



MINISTÈRE  
DES ARMÉES

*Liberté  
Égalité  
Fraternité*

# NOTEBOOK

2021 Edition



INTERNATIONAL DEFENCE COMPANIES

Let's build together  
the future of defence



# NOTEBOOK

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2021 Edition

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INTERNATIONAL DEFENCE COMPANIES



Manuscript completed on 16 November 2020

French defence procurement agency (DGA)

Industrial Affairs and Economic Intelligence Department

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## FOREWORD

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Paris, November 16, 2020

The Department for Industrial Affairs and Economic Intelligence presents, on behalf of the French Defence Procurement Agency (Direction générale de l'Armement, DGA), the 2021 edition of the "Notebook on International Defence Companies".

This publication provides key data from publicly available open sources, for a selection of international companies that were chosen according to their main activities in the defence sector.

In this regard, AVIO, Leidos, Raytheon Technologies and Teledyne were for the first time included in this 2021 edition.

The notebook does not in any way reflect the opinions or positions of the DGA or XERFI Spécific, which contributed to its preparation.

A digital version of the notebook, both in French and in English, is available on the DGA's website at [www.defense.gouv.fr/DGA](http://www.defense.gouv.fr/DGA)

I wish you a pleasant reading.

François MESTRE

Director for Industrials Affairs and Economic Intelligence  
DGA

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### SCOPE

The 2021 edition of the Notebook on International Defence Companies covers a panel of 60 companies. A specific section, "Key Data", presents the following consolidated financial indicators for each company, provided such information is available ("N/A" meaning that data is not available):

- Revenue (in euros)
- Revenue variation (as a percentage change; calculated from data in local currency)
- Defence revenue (as a % of total revenue)
- Export revenue (as a % of total revenue)
- Operating profit/loss (in euros)
- Operating margin (as a %)
- Net income (in euros) or net income attributable to shareholders
- Order book at the end of the fiscal year (in euros)
- Headcount

To ensure consistency, consolidated financial statements were the preferred source of information. Emphasis was placed on the most recent, restated financial indicators. Furthermore, some data contained in the previous edition have been revised, corrected or modified for this edition in order to take into account more recent currency exchange rates (see below).

Currency conversions were calculated using the annual average exchange rate (source: European Central Bank) during each company's fiscal year. However, order book values were converted using the exchange rates at the closing date of each company's fiscal year. Average annual exchange rates used for conversions are presented in the table below. It should be noted that all financial indicators were converted using the average exchange rate for their corresponding year. To avoid a bias when calculating annual changes of monetary indicators, variations (as a percentage change) were calculated in the original currency used in each company's financial statement.

### SOURCES

The defence industry ranking is based on data from the Defense News magazine 2019 top 100 list.

For publicly listed groups or those that publish annual statements of consolidated accounts, the following sources were used:

- Annual reports and reference documents
- Consolidated balance sheets and profit & loss statements
- Financial and investor presentations

For unlisted groups or those that do not publish annual statements of consolidated accounts, the following sources were used:

- Press releases, company presentations
- Data bases : Factiva, Diane
- Business press and specialist publications

List of companies that do not publish, or only partially publish, financial statements:

- ArianeGroup
- Arquus
- Aviation Industry Corporation of China (AVIC)
- Cobham
- Diehl Defence
- General Atomics
- Iveco Defence Vehicles
- KMW + Nexter Defense Systems (KNDS)
- MBDA
- Oshkosh Defense
- Polska Grupa Zbrojeniowa (PGZ)
- Rafael Advanced Defense Systems
- TechniRevenuetome (FormerlyAreva TA)
- Thales Alenia Space (TAS)
- ThyssenKrupp Marine Systems (TKMS)
- Turkish Aerospace
- United Aircraft Corporation (UAC)

## OWNERSHIP

The "Ownership structure" section draws data from the following sources:

- Company publications (websites, reference documents, investor presentations)
- Brokerage firms and major trading platforms (Morningstar, EDGAR, NYSE Euronext, Nasdaq, LSE, Borsa Italiana, Tokyo Stock Exchange, etc).

## CHARTS

Charts represent the sales breakdown by business segment (i.e. branches or divisions as presented by the company) and geographical region.

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

The "Main programmes, cooperations and export partnerships" section presents the main programmes highlighted by companies in their public media releases (excluding upstream study programmes). Partnerships for each programme are also listed, without further details. These partnerships can take several forms: co-contractorship, co-development or co-production agreements, subcontracting agreements (for tier-1 equipment suppliers considered as "strategic partners"), marketing agreements, joint ventures (JV), or partnerships with foreign companies as part of offset agreements.

Due to the very concise format of the notebook, this section cannot claim to be exhaustive.

## STRATEGIC HIGHLIGHTS

When available, information about the impact of the COVID-19 related health crisis on international defence companies' activities is presented in the "Strategic Highlights" section.

## EURO EXCHANGE RATES\*

COUNTRY	CURRENCY	1 EURO =			
		2016	2017	2018	2019
Australia	Australian dollar	1,488	1,473	1,580	1,611
China	Yuan	7,352	7,629	7,808	7,736
South Korea	Won	1 284,180	1 276,740	1 299,070	1 305,320
United States	U.S. dollar	1,107	1,130	1,181	1,120
India	Rupee**	74,372	73,532	80,733	78,836
Japan	Yen	120,200	126,710	130,400	122,010
Norway	Krone	9,291	9,327	9,596	9,851
Poland	Zloty	4,363	4,257	4,262	4,298
United Kingdom	Pound sterling	0,819	0,877	0,885	0,878
Russia	Ruble	74,145	65,938	74,042	72,455
Singapore	Singapore dollar	1,528	1,559	1,593	1,527
Sweden	Krona	9,469	9,635	10,258	10,589
Switzerland	Swiss franc	1,090	1,112	1,155	1,112

\*Exchange rates used for conversions were calculated as the annual average rate from January 1 to December 31 (source: European Central Bank)

\*\*The Indian numbering system groups the rightmost three digits together and thereafter groups digits by sets of two. To facilitate the reading of large numbers, the Indian system uses "crore": For instance, one crore rupee is equivalent to ten million (10,000,000) rupees.





# AIRBUS

Leading European aerospace and defence company. Third-largest military helicopter supplier worldwide and 12th-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial and military aircraft
- ▶ Commercial and military helicopters
- ▶ Unmanned aircraft systems (UAS)
- ▶ Commercial and military space (satellites, services)
- ▶ Defence electronics
- ▶ Cybersecurity

## GOVERNANCE

Chairman\* René Obermann  
 Chief Executive Officer Guillaume Faury  
 CEO Airbus Defence & Space Dirk Hoke

\*In April 2020, René Obermann succeeded Denis Ranque as Chairman.

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017*	2018	2019
Revenue	66 581	59 022	63 707	70 478
Δ (%)	3,31 %	-11,35 %	7,94 %	10,63 %
Defence (%)	17 %	15 %	16 %	14 %
Export (%)**	68 %	73 %	72 %	68 %
Operating profit/loss	2 258	2 665	5 048	1 339
Operating margin	3,39 %	4,52 %	7,92 %	1,90 %
Net income***	995	2 361	3 054	-1 362
Order book	1 060 447	996 822	459 525	471 488
Employees	133 782	129 442	133 671	134 931

\*Figures restated

\*\*Based on revenue in European markets

\*\*\*Net income attributable to shareholders

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	AIR
Listed on	NYSE Euronext
Market Cap (€m)	65 041

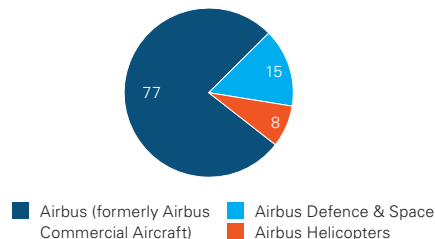
### Major shareholders (as of 10.11.2020)

SOGEPA (French State)	10,90 %
GZBV (German State)	10,90 %
Capital Research & Management Co. (World Investors)	5,10 %
SEPI (Spanish State)	4,12 %

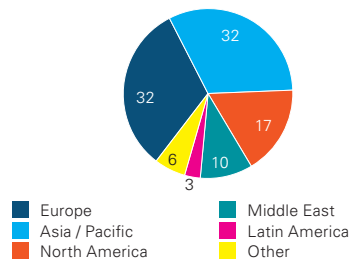
## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
MBDA	37,5 %	France
Eurofighter Jagdflugzeug GmbH	46 %	Germany
ArianeGroup	50 %	France
ATR GIE	50 %	France
NHIndustries	62,5 %	France
AirTanker Holdings Ltd	40 %	United Kingdom

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Thales	BAE Systems	Northrop Grumman*	Leonardo	Safran	Dassault Aviation	TAI	Naval Group	Rolls-Royce
<b>Military aircraft and Unmanned aircraft systems</b>									
A400M tactical and strategic military transport aircraft	●			●		●			
C295 and AC295 tactical transport aircraft	●	●							
A330 Multi-Role Tanker Transport (MRTT) aircraft	●							●	
A320neo MPA (Maritime Patrol Aircraft)	●			●					
Eurofighter Typhoon fighter aircraft		●		●				●	
European MALE RPAS (Eurodrone programme)				●		●			
VSR700 future shipborne UAS	●				●		●		
NGF future fighter aircraft (FCAS programme)	●				●				
<b>Military helicopters</b>									
H125M single-engine transport helicopter (2t)	●				●				
H135M and H145M twin-engine transport helicopters (3t)	●				●				
AS565 Mbe (4t) and H160M (6t) twin-engine multi-role helicopters	●				●				
H215M (9t) and H225M (11t) twin-engine multi-role helicopters	●				●				
NH90 twin-engine multi-role helicopter (11t)	●			●	●				
Tiger HAP / HAD twin-engine attack helicopter (6t)	●				●				
<b>Space</b>									
CSO optical earth observation satellite	●								
CERES space-born military intelligence system	●								
Syracuse 4 military communication satellite	●			●					
<b>Cybersecurity</b>									
Stormshield Data Security	●								

\*Innovation Systems division, formerly Orbital ATK

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Airbus consolidated revenues reached €70.5bn in 2019, up 10.6% year-on-year. Growth was driven by a record number of commercial aircraft deliveries (863 units, compared with 800 in 2018) and strong momentum in the military helicopter segment. Substantial exceptional charges (including a €3.6bn fine paid to settle an investigation into alleged corruption, as well as a €1.2bn penalty for the late delivery of the A400M transport aircraft) weighed on the group's results, with losses reaching a record €1.4bn in 2019.
- ▶ The Airbus Defence & Space division's order book stood at €32.3bn at the end of 2019 (down 8.6% year-on-year), representing less than three years of sales. It includes 53 Typhoon fighter aircraft, 123 tactical transport aircraft (86 A400M Atlas and 37 C295) and 18 A330 MRTT refuelling aircraft.
- ▶ Faced with cash flow difficulties, the Airbus Defence & Space branch in late 2019 launched Momentum, an internal efficiency plan designed to improve its operational performance. The plan includes cutting more than 2,360 positions by 2021, including 829 in Germany, 630 in Spain, 404 in France and 357 in the United Kingdom.
- ▶ In the wake of the COVID-19 health crisis, Airbus suspended operations at several plants and implemented a workforce adjustment plan with the aim to cut 15,000 jobs worldwide by the summer of 2021, including 5,000 in France (a figure that may be revised downwards depending on the amount of aid granted by the State).

### Home markets (Germany, Spain, France, United Kingdom)

- ▶ In early 2020, the French and German governments awarded Dassault Aviation, Airbus, MTU Aero Engines, Safran, MBDA and Thales the initial framework contract (Phase 1A) for the FCAS demonstrator. The contract covers an 18-month period and marks the launch of the development of the NGF (New Generation Fighter), a component of the Next-Generation Weapon System (NGWS).
- ▶ The Bundeswehr, Germany's unified armed forces, plans to acquire 93 Typhoon fighter aircraft from the European consortium Eurofighter GmbH. Acquisition contracts are not expected to be signed before 2022.
- ▶ In February 2020, France's Ministry of the Armed Forces ordered four H160s and 12 H155s (Dauphin) from Airbus Helicopters. In August, an additional €200m contract for the supply of three A330 MRTT transport and refuelling aircraft was also signed as part of the government's plan to support the aeronautics industry.
- ▶ In February 2020, France's defence procurement agency (DGA) awarded Airbus Helicopters and Safran a contract for a new set of studies on the militarisation of the H160 helicopter, as part of the HIL programme for the future joint light helicopter Guepard. The HIL programme provides for the delivery of 169 aircraft from 2026.
- ▶ In July 2020, Airbus Defence & Space won a €550m contract to supply and launch a military telecommunications satellite (Skynet 6A) for the United Kingdom. The satellite is scheduled to be put in orbit in 2025.

### Export markets

- ▶ The Eurofighter GmbH consortium is competing for several calls for tenders: in Switzerland (Air2030 programme for the acquisition of 30 to 40 combat aircraft for €5.4bn), in Finland (HX Fighter programme for the acquisition of 64 aircraft for around €10bn) and in India (supply of 110 combat aircraft).
- ▶ In May 2020, the European Defence Agency awarded Airbus the EU Satcom (satellite communications) contract, a 4-year contract estimated to be worth several tens of millions of euros.
- ▶ In late 2019, Airbus received several orders for its C295 tactical military transport aircraft (2 from Ireland, 2 from the Czech Republic and 1 from Burkina Faso). In March 2020, it also received a \$123m (about €111m) order for 15 UH-72 Lakota helicopters (military version of the H-145) from the U.S. Army. The aircraft will be built in Columbus (Mississippi, USA).

### Technology and Innovation

- ▶ The group's self-financed R&D expenditure amounted to €3.4bn (or 4.8% of sales) in 2019.

# ARIANEGROUP

Leading European aerospace company and among the world leaders in the space industry. Mainly specialised in the design and production of orbital launch vehicles.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial launch services (launchers and services)
- ▶ Ballistic missiles
- ▶ Propulsion systems
- ▶ Pyrotechnics (for launchers and satellites)
- ▶ Space instrumentation and equipment (optical, optronic, neutronic)
- ▶ Complex and secure infrastructures

## GOVERNANCE

Chairman and CEO  
Chief Operating Officer  
Defence Programmes  
Director

André-Hubert Roussel  
David Quancard  
Philippe Clar

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016*	2017	2018	2019
Revenue	2 227	3 221	3 587	3 069
Δ (%)	83,29%	44,63%	11,36%	-14,44%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss	102	228	251	133
Operating margin	4,58%	7,08%	7,00%	4,33%
Net income**	98	266	237	54
Order book	N/A	N/A	N/A	N/A
Employees	≈ 9 000	≈ 9 000	≈ 9 000	≈ 9 000

\*Changes in scope since 2016

\*\*Total comprehensive income

## OWNERSHIP STRUCTURE

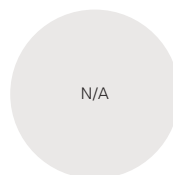
Symbol  
Listed on  
Market Cap

Unlisted group

Major shareholders (as of 10.11.2020)

Airbus	50%
Safran	50%

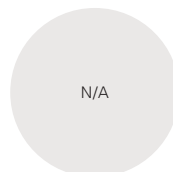
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Arianespace	74%	France
Nucléutudes	98,9%	France
CILAS	63%	France
Pyroalliance	90%	France
Sodern	90%	France
EuroCryospace	45%	France
Europropulsion	50%	France
Regulus	40%	France

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	Safran	Thales	Naval Group	Avio	RUAG	MT Aerospace	SABCA	Air Liquide
<b>Commercial launch services</b>									
Ariane 6 future launcher (2021)	●	●	●			●	●	●	●
Ariane 5 launcher	●	●	●			●	●	●	●
Launch services (Ariane 5, Vega, Soyouz)									
<b>Ballistic missile</b>									
M51 submarine-launched ballistic missile	●	●	●	●					
<b>Propulsion systems</b>									
Vulcain 2 (Ariane 5) and Vulcain 2.1 (Ariane 6) rocket engines		●							
Vinci rocket engine (Ariane 5ME)		●							
P120C rocket engine (Ariane 6, Vega-C)					●				
Prometheus rocket engine project	●	●							
Bipropellant thrusters (4N, 10N, 22N, 200N, 400N)									
Chemical monopropellant hydrazine thrusters (1N, 20N, 400N)									
Electric orbital propulsion systems (RIT 2X, RIT 10 EVO, RIT μX)									
M10 hold down and release mechanisms (ME0032, ME0038)									
Combustion chambers									
Propellant tank									
<b>Pyrotechnics (for launchers and satellites)</b>									
Vulcain Turbine Pump Starter		●							
Vinci engine ignition system		●							
Vega's Zefiro-9 third-stage engine ignition system					●				

\*OHB group \*\*Blueberry group

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ ArianeGroup, equally owned by Airbus and Safran, specialises in the design and production of civil and military space launchers, as well as the supply of satellite and spacecraft-related equipment and services. The group had sales of €3.1bn in 2019 (-14% year-on-year) and has around 9,000 employees based in France (9 sites, including one in French Guiana) and Germany (4 sites).
- ▶ At the end of 2019, ArianeGroup inaugurated a 6,000 square metre facility in Bremen (Germany), where the upper floor of Ariane 6 will be integrated. The facility features various Industry 4.0 technologies and innovative processes for surface treatment and thermal insulation of ergol tanks.
- ▶ In early 2020, the French Minister of the Economy called for a merger between ArianeGroup, Germany's OHB and Italy's Avio, with the aim of increasing competitiveness, in particular against growing competition from new entrants in the space sector, such as SpaceX from the U.S.
- ▶ ArianeGroup closed its production sites in France and Germany between 18 and 23 March 2020 due to the health crisis related to the COVID-19 pandemic. The group gradually restarted its activity the following month: on 23 April 2020, 73% of the workforce was working in France and 90% in Germany.
- ▶ After suspending its launch campaigns at the Guiana Space Centre since 16 March 2020 due to the health crisis, Arianespace resumed operations in mid-June. Several flights have been postponed, including the inaugural flight of Ariane 6 (rescheduled to 2021) due to development delays caused by the crisis.
- ▶ U.S. company OneWeb's difficulties (financing problems and the adverse impact of the coronavirus crisis) could directly impact Arianespace, its largest creditor, with an exposure of \$238m (approximately €217m).

### Home market

- ▶ Arianespace completed 9 launches in 2019 (compared with 12 initially planned at the beginning of the year), enabling 15 satellites to be put into orbit. Prior to the health crisis, Arianespace planned 22 launches in 2020 (with more than 300 satellites to be put into orbit), including the inaugural flights of Ariane 6 and Vega C. Only 6 launches were completed as of the end of October 2020.
- ▶ Arianespace and the European Space Agency (ESA) signed several contracts in 2019: development of the industrial technology (CDTI) to put the SEOSAT/Ingenio Earth observation satellite into orbit; launch of the Biomass mission; launch of the EarthCARE satellite, etc.
- ▶ Ariane 5 successfully completed its 108th launch in February 2020 (the second of that year), placing two satellites in geostationary transfer orbit for SKY Perfect JSAT and the Korean Aerospace Research Institute (KARI), respectively. Arianespace still plans to operate 9 more launches on Ariane 5 until 2023.
- ▶ In early 2020, Arianespace signed a contract with the European Space Agency (ESA) to launch the Euclid Earth observation satellite from mid-2022. This satellite, built under prime contractorship by Thales Alenia Space, will be launched by an Ariane 6 rocket (version 62) or a Soyuz rocket.

### Technology and Innovation

- ▶ During the second quarter of 2020, ArianeGroup and the German Aerospace Agency successfully tested a 3D-manufactured combustion chamber, paving the way for entirely 3D-printed rocket engines (with the aim of using 3D printing for all of ArianeGroup's liquid propellant engines). A propellant composed of 70% printed parts will be tested in 2021.
- ▶ Sodern and Safran Electronics & Defense are developing a day-and-night stellar sighting demonstrator for military aircraft (a series of flight tests took place in autumn 2020). This demonstrator will be independent of satellite positioning systems (GPS, Galileo, etc.).



# ARQUUS (FORMERLY RENAULT TRUCKS DEFENSE)

Defence subsidiary of the Volvo group. One of the European leaders in land armaments.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Wheeled armoured vehicles
- ▶ Tactical and logistics vehicles
- ▶ Propulsion systems for armoured vehicles
- ▶ Weapon systems (Remote Control Weapon Systems, RCWS)
- ▶ Maintenance and modernisation

## GOVERNANCE

Chairman and CEO  
Head of Operations

Emmanuel Levacher  
Frédéric Gratien

## OWNERSHIP STRUCTURE

Symbol  
Listed on  
Market Cap

Unlisted subsidiary

Major shareholders (as of 10.11.2020)

Volvo Group Government Sales | 100%

## MAIN JOINT VENTURES AND ASSOCIATES

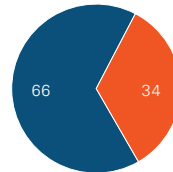
Name	%	Country
SOFEMA	4%	France
ODAS	2%	France

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017*	2018*	2019
Revenue	≈ 410	≈ 340	≈ 450	≈ 620
Δ (%)	2,50%	-17,07%	25,00%	37,78%
Defence (%)	100%	100%	100%	100%
Export (%)	N/A	N/A	N/A	42%
Operating profit/loss	N/A	N/A	N/A	N/A
Operating margin	N/A	N/A	N/A	N/A
Net income	N/A	N/A	N/A	N/A
Order book	N/A	N/A	6 000	5 800
Employees	≈ 1 400	≈ 1 500	≈ 1 500	≈ 1 500

\*Figures restated

## REVENUE BY BUSINESS SEGMENT (%)



■ Platform development and Production  
 ■ Services and MRO

## REVENUE BY REGION (%)



# ARQUUS (FORMERLY RENAULT TRUCKS DEFENSE)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Nexter*	Thales	Astalis**	Metravib***	AM General
<b>Reconnaissance vehicles</b>					
4x4 VBL Mk2 light armoured vehicle		●			
4x4 VBR light armoured vehicle					
4x4 PVP light protected vehicles					
Scarabée light armoured vehicle					
Dagger autonomous light armoured vehicle					
<b>Armoured combat and transport vehicles</b>					
6x6 Jaguar reconnaissance and combat armoured vehicle (EBRC) and 6x6 Griffon multi-role armoured vehicle (VBMR) (Scorpion and CaMo programmes)	●	●		●	
Maintenance for VAB armoured personnel carrier and transport vehicle					
6x6 VAB Mk3 medium weight armoured vehicle		●			
Higuard MRAP (armoured vehicle resistant to improvised explosive devices)					
Bastion and Fortress Mk2 armoured personnel carrier/combats vehicles					●
VBCI armoured infantry fighting vehicle	●				
<b>Light tactical vehicles</b>					
VLRA, Sherpa Light and ALTV light wheeled tactical vehicles					
4x4 VT4 tactical vehicle					
<b>Heavy tactical and logistic trucks</b>					
4x4 / 6x6 / 8x4 / 8x8 KERAX logistic tractor trucks					
4x4 / 6x6 Sherpa Medium tactical trucks					
4x4 / 6x6 / 8x8 Armis tactical trucks					
<b>Special forces vehicles</b>					
Areg, Torpedo, Sabre, Patsas special forces vehicles					

\*KNDS group \*\*Russian company \*\*\*ACOEM group



## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Arqus, Volvo Group's defence subsidiary, generated sales of over €600m in 2019, up 38% year-on-year. The group has around 1,500 employees in France across four production sites and three sites dedicated to support activities (maintenance, repair and operations, remote diagnostics, training, etc.).
- ▶ Arqus' order intake reached approximately €1.2bn in 2019 (including €750m in firm orders), mainly for export markets. The order book stood at €5.8bn at the end of the financial year, representing more than 9 years of sales.
- ▶ The company launched a €12m investment plan for 2020-2021 to improve and modernise its French facilities. Among other initiatives, a new logistics centre will be attached to the Limoges plant.
- ▶ Arqus closed its production sites for two weeks during the coronavirus-related health crisis, before gradually restarting its activity between the end of March and early April 2020. Several support activities (spare parts delivery, maintenance, etc.) were partially maintained during the crisis.

### Home market

- ▶ Arqus, Nexter (KNDS) and Thales are jointly in charge of the Scorpion programme, which includes the supply of wheeled armoured vehicles to the French Army. 1,872 VBMR Griffon and 300 EBRC Jaguar will be delivered by 2030, half of them by 2025. Due to the health crisis, some deliveries scheduled for 2020 are likely to be postponed.
- ▶ Arqus delivered 100 new VT4 vehicles to the French Armed Forces in June 2020, bringing the total number of deliveries to 1,300. The Group has yet to produce 3,080 VT4s, mainly for the French Army, by 2025.
- ▶ In January 2020, Arqus delivered the first 15 renovated TRM2000 trucks to the French Army as part of the Private Industrial Repair programme (Réparation Industrielle Privée, RIP) aimed at extending the operational lifetime of these trucks. A total of 200 TRM2000 trucks are to be refurbished by the end of 2021.
- ▶ Arqus intends to take part in the future call for tenders for the replacement of 7,000 tactical army trucks. The company will be offering its Armis model in 4x4, 6x6 and 8x8 versions. The contract is estimated to be worth around €2bn and the first vehicles could be delivered from 2025.

### Export markets

- ▶ Arqus, which has customers in more than 60 countries, is looking to expand its export sales, which accounted for 42% of sales in 2019. The company aims to eventually generate half of its business in export markets. African and Middle Eastern countries are among the group's main target markets.
- ▶ Together with Nexter and Thales, Arqus is participating in the CaMo (Motorised Capability) programme, which provides for the supply of 60 Jaguar EBRCs and 382 Griffon VBMRs to the Belgian Army from 2025 onwards. The contract, valued at €1.6bn, includes training, instruction and maintenance services.
- ▶ In 2019, Arqus delivered 1,276 MSVS logistics trucks to the Canadian Army, 61 Bastion armoured personnel carriers to the G5-Sahel Joint Force, as well as various Sherpa light armoured vehicles to Kuwait. The group also won two contracts to supply a further 36 Bastion and 84 logistics trucks to the G5-Sahel Joint Force.

### Technology and Innovation

- ▶ Arqus invests around 4% of its yearly sales in R&D (around €20m). The group is in particular working on the development of fully autonomous vehicles (e.g. the new version of the Dagger).
- ▶ Arqus is conducting a tactical evaluation of a fleet of French Army vehicles, using HUMS-oriented sensors (Health and Usage Monitoring Systems) to assess the relevance of technologies related to predictive maintenance on land-based equipment.



# ASC PTY LTD

Leading Australian naval defence group, involved in the construction and maintenance of submarines and surface ships.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Submarines
- ▶ Surface ships
- ▶ Maintenance services
- ▶ Training

## GOVERNANCE

Chairman	Bruce Carter
Chief Executive Officer	Stuart Whiley
Chief Financial Officer	Ashley Menadue

## KEY FIGURES (Fiscal year ended: June 30th)

€ millions	2016-17	2017-18	2018-19	2019-20
Revenue	561	497	466	410
Δ (%)/[AUD]*	1,29%	-5,67%	-2,89%	-9,03%
Defence (%)	100%	100%	100%	100%
Export (%)	0%	0%	0%	0%
Operating profit/loss	27	27	25	22
Operating margin	4,82%	5,46%	5,38%	5,33%
Net income**	20	21	19	14
Order book	N/A	N/A	N/A	N/A
Employees	≈ 2 400	≈ 2 200	≈ 1 300	1 345

\*Variation based on revenue in local currency  
See E/AUD p.7

\*\*Net income attributable to shareholders

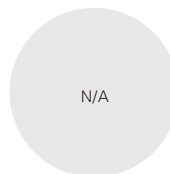
## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

Major shareholders (as of 10.11.2020)

Australian State	100%
------------------	------

## REVENUE BY BUSINESS SEGMENT (%)

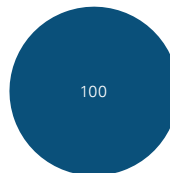


## MAIN JOINT VENTURES AND ASSOCIATES\*

Name	%	Country

\*No information available

## REVENUE BY REGION (%)



■ Australia

MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	General Dynamics	Raytheon Technologies*	Babcock International	Naval Group	Lockheed Martin	Forges Marine & Defence Ptyd**	L3Harris Technologies***	Navantia	Lürssen Australia****	Saab	Penske
<b>Submarine</b>											
Attack-class conventionally-powered submarine			●	●							
<b>Surface ships*****</b>											
Hobart-class Air Warfare Destroyer (AWD programme)******	●	●			●			●			
Arafura-class OPV (SEA 1180 programme)						●	●		●	●	●
<b>MRO, training and support</b>											
Collins-class submarine maintenance and training	●		●							●	
Swedish Royal Navy's A26 Blekinge-class submarine services (engineering, design)										●	

\* Merger of Raytheon and UTC

\*\* Cimtec group

\*\*\* Merger of L3 Technologies and Harris Corporation

\*\*\*\* Lürssen group

\*\*\*\*\* Excluding Hunter-class anti-submarine warfare frigate (SEA 5000 programme) built by ASC Shipbuilding, now a subsidiary of BAE Systems Australia, the prime contractor of the programme

\*\*\*\*\* Based on F-100-class frigate (Spanish Navy)

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ ASC revenues reached AUD 676 m (€410m) in 2019-2020, down 9% year-on-year in local currency. It was the third consecutive year of declining sales for the group.
- ▶ In late 2018, ASC Shipbuilding - which has about 1,000 employees - officially became a subsidiary of BAE Systems for the entire duration of the construction of the nine Hunter-class anti-submarine warfare frigates (SEA 5000 programme, a contract estimated at AUD 35 bn, or approximately €24bn), for which the British group is the prime contractor. The Australian government retains shares in the shipyard and will recover all the capital at the end of the programme, which is scheduled to last 10 years.
- ▶ The group reported a relatively limited impact from the Covid-19 crisis on its activities. The business continuity plan put in place at its various sites should enable ASC to meet the deadlines set for the various programmes.

## Home market

- ▶ A key player in the Australian naval sector, ASC is the main beneficiary of the Royal Australian Navy's modernisation programme (AUD 89 bn, or about €60bn) launched in 2015.
- ▶ In partnership with foreign groups, the group is involved in the main Australian naval programmes: future Attack-class submarines, Hobart-class destroyers (SEA 4000 or AWD programme), Arafura-class offshore patrol vessels (SEA 1180 programme). ASC is also prime contractor for the ISSC (In Service Support Contract) programme, which covers the maintenance of Collins-class submarines until 2030.
- ▶ In February 2019, Naval Group signed a strategic partnership agreement with the Australian government for the supply of 12 Attack-class submarines (SEA 1000 programme), which will be based on the group's Shortfin Barracuda design, a conventionally-powered variant of the nuclear-powered Barracuda fast attack submarine. The construction of the vessels will be carried out in Australia by ASC at the Osborne shipyard as part of a technology transfer.
- ▶ In December 2019, ASC delivered the third and last Hobart-class destroyer, named Sydney, to the Royal Australian Navy. The ship officially entered service in May 2020.
- ▶ Construction continued on the first of 12 new offshore patrol vessels ordered by the Royal Australian Navy (a programme for which Luerssen Australia is the prime contractor and ASC and Cvmec are tier 1 subcontractors). Christened Arafara, the vessel is due for delivery in 2021. A second patrol vessel, called Eyre, is also under construction. The next 10 patrol boats will be built at the Cvmec shipyard in Henderson.

## Technology and Innovation

- ▶ During the Pacific Sail & Power Boat Show 2019, ASC and French company Jeumont Electric (which provides Naval Group the propulsion engines for Attack-class submarines), announced they would join forces to develop new technologies in the submarine field.
- ▶ In June 2020, ASC announced a strategic partnership with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), a public entity dedicated to research, as well as DMTC Ltd., an Australian company specialised in defence innovation, to integrate 3D printing technologies into maintenance operations for Collins-class submarines.



# AVIATION INDUSTRY CORPORATION OF CHINA (AVIC)

Chinese conglomerate made up of about 60 subsidiaries, mainly active in civil and military aeronautics. China's largest and world's 6th-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial and military aircraft
- ▶ Transport and energy
- ▶ Electronics and electric equipment
- ▶ Engineering
- ▶ Financial services

## GOVERNANCE

Chairman	Tan Ruisong
Chief Executive Officer	Luo Ronghui
Chief Financial Officer	Zhang Minsheng

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	50 488	52 890	N/A	59 695
Δ (%) /CNY)*	6,10%	8,70%	N/A	N/A
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	N/A	24%	N/A	N/A
Operating profit/loss	N/A	N/A	N/A	N/A
Operating margin	N/A	N/A	N/A	N/A
Net income	2 282	2 169	N/A	N/A
Order book	N/A	N/A	N/A	N/A
Employees	467 929	452 178	≈ 450 000	≈ 450 000

\* Variation based on revenue in local currency  
See €/CNY, p.7

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

Major shareholders (as of 10.11.2020)

SASAC (Chinese State)	100%
-----------------------	------

## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
AviChina Industry & Technology Co., Ltd	58,6%	China
Snecma-SAIC JV	50,0%	China
Cessna-AVIC Aircraft (Zhuhai) Co., Ltd	N/A	China
Cessna-AVIC Aircraft (Shijiazhuang) Co., Ltd	N/A	China
Xi'an AVIC Hamilton Sundstrand Aviation Electric Co., Ltd (AUAE)	50,0%	China
Commercial Aircraft Corporation of China, Ltd (COMAC)	N/A	China

## REVENUE BY REGION (%)



# AVIATION INDUSTRY CORPORATION OF CHINA (AVIC)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	Sukhoi**	UEC Saturn***/	Antonov****	Ivchenko-Progress****	Klimov****	Yakovlev****	Honeywell Aerospace	PAC
<b>Fighter and trainer aircraft</b>									
Chengdu J-10 fighter aircraft		●							
Chengdu J-20 fighter aircraft									
Shenyang J-11 fighter aircraft	●	●							
Shenyang J-15 fighter aircraft	●								
Shenyang J-31 fighter aircraft					●				
FC-1/JF-17 fighter aircraft					●		●	●	
Guizhou JL-9/FTC-2000G trainer/light attack aircraft									
Hongdu L-15 trainer/light attack aircraft				●		●			
<b>Transport and AEW&amp;C aircraft</b>									
Shaanxi Y-9 transport and AEW&C aircraft			●						
Y-20 transport aircraft			●						
<b>Propulsion systems</b>									
Shenyang WS-10 (J-11, J-15, J-20) turbojet engine		●							
Guizhou WS-13 (J-31) turbojet engine									
Shenyang WS-20 (Y-20) turbojet engine									
<b>Helicopter</b>									
Z-9/Z-19 twin-engine reconnaissance helicopter	●								
<b>Unmanned systems</b>									
Wing Loong I/II MALE UAS									
Yaoying IIUCAV									
Cloud Shadow UAV									
AV500W and AR500C future VTOL UAVs									

\*UAC group \*\*formerly NPO Saturn \*\*\*United Engine Corporation (UEC) group \*\*\*\*UkrOboronProm group

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ AVIC revenues reached CNY 461.8 bn (€59.7bn) in 2019, up more than 30% in local currency since 2016. However, the group's performance remains far below the CNY 1,000 bn (€129bn) sales target itself by the year 2020.
- ▶ In September 2019, AVIC and Airbus strengthened their strategic partnership in the production of single-aisle commercial aircraft. The two groups, which also cooperate in the civil and military helicopter segment (mostly on the twin-engine Z-9/Z-19 reconnaissance helicopter), have been partners since 1985.

### Home market

- ▶ AVIC generates a large part of its turnover on its domestic market. As the leading company in the Chinese aeronautics sector, the group is directly or indirectly involved in most of the country's military aircraft programmes through its subsidiaries CAIC, Guizhou, Harbin, Shenyang Aircraft and Chengdu.
- ▶ The group is an essential partner for foreign contractors wishing to enter the Chinese market. Several major manufacturers have created joint ventures with AVIC in recent years, such as Safran (Safran Aircraft Engines) with the Snecma-SAIC joint venture that was created in 2014.
- ▶ Despite the difficulties encountered on the Shenyang J-15 fighter aircraft programme, including several successive accidents between 2016 and 2018 related in particular to faulty flight systems, the group announced the delivery of a third batch for the People's Liberation Army (the PRC's regular armed forces) in late 2020.

### Export markets

- ▶ The group generates barely 20% of its turnover from exports. Africa, the Middle East and Eastern Europe are AVIC's main target markets.
- ▶ AVIC aims to increase its international presence, in particular through the One Belt One Road (OBOR) initiative, by strengthening industrial partnerships with its customers, but also and above all by developing relationships with supply chain players in the regions associated with the initiative.
- ▶ The group announced that it has stepped up production of the JF-17 fighter jet in 2020, jointly developed with Pakistan Aeronautical Complex, a Pakistani defence contractor and aerospace manufacturer, on behalf of the Pakistan Air Force. In addition to Pakistan, Myanmar also ordered 16 units of this fighter jet in 2015, six of which have already been delivered over the recent years.
- ▶ In April 2020, AVIC received its first export order for the Guizhou JL-9 (also known as the FTC-2000G) light training/ multi-role combat fighter aircraft from a Southeast Asian country, possibly Cambodia or Myanmar. The first deliveries under this contract, the amount of which has not been disclosed, are expected in 2021.

### Technology and Innovation

- ▶ In April 2020, a new naval variant of the Guizhou JL-9 light training/multi-role aircraft made its first test flight at Anshun airport in Guizhou province, southwest China.
- ▶ In September 2020, AVIC completed the first test flight of its AR500C vertical take-off and landing (VTOL) unmanned helicopter at its R&D site based in Poyang County. The UAV is 7.2 m long and has a maximum take-off weight of 500 kg.



# AVIO

Major player in the global space launcher market. Prime contractor for the Vega launcher programme and subcontractor for the Ariane 5 and Ariane 6 programmes.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Launch vehicles
- ▶ Launcher propulsion systems
- ▶ Missile propulsion systems
- ▶ Payload adapters
- ▶ Space vehicle

## GOVERNANCE

Chairman	Roberto Italia
Chief Executive Officer	Giulio Ranzo
Chief Financial Officer	Alessandro Agosti

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	292	344	389	369
Δ (%)	13,44%	17,74%	13,06%	-5,15%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	N/A	N/A	≈60%	N/A
Operating profit/loss	13	25	29	27
Operating margin	4,52%	7,27%	7,33%	7,19%
Net income*	1	18	24	26
Order book	775	952	877	669
Employees	758	782	838	935

\*Net income attributable to shareholders

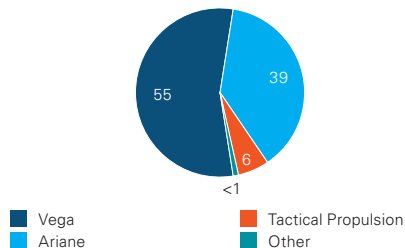
## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	AVIO
Listed on	Italian Stock Exchange
Market Cap (€m)	331

## Major shareholders (as of 10.11.2020)

Leonardo S.p.A.	25,90%
Amundi SGR SpA	5,97%
Space Holding SRL	4,84%
In Orbit SpA	3,97%

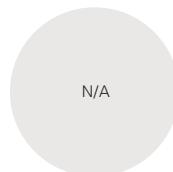
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Spacelab	70%	Italy
Regulus	60%	France
Europropulsion	50%	France

## REVENUE BY REGION (%)





MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	ArianeGroup	Spacelab	Telespazio	RUAG	Yuzhnoye SDO	SABCA	Thales	Thales Alenia Space	MBDA
<b>Launch vehicles</b>									
Vega launcher	●	●	●	●	●	●	●		
Vega C future launcher	●	●		●		●			
Vega E future launcher	●								
Vega C Light future launcher	●								
<b>Launcher propulsion systems</b>									
P80 solid propellant engine (Vega)									
P230 solid propellant engine (Ariane 5) and P120C future engine (Ariane 62, Ariane 64, Vega C, Vega E)*	●								
Vulcain 2 (Ariane 5), Vulcain 2.1 (Ariane 6) and Vinci (Ariane 6) liquid oxygen turbopumps	●								
Zefiro 9 (Vega, Vega C), Zefiro 23 (Vega) and Zefiro 40 (Vega C, Vega E) solid propellant engines									
M10 liquid oxygen and methane engine (Vega E)									
AVUM liquid propulsion module (Vega, Vega C)									
<b>Missile propulsion systems</b>									
CAMM-ER air defence missile propulsion system									●
ASTER 30 air defence missile propulsion and actuation systems and fins									●
<b>Payload adapters</b>									
Small Spacecraft Mission Service (SSMS) dispenser adaptor									
Vampire and VESPA C payload adapters									
<b>Space vehicle</b>									
Space Rider future space transport system**									●

\*Based on P80 solid propellant engine

\*\*Developed by Spacelab (formerly ELV), an Avio subsidiary which is 30% owned by the Italian Space Agency

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ After strong growth during 2014-2018 (+73.1% overall growth during the period), Avio revenues fell by 5% in 2019, reaching €369m. The drop was mainly caused by declining activity in the group's two main divisions, the Vega Launchers division (-1.8% over the year) and the Ariane Launchers division (-10.8%). The Vega Launchers branch was particularly impacted by the failure of Vega Flight VV15 in July 2019.
- ▶ Following the closure of the Guyana Space Centre (CSG) in Kourou for two months in the context of the COVID-19 related health crisis, several launches have been postponed. Among others, the inaugural flights of Vega C and Ariane 6, initially scheduled for 2020, have been postponed to the first half of 2021 and the end of 2021, respectively. These postponements are likely to again weigh on activity during the 2020 financial year.
- ▶ The year 2020 was marked by the first launch of the Vega rocket (VV16 launch) since the failure of the VV15 mission a little more than a year earlier. Initially scheduled for March 2020 and postponed due to the health crisis and later unfavourable weather conditions, the VV16 mission was carried out in September 2020. 7 microsatellites and 46 nanosatellites, on behalf of 21 customers from 13 countries, were put into orbit.
- ▶ In January 2020, Avio also presented the SPTF (Space Propulsion Test Facility) project, which involves the construction of a dedicated site for space activities, including a test bench for "green" engines and a carbon component production plant in Villaputzu, Sardinia (Italy). Managed by Spacelab, the site will eventually employ around 35 people. With a total investment of around €30m, the SPTF project is being carried out in partnership with the Italian Space Agency, the Italian Ministry of Economic Development, and the Sardinia Region.

## Home market

- ▶ Avio benefits from the support of the Italian State, which is keen to develop national expertise in the strategic space sector, but also and above all from the support of the European Space Agency (ESA), which provides assistance to European space companies.
- ▶ As the prime contractor for the Vega launcher programme (produced by Avio and its subsidiary Spacelab - formerly ELV, jointly owned with the European Space Agency - and marketed by Arianespace, a subsidiary of ArianeGroup) and a subcontractor for the Ariane 5 and Ariane 6 programmes, Avio benefits from the contracts won by Arianespace.
- ▶ At the end of 2019, ESA was allocated a €12.5bn budget for the next three years, destined to finance the continuation of current programmes - including programmes in which Avio is participating (Space Rider space shuttle and the Ariane 6, Vega C, Vega E and Vega C Light launchers) - as well as the launch of new ones. The budget allocated to Avio from 2020 onwards for research, development and support missions related to these programmes is estimated at over €400m.
- ▶ In January 2020, Arianespace won two new contracts from ESA in which Avio could be involved. The first contract is for the launch of the Euclid Earth observation satellite from mid-2022. This satellite, built under the supervision of prime contractor Thales Alenia Space, will be launched either by an Ariane 62 launch system (twin-booster version), including the liquid oxygen turbopumps of the Vulcain 2.1 and Vinci rocket engines that are provided by Avio; or by a Soyuz rocket. The second contract is an order for 4 launches of Ariane 6 (Ariane 62 version) to put the last satellites of the Galileo geolocation service into orbit from 2022 (order pending validation by the European Union once the multiannual budget for 2021-2027 has been decided).
- ▶ Avio is also in charge of producing new-generation P120C engines (a contract won in October 2019 from ArianeGroup) which will power a first batch of 14 Ariane 62 and Ariane 64 launchers. ArianeGroup started production of the launchers, which are scheduled to fly between 2021 and 2023, in May 2019.
- ▶ Avio is also a supplier of propulsion systems for MBDA's CAMM-ER and ASTER missiles.

## Export markets

- ▶ The group's self-financed R&D expenditure amounted to €13.7m in 2019, representing 3.7% of total revenue.



# BAE SYSTEMS

Diversified defence group (aeronautics, naval, land, etc.), particularly present on the U.S. market and seventh-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Military aircraft (manned and unmanned aircraft)
- ▶ Naval platform and systems (surface ships and submarines)
- ▶ Land platform and systems (armoured vehicles and artillery systems)
- ▶ Defence electronics
- ▶ Cybersecurity

## GOVERNANCE

Chairman Roger Carr  
 Chief Executive Officer Charles Woodburn  
 Managing Director, Air Chris Boardman

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	BA
Listed on	LSE
Market Cap (€m)	14 206

### Major shareholders (as of 10.11.2020)

Invesco Asset Management Ltd.	4,89%
Barclays Bank Plc (Private Banking)	3,97%
Veritas Asset Management LLP	3,87%
Templeton Investment Counsel LLC	3,85%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Eurofighter Jagdflugzeug GmbH	33%	Germany
Panavia Aircraft GmbH	42,5%	Germany
MBDA	37,5%	France
CTA International SAS	50%	France
Rheinmetall BAE Systems Land Ltd	45%	United Kingdom
FADEC International LLC	50%	United States

## KEY FIGURES (Fiscal year ended: December 31st)

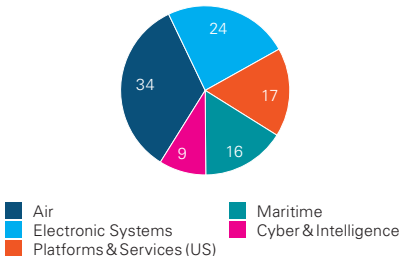
€ millions	2016	2017**	2018	2019
Revenue	21 722	19 640	19 007	20 849
Δ (%)/[€]*	5,97%	-3,18%	-2,34%	8,82%
Defence (%)	91%	92%	91%	92%
Export (%)	78%	80%	78%	80%
Operating profit/loss	2 017	1 496	1 655	1 972
Operating margin	9,29%	7,62%	8,71%	9,46%
Net income***	1 115	943	1 130	1 681
Order book	49 065	43 630	54 078	53 349
Employees	83 100	83 200	85 800	87 800

\*Variation based on revenue in local currency  
 See €/\$, p.7

\*\*Figures restated

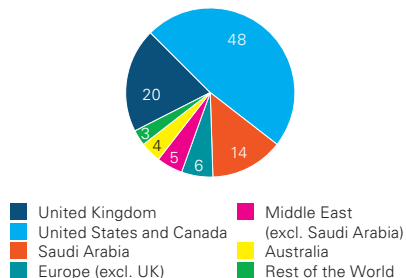
\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)\*



\*Excluding Headquarter division

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	Leonardo	Thales	Lockheed Martin	Northrop Grumman	General Dynamics	Babcock International	Raytheon Technologies*	Rolls-Royce	Iveco Defence Vehicles	ASC Pty Ltd	Nexter**	Saab
<b>Military aircraft</b>													
Tempest future fighter aircraft		●	●				●	●					
F-35 Lightning II fighter aircraft (Lockheed Martin's level 1 partner)				●	●								
Eurofighter Typhoon fighter aircraft	●	●											●
Hawk trainer aircraft				●				●					
<b>Naval platforms and systems</b>													
Hunter-class frigate (SEA 5000 programme)			●	●						●			●
Type 26 frigate (Global Combat Ship programme)		●						●					
CSC future frigate (Canadian Surface Combatant)***				●									
Queen Elizabeth-class aircraft carrier		●				●		●					
Dreadnought-class ballistic missile submarine				●		●		●					
Astute-class nuclear-powered attack submarine		●			●		●	●					
<b>Land platforms and systems</b>													
Amphibious Combat Vehicle (ACV)									●				
Armored Multi-Purpose Vehicle (AMPV)													
CV90 infantry fighting vehicle		●											●
M109A7 self-propelled howitzer													
40mm Cased Telescoped Armament System (40CTAS)***													●
M982 Excalibur advanced precision guided artillery shell								●					
<b>Cyber &amp; Intelligence</b>													
GEOINT-ISR	●												

\*Merger of Raytheon and UTC \*\*KNDIS group \*\*\*Based on Type 26 frigates  
 \*\*\*\* CTA International, joint venture between BAE Systems and Nexter

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ BAE Systems revenues reached £18.3bn (€20.8bn) in 2019, 92% of which from defence activities. Revenues grew by 8.8% in local currency year-on-year, driven by sales of electronic warfare systems equipping the F-35 as well as deliveries of Typhoon fighters and Hawk training aircraft to Qatar.
- ▶ BAE Systems is the leading defence supplier to the United Kingdom, Saudi Arabia and Australia and is also one of the top 10 contractors for the U.S. Department of Defense. The group's ambition is to become the world's leading defence, aerospace and security company within the next 5 to 10 years by focusing on three areas: increasing its export sales, strengthening its service offer, and restructuring certain activities.
- ▶ In September 2019, BAE Systems acquired British firm Prismatic Ltd, with which it had been partnering since 2018 on the development of the PHASA-35, a high-altitude long-endurance (HALE) UAV with dual applications.
- ▶ During the first half of 2020, BAE Systems' operating profit fell by 10%. The group's revenues were impacted by the delay in certain programmes due to the COVID-19 related health crisis.

### Home market

- ▶ BAE Systems generated 20.1% of its revenue in the United Kingdom in 2019, a share that has been on a slight downward trend over the past years (-1.6 percentage points compared with 2015).
- ▶ In August 2019, the British Army ordered more than 500 Boxer armoured infantry combat vehicles from the ARTEC GmbH consortium (comprising Rheinmetall Defence and KMW) for £2.8bn (€3.2bn) as part of the Mechanised Infantry Vehicle (MIV) programme. The vehicles will mainly be produced in the United Kingdom by BAE Systems' 45%-owned subsidiary Rheinmetall BAE Systems Land.
- ▶ The HMS Prince of Wales aircraft carrier, the second Queen Elizabeth-class aircraft carrier built by BAE Systems, was delivered to the Royal Navy in December 2019.

### Export markets

- ▶ In 2019, 79.9% of the group's business resulted from exports. BAE Systems is increasingly reliant on the U.S. market (nearly half of consolidated sales), whose weight in the group's total sales is likely to increase in the coming years due to the growing share of the F-35 programme.
- ▶ In December 2019, the U.S. Navy ordered batches 8 to 12 of the APKWS II missile guidance units from BAE Systems for \$2.68bn (€2.39bn).
- ▶ In January 2020, BAE Systems signed a \$400m (€363m) contract with the U.S. Army to produce 160 AMPV armoured personnel carriers as part of a \$1.2bn (€1.1bn) contract awarded in February 2019 for the supply of 460 vehicles.
- ▶ In February 2020, the United States Marine Corps awarded BAE Systems a \$114m (€103m) contract for the production of 26 ACV amphibious armoured personnel carriers. This contract follows a previous \$120m (€107m) order for 30 vehicles signed in October 2019.
- ▶ Following a \$249m (€222m) contract for the supply of 60 M109A7 self-propelled howitzers notified in December 2019, BAE Systems in March 2020 received an order worth \$339m (€308m) by the U.S. Army for an additional 48 units of the M109A7 and the same number of M992A3 ammunition transport vehicles.

### Technology and Innovation

- ▶ During 2019, the group's R&D expenditure increased 6.8% to £237m (€270m).
- ▶ BAE Systems is part of the Team Tempest consortium, which is developing the future Tempest fighter aircraft. The group is the prime contractor, alongside the British Ministry of Defence, Rolls-Royce, Leonardo UK and MBDA UK. The consortium has more recently been joined by the Swedish Ministry of Defence as well as several Italian industry partners (Elettronica Group, Leonardo Italy, MBDA Italy and Avio Aero).



# BOEING

Industrial group with civil and military activities, world's second-largest defence contractor. Partly operating in military aeronautics (FA-18, CH-47 Chinook, etc.).

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial aircraft
- ▶ Military aircraft (combat, transport, surveillance and unmanned aircraft systems)
- ▶ Defence electronics and C4ISR
- ▶ Missile systems
- ▶ Space

## GOVERNANCE

**Chairman** L. W. Kellner  
**Chief Executive Officer** D. L. Calhoun  
**CEO Defense, Space & Security** L. Caret

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	BA
Listed on	NYSE
Market Cap (\$m)	101 254

Major shareholders (as of 10.11.2020)

Capital Research & Management Co.	6,96%
The Vanguard Group, Inc.	6,89%
Newport Trust Co.	6,08%
Evercore Trust Company, NA (Investment Management)	5,97%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Hellfire Systems LLC	50%	United States
United Space Alliance	50%	United States
United Launch Alliance	50%	United States
Initium Aerospace	50%	United States
Ural Boeing Manufacturing	50%	Russia
Tata Boeing Aerospace Limited	50%	India

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016**	2017**	2018	2019
Revenue	84 459	83 190	85 628	68 356
Δ (%)/[\$]*	-2,72%	0,54%	7,58%	-24,29%
Defence (%)***	22%	22%	23%	34%
Export (%)****	57%	54%	56%	50%
Operating profit/loss	5 896	9 154	10 150	-1 763
Operating margin	6,98%	11,00%	11,85%	-2,58%
Net income	4 547	7 485	8 857	-568
Order book	449 233	395 863	428 368	412 647
Employees	150 500	140 800	153 000	161 100

\*Variation based on revenue in local currency

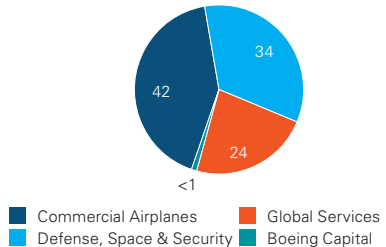
See €/\$, p.7

\*\*Figures restated

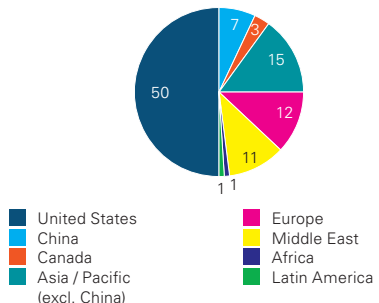
\*\*\*Defense, Space & Security division only

\*\*\*\*Excluding 737 MAX-related impacts in 2019

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)\*



\*Excluding 737 MAX-related impacts

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	KHI*	Saab	Northrop	Grumman	Raytheon Technologies**	Bell Helicopter***	Lockheed	Martin	Teledyne	Technologies	Aeroleit	Rocketdyne	Bombardier	Mahindra	Defence Systems	Rohde & Schwarz	Leonardo	HAL
<b>Military aircraft</b>																		
F/A-18E/F Super Hornet fighter aircraft		●											●					●
KC-46A Pegasus tanker aircraft																		
CL-605 future Maritime Surveillance Aircraft (MSA)												●						
T-7A Red Hawk future trainer aircraft****		●																
<b>Military helicopters</b>																		
SB>1 DEFIANT future twin-engine multi-role helicopter						●												
MH-139 Grey Wolf twin-engine multi-role helicopter																		●
CH-47 Chinook twin-engine multi-role helicopter	●													●			●	
V-22 Osprey multi-role tiltrotor aircraft							●											
AH-64 Apache twin-engine attack helicopter		●		●		●												●
<b>Unmanned systems</b>																		
MQ-25 Stingray refueling Unmanned Aircraft System (UAS)																		
Wave Glider Unmanned Surface Vehicle (USV)																		
Echo Voyager Unmanned Underwater Vehicle (UUV)																		
<b>Guided ammunition and missile systems</b>																		
Harpoon anti-ship missile																		●
Joint Direct Attack Munition (JDAM)																		
<b>Space</b>																		
CST-100 Starliner spacecraft																		
Future Space Launch System (SLS)		●				●			●									

\*Kawasaki Heavy Industries \*\*Merger of Raytheon and UTC \*\*\*Textron group \*\*\*\*TX programme

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Boeing revenues fell by 24.3% (in local currency) in 2019, reaching \$76.6bn (€68.4bn), mainly due to the difficulties related to the 737 MAX passenger aircraft programme. Following two closely occurring accidents involving 737 MAX aircraft, the aircraft has been grounded worldwide since 13 March 2019, while several orders were cancelled and production stopped. In October 2020, the European Aviation Safety Agency (EASA) declared the 737 MAX "safe to fly", a further step towards its return to service, which could take place in early 2021 in Europe. Boeing is also awaiting re-certification of the aircraft by the U.S. Federal Aviation Agency (FAA).
- ▶ These difficulties were reinforced by the coronavirus-related health crisis, which significantly impacted global demand for commercial aircraft and led Boeing to cancel a deal for the purchase of 80% of Embraer's civil activities (April 2020), scale back production rates of the long-haul 787 and 777/777X aircraft, announce a cut of more than 10% of its workforce (i.e. over 16,000 jobs), and to issue a \$25bn (€22.7bn) bond sale. Boeing also indicated that the group will not be able to pay new dividends to its shareholders for several years.
- ▶ The group operates in the military sector through its Defence, Space & Security division (sales of \$26.2bn, or €23.4bn, in 2019), which competes in many segments: military aircraft and helicopters, aerial and submarine unmanned vehicles, guided missiles and munitions, space launchers, etc.

## Home market

- ▶ Boeing generated 50% of its revenue in the United States in 2019, a share that has increased by 9 percentage points since 2015. In the defence segment, the U.S. market remains predominant (75% of sales).
- ▶ In March 2020, the U.S. Navy awarded Boeing a \$1.5bn (\$1.36bn) contract to supply 18 P-8A Poseidon maritime patrol aircraft, including 8 for the U.S. Navy, 6 for the South Korean Navy and 4 for the Royal New Zealand Air Force under FMS procedures. The aircraft will be delivered from 2022 onwards.
- ▶ In April 2020, the U.S. Navy ordered 3 MQ-25 Stingray tanker UAVs from Boeing for an undisclosed amount. This order follows a \$805m (€682m) contract signed in 2018 for the supply of 4 units. The drones are scheduled to enter service in 2024.

## Export markets

- ▶ The group generated 50% of its sales in foreign markets during 2019. A large share (around 65%) was generated by the Commercial Airplanes branch.
- ▶ In May 2020, the U.S. Navy awarded Boeing a \$3.1bn (€2.8bn) contract to supply SLAM-ER surface-to-air cruise missiles and Harpoon anti-ship missiles to several foreign countries within the framework of FMS procedures. The group will in particular deliver 1,000 SLAM-ER and Harpoon missiles to Saudi Arabia for \$2.6bn (€2.4bn).
- ▶ Boeing signed a \$439m (€398m) contract with the U.S. Army for the production of 24 AH-64E Apache helicopters and Longbow flight simulators for Morocco (under a FMS procedure), making it the 17th country to use the helicopter.

## Technology and Innovation

- ▶ The group's total R&D spending reached \$3.2bn (€2.9bn) in 2019, down 1.5% year-on-year. About 25% of spending is dedicated to the areas of defence, space and security.
- ▶ In March 2020, Boeing unveiled its offer for the Future Attack Reconnaissance Aircraft (FARA) programme, which will replace the U.S. Army's Bell OH-58 reconnaissance helicopters. The group's competitors on this programme include AVX Aircraft/L3Harris Technologies, Bell Helicopter (Textron), Karem Aircraft and Lockheed Martin. Two manufacturers will be selected to propose prototypes in 2023. The choice of the group selected for the programme will be announced in 2028.





# COBHAM

Aerospace manufacturing company refocused on defence electronics since its acquisition, in 2019, by U.S. firm Advent International. 54th-largest defence contractor.

## BUSINESS AREAS

Systems integrator/equipment supplier

- ▶ Aeronautics (refuelling systems, communication systems, services)
- ▶ Defence electronics and sensors
- ▶ Solutions for communication
- ▶ Robotics

## GOVERNANCE

Chief Executive Officer David Lockwood

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

Major shareholders (as of 10.11.2020)

Advent International	100%
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## KEY FIGURES (Fiscal year ended: December 31st)

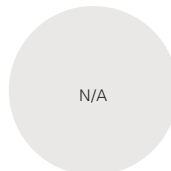
€ millions	2016	2017**	2018	2019
Revenue	2 374	2 385	2 105	N/A
Δ (%) [E]*	-6,18%	760%	-10,92%	N/A
Defence (%)	59%	60%	64%	N/A
Export (%)	90%	91%	92%	N/A
Operating profit/loss	-951	122	126	N/A
Operating margin	-40,08%	5,11%	6,01%	N/A
Net income***	-971	96	83	N/A
Order book	3 442	2 928	2 984	N/A
Employees	10 692	10 813	10 069	N/A

\*Variation based on revenue in local currency  
See €/E, p.7

\*\*Figures restated

\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Aviation Defence Service S.A.	45%	France
Northrop Grumman Cobham Intercoms LLC	50%	United States
Philtec Co. Ltd	30%	South Korea
AirTanker Services Ltd	5%	United Kingdom
AirTanker Holding Ltd	13%	United Kingdom

## REVENUE BY REGION (%)



MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Embraer	Boeing	Lockheed Martin	Northrop Grumman	Airbus	Thales	Collins Aerospace*	BAE Systems	Leonardo	Rafael	Textron
<b>Avionics systems</b>											
Electronic warfare suites		●	●					●			
Navigation systems											
Tactical communications and surveillance systems			●		●	●					
Intercom and radio management systems				●				●		●	
JetLAN advanced servers and routers	●	●		●							
VHF/UHF ELT antennas	●	●		●							
SATCOM terminals		●	●								
Oxygen systems	●										
<b>Defence systems</b>											
Countermeasures systems	●			●			●	●			
Electromagnetic microwave modules	●	●	●	●			●	●			
Sensor systems: RWR, antennas, radars, missiles, navigation											
SPS Series Precision Positioners	●	●	●				●	●			
Transmitters for jamming systems											
AESA radar antennas and radar subsystems	●		●								
<b>Mission systems</b>											
Missile ejection launchers and pylons	●	●	●		●	●	●	●	●		
Refuelling systems: pods, fuel tanks, hose and drogue systems	●	●	●	●	●						
Aviation services (MRO, modification, flight inspection services, training)	●		●								
Explosive ordnance disposal and observation robots (Telexmax, tEODor, OSCAR, NBCmax)											

\*Formerly Rockwell Collins, Raytheon Technologies group (merger of Raytheon and UTC)

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ In December 2019, the UK government approved the takeover of Cobham by U.S. private equity fund Advent International for £4bn (€4.5bn). As part of the deal, Advent International committed to maintain at least 90% of the group's UK-based workforce (currently 1,700 people) over the next five years. Following the transaction, Cobham was delisted from the London Stock Exchange and no longer publishes its annual financial statements.
- ▶ In September 2020, Cobham sold its British subsidiary Aviation Services UK, which provides training services for pilots of various national air forces and navies, to Draken International, a U.S.-based contract air services company. The deal, which was completed in September 2020 for an undisclosed amount, also provides for Draken International to take control of 15 companies owned by Aviation Services UK.
- ▶ At the same time, Cobham's sole shareholder Advent International announced plans to sell Cobham Aerospace Connectivity (750 employees), a division of the group specialised in the supply of communication and navigation systems (antennas, countermeasure systems, etc.) for land, aeronautic and naval applications. The transaction would be valued at approximately £1bn (€910m).

### Home market

- ▶ The United Kingdom is the group's third-largest market after the U.S. and Australia. As of 2019, it represented less than 10% of Cobham's sales.
- ▶ In March 2020, the British Ministry of Defence (DoD) awarded Cobham a research contract in the field of advanced anti-jamming techniques, in particular for Global Navigation Satellite Systems (GNSS). The value of the contract was not disclosed.

### Export markets

- ▶ Cobham is highly dependent on the U.S. market, which accounted for about 50% of its turnover in 2019. The group supplies several systems and components for Lockheed Martin's F-35 Lightning II fighter aircraft and Boeing's KC-46A Pegasus tanker.
- ▶ Through its U.S. subsidiary Cobham Advanced Electronic Solutions, Cobham has since 2016 been part of a group of eight defence companies (including Lockheed Martin, Northrop Grumman and BAE Systems) that are involved in the Advanced Technology Support Program IV regarding the modernisation of the U.S. Department of Defense's electronic systems. From an initial amount of \$7.2bn, the contract's funding ceiling was raised to \$17.4bn in June 2020. The contract runs until March 2026.
- ▶ The group is also participating in the development phase of the future South Korean KF-X fighter aircraft, produced by Korean Aerospace Industries. Cobham is mainly responsible for supplying the aircraft's oxygen system. The Republic of Korea Air Force plans to order around 100 KF-X aircraft, with production scheduled to begin in the mid-2020s.
- ▶ In May 2019, Boeing selected Cobham to supply the oxygen system for the U.S. Air Force's future T-7A Red Hawk trainer aircraft (T-X programme), developed by Boeing in partnership with Sweden's Saab. The aircraft entered the industrialisation phase in January 2020.

### Technology and Innovation

- ▶ Cobham's research efforts mainly focus on new-generation in-flight refuelling systems, anti-jamming systems, but also on components for space applications.



# DASSAULT AVIATION

Aircraft manufacturer with activities in civil (business aviation) and military (including Rafale fighter aircraft) aeronautics. 22nd-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Executive jets
- ▶ Fighter aircraft
- ▶ Unmanned aircraft systems
- ▶ Maritime patrol aircraft
- ▶ Pyrotechnics and space activities
- ▶ Artificial intelligence (AI)

## GOVERNANCE

Chairman and CEO	Éric Trappier
Chief Financial Officer	Denis Dassé
Executive Vice President, Military and Space Programmes	J-M. Gasparini

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017*	2018	2019
Revenue	3 586	4 876	5 084	7 341
Δ (%)	-14,13%	35,97%	4,27%	44,39%
Defence (%)	35%	38%	49%	70%
Export (%)	83%	89%	78%	88%
Operating profit/loss	218	357	669	765
Operating margin	6,08%	7,32%	13,16%	10,42%
Net income**	384	410	681	814
Order book	20 323	19 460	19 376	17 798
Employees	11 942	11 398	11 494	12 757

\*Figures restated.

\*\*Net income attributable to shareholders

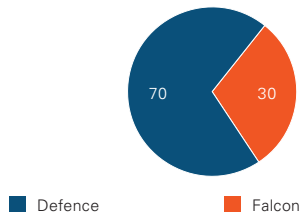
## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	AM
Listed on	NYSE Euronext
Market Cap (€m)	6 852

### Major shareholders (au10.11.2020)

GIMD (Dassault family)	62,20%
Airbus	9,91%
T. Rowe Price International Ltd.	2,86%
DNCA Finance SA	1,75%

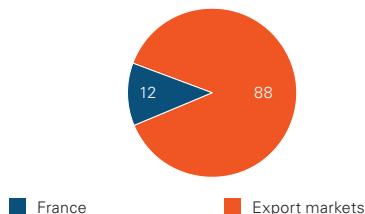
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Thales	25%	France
SECBAT	54%	France
GIE Rafale International	60%	France
Dassault Reliance Aerospace Ltd	49%	India

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Thales	Safran	HAL	Naval Group	L3Harris Technologies*	HAL	Leonardo	RUAG	Airbus	Honeywell	Saab
<b>Fighter aircraft</b>											
Rafale (F4 standard and RAVEL)	●	●									
Mirage 2000	●	●	●								
NGF future fighter aircraft (FCAS programme)	●	●							●		
<b>Maritime patrol and reconnaissance aircraft</b>											
Future maritime and patrol reconnaissance aircraft (ALBATROS programme, formerly AVSIMAR)**	●										
Falcon 2000 MRA/MSA	●				●						
ATL2 modernisation	●			●							
Falcon 900 MPA										●	
Strategic intelligence aircraft (ARCHANGE programme)	●										
<b>Unmanned aircraft systems</b>											
nEUROn UCAV demonstrator						●	●	●	●		●
European MALE RPAS (Eurodrone programme)							●		●		
<b>Artificial Intelligence</b>											
Man Machine Teaming advanced study programme	●										

\*Merger of L3 Technologies and Harris Corporation

\*\*Based on Falcon 2000 LXS

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Dassault Aviation revenues jumped 44% to a record €7.3bn in 2019. Growth was driven by the Defence branch (amid strong export sales), which now accounts for 70% of the group's revenues (+21 percentage points over the previous year). The order book stood at €17.8bn at the end of 2019 (of which 87% for the Defence branch), representing less than 2.5 years of sales and down 8% year-on-year, due to the acceleration of Rafale deliveries to export customers (26 aircraft delivered to Qatar, India and Egypt).
- ▶ In early 2020, Dassault Aviation sold Société Belge de Constructions Aéronautiques (SABCA), which operates in civil aviation, space and defence, to Société Fédérale de Participations et Investissements (SFPI) and Sabena Aerospace for €74.5m.
- ▶ As a result of the COVID-19 related health crisis, during which Dassault Aviation temporarily suspended production, the group's sales (-14%) and order intake (-66%) markedly dropped during the first half of 2020.

### Home market

- ▶ At the end of 2019, France's DGA awarded Dassault Aviation and Thales a contract to equip the French Army's future strategic intelligence aircraft (ARCHANGE programme) with the CUGE universal electronic warfare capability. The contract initially covers the equipment of two Dassault Aviation Falcon 8X aircraft.
- ▶ In early 2020, the French and German governments awarded Dassault Aviation, Airbus, MTU Aero Engines, Safran, MBDA and Thales the initial framework contract (Phase 1A) for the FCAS demonstrator. The contract covers an 18-month period and marks the launch of the development of the NGF (New Generation Fighter).
- ▶ In April 2020, the group delivered a third upgraded ATL2 maritime patrol aircraft (MPA) to the French defence procurement agency (DGA). The aircraft was upgraded to Standard 6 as part of the French ATL2 modernisation programme. The programme, which was awarded by the DGA in 2013, covers 18 aircraft, including 7 to be delivered by Dassault Aviation by 2023 and 11 by the French Armed Forces aircraft maintenance service (SIAé).
- ▶ In November 2020, the French Ministry of Defence announced the upcoming notification of the contract for the first 7 maritime surveillance and intervention aircraft (AVSIMAR programme, total of 12 units planned). The first 3 aircraft will be manufactured in France. The remainder will be produced in India as part of the offset arrangements related to the 2016 Rafale contract.

### Export markets

- ▶ The group generated 88% of its revenue from exports in 2019 (+10 percentage points compared to 2018).
- ▶ At the end of 2019, Dassault Aviation won the contract to upgrade the Mirage 2000-9 of the United Arab Emirates (€418m) as well as the contract to maintain and upgrade the electronic system of the Mirage 2000-5 of Greece (€260m over 7 years, in partnership with Thales and Safran).
- ▶ In early 2020, the Finnish Ministry of Defence carried out tests for its HX programme, which will replace its F/A-18 Hornet from 2025 onwards (for a budget ranging between €7-10bn). Dassault Aviation (Rafale) is competing for this programme with Boeing (F/A-18), Eurofighter (Typhoon), Lockheed Martin (F-35) and Saab (JAS 39 Gripen).
- ▶ In September 2020, Greece announced its intention to acquire 18 Rafale fighter aircraft, of which 6 new and 12 pre-owned. The pre-owned aircraft will be taken from the French Air Force, which in turn will result in an order for 12 new Rafales by France.
- ▶ Dassault Aviation (Rafale) is in the running for the Swiss invitation to tender for the supply of 30 to 40 combat aircraft which should enter service by 2030, a contract estimated at about €5.5bn. The group is competing with Boeing (F/A-18), Eurofighter (Typhoon) and Lockheed Martin (F-35).

### Technology and Innovation

- ▶ The group's self-financed R&D expenditure amounted to €527m in 2019 (or 7.2% of sales), up 34% year-on-year.



# DIEHL DEFENCE

Defence division of the German industrial conglomerate Diehl. One of the leading European players in the field of missiles. 86th-largest defence contractor worldwide

## BUSINESS AREAS

Missile manufacturer and systems integrator/  
equipment supplier

- ▶ Missile systems and air defence systems
- ▶ Ammunition
- ▶ Surveillance and reconnaissance systems
- ▶ Transmission systems and vehicle support services

## GOVERNANCE

Executive Chairman	Helmut Rauch
Executive Director	Thomas Bodenmüller
Chief Executive Officer	Frank Kienzler

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	435	456	464	516
Δ (%)	7,41%	4,83%	1,75%	11,21%
Defence (%)	100%	100%	100%	100%
Export (%)	31%	46%	42%	54%
Operating profit/loss	N/A	N/A	N/A	N/A
Operating margin	N/A	N/A	N/A	N/A
Net income	N/A	N/A	N/A	N/A
Order book	N/A	N/A	N/A	N/A
Employees	2 301	2 341	2 509	2 666

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted division
Market Cap	
Major shareholders (as of 10.11.2020)	
Diehl group	100%

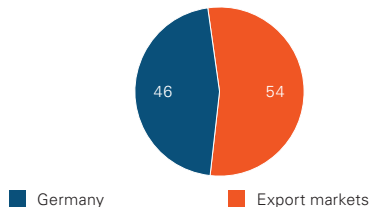
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES\*

Name	%	Country
Eurospike GmbH	40%	Germany
Junghans Microtec GmbH	55%	Germany
GIWS	50%	Germany
PARSYS GmbH	50%	Germany
RAM-System GmbH	50%	Germany
Diehl & Eagle-Picher GmbH	55%	Germany

## REVENUE BY REGION (%)



\*JVs and associates of Diehl group

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	MBDA	Rafael	Hensoldt	TKMS*	Leonardo	Saab	Rohde & Schwarz	Rheinmetall Defence	Raytheon Technologies**	Ebit Systems	Kongsberg	Lockheed Martin	Safran	Boeing	ESG
<b>Missile systems and air defence systems</b>															
IRIS-T and IRIS-T SLS/SLM air-to-air missiles	●					●			●						
AIM-9 Sidewinder air-to-air missile								●							
HUSSAR future air-to-ground light missile												●			
IDAS surface-to-air missile			●												
RIM-116 RAM Block 2 surface-to-air missile	●							●							
RBS15 Mk3 anti-ship missile						●									
PARS 3 LR air-to-ground anti-tank missile	●														
Spike family of anti-tank missiles		●					●								
NGF's future weapon systems (FCAS programme)	●		●				●								●
Falcon air defence system						●						●			
<b>Ammunition</b>															
40 mm infantry ammunition															
76 mm and 127 mm naval ammunition															
127 mm et 155 mm Vulcano guided ammunition					●										
GBU-54 Laser JDAM weapon system														●	
<b>Surveillance and protection systems</b>															
SIMONE infrared monitoring system															
Integration of the DIRCM J-MUSIC countermeasure system (Luftwaffe's military aircraft A400M)								●							

\*ThyssenKrupp Marine Systems, ThyssenKrupp group \*\*Merger of Raytheon and UTC



## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Diehl Defence revenues reached €516m in 2019, growing for the fourth consecutive year (+11.2%). The branch accounted for 14.2% of sales of the Diehl group in 2019, and 15.3% of its workforce.
- ▶ Diehl Defence is a partner on a number of key programmes, including with Saab (RBS15 Mk3 anti-ship missile), Rafael (Spike anti-tank missiles), Leonardo (Vulcano guided munitions) and Roxel (joint venture between Safran and MBDA, rockets for artillery munitions).
- ▶ In 2019, the branch entered into an alliance with Lockheed Martin and Saab to develop the new Falcon short- and medium-range air defence system (integrating its IRIS-T SLM medium-range missile) and another with Safran to design an ultra-light air-to-ground missile (HUSSAR).
- ▶ Helmut Rauch was appointed Executive Chairman of Diehl Defence in November 2019, replacing Claus Günther, who has retired.

### Home market

- ▶ A key supplier to the Bundeswehr, Diehl Defence intends to take advantage from Germany's increased military investment to strengthen its position in its home market, which accounted for 47% of its sales in 2019.
- ▶ In November 2019, EuroSpike, a joint venture between Diehl Defence, Rheinmetall Defence and Rafael, signed a multi-year framework agreement with the Federal Office of Bundeswehr Equipment (BAAINBw) for the supply of 5th-generation Spike missiles. The missiles will be manufactured in Germany. A first order, including the supply of 1,500 Spike missiles, was awarded to Diehl Defence for an estimated €200m.
- ▶ Diehl Defence is participating in the development and production of Europe's New Generation Fighter (NGF, a component of the FCAS programme). The German company is in particular responsible for the NGF's weapon systems, alongside MBDA. Diehl Defence is also a member of the German FCMS consortium (Future Combat Mission System Consortium), comprising Hensoldt, Rohde & Schwarz and ESG.

### Export markets

- ▶ Export sales jumped 40.8% to €276m in 2019, for the first time exceeding the group's sales in its domestic market (53.5% of sales in 2019).
- ▶ In September 2019, Diehl Defence and Sweden's Saab joined forces to offer missiles in a call for tenders issued by the Romanian Ministry of Defence in March 2019. The Romanian tender, valued at €137m, covers the acquisition of anti-ship missiles (onboard missiles and coastal defence missiles). Diehl Defence and Saab (with an offer based on the latter's RBS15 missile) are competing with Kongsberg, MBDA and Boeing.
- ▶ In October 2019, Diehl Defence signed a contract with Sweden to supply IRIS-T SLS missiles to the Swedish Air Force. The value of the contract was not disclosed.

### Technology and Innovation

- ▶ Diehl Defence's R&D investments cover the development of a new generation of the RBS15 anti-ship missile with Saab as well as the modernisation of the RIM-116 RAM surface-to-air missile system alongside Raytheon Technologies.
- ▶ Since autumn 2019, Diehl Defence has been participating in a consortium led by Finland's Insta and comprising 10 other companies, research institutes and universities from 6 countries, which aims to develop swarms of military drones designed to confuse, deactivate and destroy enemy anti-aircraft defence systems. The project, named SEAD Swan, is part of the European Union's Emerging Game Changers programme that aims to develop artificial intelligence-based technologies for military applications.



# DSME

Shipbuilder with civil and military activities, currently being acquired by its domestic peer Hyundai Heavy Industries to form one of the world's largest shipbuilding companies.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial ships
- ▶ Offshore plants
- ▶ Naval ships (surface combatants and submarines)

## GOVERNANCE

Chairman and CEO  
Chief Financial Officer

Sung Geun Lee  
Yong Seok Choe

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	042660:KS
Listed on	Korea Stock Exchange
Market Cap (KRWbn)	2 599

### Major shareholders (as of 10.11.2020)

Korea Development Bank (KDB)	55,70%
Hana Financial Group Inc.	8,41%
Woori Financial Group Inc.	2,33%
BlackRock Asset Management North Asia Ltd.	1,40%

## MAIN JOINT VENTURES AND ASSOCIATES\*

Name	%	Country
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\*No information available

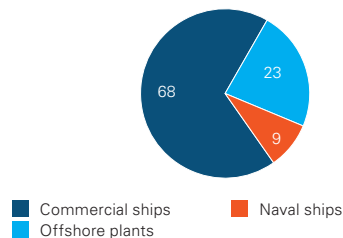
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	9 982	8 695	7 424	6 404
Δ (%) [KRW]*	-16,99%	-13,40%	-13,13%	-13,33%
Defence (%)	12%	9%	8%	9%
Export (%)	5%	4%	1%	2%
Operating profit/loss	-1 192	574	789	224
Operating margin	-11,94%	6,60%	10,63%	3,50%
Net income**	-2 129	487	265	-36
Order book (USD)	32 300	20 000	20 100	18 600
Employees	34 006	27 692	26 927	26 183

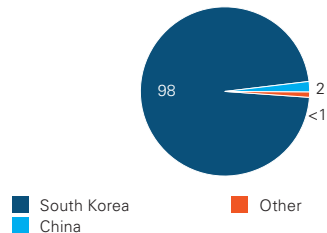
\*Variation based on revenue in local currency  
See €/KRW, p.7

\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)\*



\*Revenue distribution based on total sales excluding eliminations

MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Lockheed Martin	GE Aviation	Indra Sistemas	TKMS*	BMT Defence Services	Raytheon Technologies**	NGV Tech / Grade One Marine	LIG Nex1	Thales	Hanwha	Rolls-Royce	PT PAL	Babcock	HHI
<b>Surface ships</b>														
KDX-II Chungmugong Yi Sun-sin-class destroyer	●	●			●	●	●							●
KDX-III Sejong Daewang-class destroyer	●	●			●	●	●			●				●
FFX-II Daegu-class frigate					●	●		●	●					●
Tide-class tanker				●	●									
ASR-II future submarine rescue ship														
Royal Malaysian Navy's Gagah Samudera-class training ship						●				●				
<b>Conventionally-powered attack submarines</b>														
KSS-I Chang Bogo/Nagapasa-class (based on TKMS' HDW-class 209)				●			●					●		
KSS-II Son Won-il-class (based on TKMS' HDW-class 214)				●			●	●						●
KSS-III Dosan Ahn Chang-ho-class			●		●		●		●				●	●
<b>MRO and services</b>														
KSS-I Chang Bogo-class (based on TKMS' HDW-class 209) submarine MRO				●									●	

\*ThyssenKrupp Marine Systems (including Atlas Elektronik), ThyssenKrupp group

\*\*Merger of Raytheon and UTC

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Daewoo Shipbuilding & Marine Engineering (DSME), the second-largest South Korean shipbuilder after Hyundai Heavy Industries, mostly operates in the production of civil vessels and offshore platforms.
- ▶ In the defence segment (9% of group revenues), DSME specialises in the construction of surface ships (destroyers, frigates, auxiliary ships, etc.) and conventional attack submarines. The group also provides MRO and modernisation services for its older vessels.
- ▶ In early 2019, the South Korean state-owned bank KDB reached an agreement with Hyundai Heavy Industries to sell its 55.7% stake in DSME for nearly €1.7bn. The transaction is currently under examination by various competition authorities (South Korea, China, Japan, Singapore and the European Union).
- ▶ DSME generated revenue of KRW 8,359 bn (€6.4bn) in 2019, down for the fifth consecutive year (-13.3% year-on-year and down 38% from 2012 in local currency). Net profit also returned to negative levels (KRW -46 bn, or €36m).
- ▶ With its financial position already under strain, the group was additionally hit by the COVID-19 related health crisis in 2020, which caused a decline in merchant ship orders.

## Home market

- ▶ DSME is one of the main suppliers to the South Korean navy. In alternation with Hyundai Heavy Industries (HHI), it supplies the Dosan Ahn Chang-ho-class KSS-III submarines, the first South Korean-designed submarines.
- ▶ In April 2019, the South Korean Ministry of Defence approved the construction of a second batch of three KDX-III Sejong the Great-class destroyers for KRW 3.9 bn (€3bn). The destroyers should be built alternately by DSME and Hyundai Heavy Industries, which will supply the first unit.
- ▶ The South Korean Ministry of Defence has also approved the construction of a second batch of 3 KSS-III Dosan Ahn Chang-ho-class submarines for KRW 3,400 bn (€2.6bn), to be delivered by the end of the 2020s. DSME will supply the first unit of this batch. The construction of the two other submarines should be divided between DSME and HHI.
- ▶ In October 2019, DSME signed a KRW 1,130 bn (€866m) contract to develop and produce the first submarine of the Dosan Ahn Chang-ho-class KSS-III Batch-III.

## Export markets

- ▶ In April 2019, Indonesia awarded DSME a \$1.02bn (€903m) contract for the supply of three additional KSS-I Nagapasa-class submarines (after the three units ordered in 2011), to be delivered by 2026. However, the Indonesian government is reportedly considering cancelling this order and evaluating other suppliers, including Naval Group (Scorpène-class) and Turkey's Gölcük Shipyard.
- ▶ In late 2019, DSME prepared a proposal to supply new frigates to the Royal Thai Navy, which is considering expanding its fleet. At the end of 2018, the group delivered a DW3000 frigate ordered by Thailand in 2013.
- ▶ In the summer of 2019, DSME submitted a bid to the Indian call for tenders for the supply of six conventional submarines (P-75I programme). The group could also be selected by the Philippines to supply two or three conventional attack submarines.

## Technology and Innovation

- ▶ DSME's R&D expenditure amounted to KRW 69 bn (€53m) in 2019, representing less than 1% of the group's revenue.
- ▶ In October 2019, DSME unveiled a new attack submarine design for export markets, mainly those in Southeast Asia and South America. Presented under the name "DSME 2000", the submarine is based on the KSS-III supplied by DSME and HHI to the South Korean navy.



# ELBIT SYSTEMS

Israel's main defence group, world leader in the area of helmet-mounted sights and displays for aircraft pilots. 31st-largest defence contractor worldwide.

## BUSINESS AREAS

Systems integrator/equipment supplier

- ▶ Military aircraft and helicopter systems
- ▶ Unmanned systems
- ▶ C4ISR systems
- ▶ ISR & Electro-optic systems, EW and SIGINT
- ▶ Land systems and artillery systems
- ▶ Cybersecurity
- ▶ Simulation and training

## GOVERNANCE

Chairman	M. Federmann
Chief Executive Officer	B. Machlis
General Manager of Airborne Systems	Y. Shmueli

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	ESLT
Listed on	NASDAQ et TASE
Market Cap (\$m)	5 251

### Major shareholders (as of 10.11.2020)

Michael Federmann	44,30%
1832 Asset Management LP	3,51%
Fidelity Management & Research Co. LLC	2,10%
The Vanguard Group, Inc.	1,44%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
UAV Tactical Systems Ltd (U-Tacs)	51%	United Kingdom
AEL Sistemas S.A.	75%	Brazil
Collins Elbit Vision Systems LLC	50%	United States
Opgal-Optronic Industries Ltd	50,1%	Israel
Halbit Avionics Pvt Ltd	26%	India
Adani Elbit Advanced Systems India Ltd	49%	India

## KEY FIGURES (Fiscal year ended: December 31st)

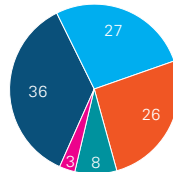
€ millions	2016	2017	2018	2019
Revenue	2 945	2 989	3 119	4 025
Δ (%) / (\$)*	4,89%	3,62%	9,06%	22,37%
Defence (%)	97%	97%	97%	97%
Export (%)	78%	78%	80%	76%
Operating profit/loss**	275	287	248	287
Operating margin**	9,35%	9,60%	7,95%	7,13%
Net income***	214	212	175	203
Order book	6 555	6 306	8 209	8 931
Employees	12 470	12 781	16 149	16 575

\*Variation based on revenue in US dollars  
See €/\$, p.7

\*\*2016 and 2017 figures restated

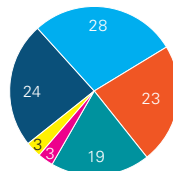
\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



■ Airborne Systems  
■ Land Systems  
■ C4ISR Systems  
■ Electro-optic Systems  
■ Other (civil engineering mainly)

## REVENUE BY REGION (%)



■ Israel  
■ North America  
■ Asia / Pacific  
■ Europe  
■ Latin America  
■ Rest of the World

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	HAL	Boeing	Thales	Diehl Defence	UAC	Collins Aerospace*	Adani	Kraken Aerospace	Embraer	Lockheed Martin	Leonardo	IAI
<b>Aircraft systems and equipments</b>												
Avionic systems (F-16I, MiG-21, MiG-29)					●					●		
Modernisation projects (F-5, F-16, MiG-21, MiG-29, Su-25, C-130, Mi-8/17)					●					●		●
Helmet-Mounted Display System (HMDS) (F-35)						●				●		
Joint Helmet-Mounted Cueing System (JHMCS) (F-15, F-16, F/A-18)	●					●				●		
Helmet Display and Tracking System (HDTS) ANVIS/HUD												
<b>Unmanned systems</b>												
Hermes (45, 450, 900, 900 StarLiner) family of UAVs			●				●		●			
Skylark (I, I-LE/LEX, C, II, 3) family of small UAVs	●											
Seagull Unmanned Surface Vehicle (USV)								●			●	
<b>C4ISR systems</b>												
Weapon-integrated Battle Management System (WinBMS)												
Tadiran and E-Lynx tactical radio and communication systems												
CoMPASS (MicroCoMPASS, DCoMPASS) and SPECTRO XR electro-optic payloads												
SkEye Wide Area Persistent Surveillance (WAPS)												
<b>Electronic warfare</b>												
J-MUSIC Directed IR Countermeasures (DIRCM) system				●					●			
<b>Land systems and artillery systems</b>												
RCWS, DRWS, UT30 and UT30MK2 remote weapon stations												
ATMOS 155 mm self-propelled howitzer												

\*Raytheon Technologies group (merger of Raytheon and UTC)

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Elbit Systems revenues reached \$4.5bn (€4.0bn) in 2019, up 22.4% year-on-year in US dollar terms. 97% of sales were made in the defence market.
- ▶ The Airborne Systems branch, the group's largest branch (36% of total revenue), recorded a 10% increase in sales in 2019, driven by higher deliveries of avionics equipment in the United States. The Land Systems branch also posted strong growth (+89.2%), driven by the acquisition of its Israeli peer IMI Systems (machine guns, munitions, missiles, etc.). The acquisition has allowed Elbit Systems to consolidate its position as Israel's leading defence group.
- ▶ In April 2019, Elbit Systems of America finalised the acquisition of Harris Corporation's night vision business (Harris Night Vision) for \$350m (€313m). The group is now one of the world's leading providers of night vision systems and the second of two suppliers of such systems in the United States, together with L3Harris Technologies.

### Home market

- ▶ The Israeli market accounted for 24% of Elbit Systems' revenues in 2019, a share that was boosted by the acquisition of IMI Systems.
- ▶ In January 2020, the Israeli Ministry of Defence (IMOD) awarded Elbit Systems a five-year, \$144m (€131m) contract to supply small-calibre munitions to the Israel Defense Forces. The first deliveries are scheduled to begin in 2021.
- ▶ In March 2020, Elbit Systems signed a \$200m (€180m), 12-year contract with the IMOD as part of a programme to replace the M-109 howitzers operated by the Israel Defense Forces. The contract followed an initial order worth \$125m (€112m) awarded to Elbit Systems in March 2019. For this replacement programme, the group could supply its ATMOS self-propelled howitzers.

### Export markets

- ▶ 76% of the group's sales, or \$3.4bn (€3.0bn), were generated by exports in 2019. Elbit Systems alone accounts for around 40% of Israel's arms exports in value.
- ▶ In March 2020, the group won a 10-year contract worth up to \$471m (€427m) to supply missile warning systems to the U.S. National Guard and U.S. Air Force Reserve Command's fleet of F-16 Fighting Falcon fighter jets.
- ▶ In February 2020, Elbit Systems signed a \$670m (€614m) 2-year contract with an undisclosed country from the Asia-Pacific region to supply unspecified defence systems.
- ▶ In 2020, Elbit Systems won two contracts in Asia in the fields of communications and electronic warfare: a 3-year, \$103m (€93m) contract was signed in April with an unspecified country for the supply and integration of systems (including countermeasure systems) to its Air Force's helicopter fleet; in June, another 2-year \$53m (€48m) contract was signed, again with an unspecified country, to equip its naval forces with electronic intelligence systems, jamming capabilities, sonar, radar, etc.

### Technology and Innovation

- ▶ The group's R&D spending, 90% of which is self-financed, amounted to \$369m (€329m, or 8.2% of sales) in 2019.
- ▶ In November 2019, Elbit Systems unveiled MAGNI, an autonomous mini-UAV with vertical take-off and landing capabilities that can be launched from all types of combat vehicles. With a weight of 2.5 kg, it features a communications suite, an automatic coordinate tracking capability as well as an integrated interface featuring ground vehicle combat management systems.



# EMBRAER

Group mainly operating in civil and military aeronautics (attack, surveillance and transport aircraft). Brazil's leading defence player and 79th-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial and military aircraft (fighter aircraft, transport aircraft, reconnaissance aircraft)
- ▶ Radar systems
- ▶ C4I systems
- ▶ Space

## GOVERNANCE

Chairman	A. Gonçalves Silva
Chief Executive Officer	F. Gomes Neto
President and CEO Defense & Security	J. M. de F. Schneider

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	EMBR3, ERJ
Listed on	B3 (55%), NYSE (45%)
Market Cap (\$m)	1 013

### Major shareholders (as of 10.11.2020)

BNDES Participações SA	5,37%
Hotchkis & Wiley Capital Management LLC	4,99%
The Vanguard Group, Inc.	2,55%
Teachers Advisors LLC	1,70%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
OGMA-Indústria Aeronáutica de Portugal S.A.	65%	Portugal
Visión Tecnología Espacial S.A.	51%	Brazil

## KEY FIGURES (Fiscal year ended: December 31st)

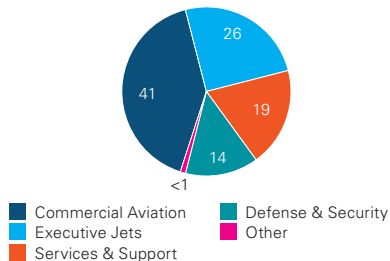
€ millions	2016**	2017**	2018	2019
Revenue	5 604	5 185	4 294	4 877
Δ (%) / (\$)***	4,65%	-5,55%	-13,45%	7,72%
Defence (%)	13%	15%	12%	14%
Export (%)	89%	87%	92%	89%
Operating profit/loss	193	303	30	-69
Operating margin	3,44%	5,84%	0,70%	-1,41%
Net income***	161	234	-151	-288
Order book	18 617	15 294	14 236	14 920
Employees	18 506	18 433	18 520	18 734

\*Variation based on revenue in U.S. dollars  
See €/€, p.7

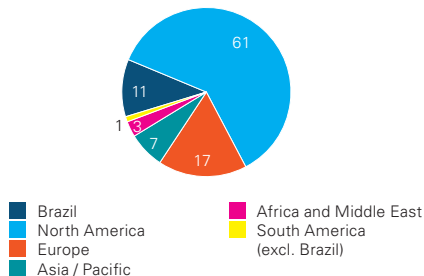
\*\*Figures restated

\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)





## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Boeing	Elbit Systems	Sierra Nevada Corp.	DRDO*	Telebras	Safran	BAE Systems	CTEX**	Thales Alenia Space	Collins Aerospace***	Elta Systems****	TKMS*****	Cobham	Seab
<b>Light attack and trainer aircraft</b>														
EMB-314 (A-29) Super Tucano	●	●	●											
A-4 Skyhawk modernisation programme														
A-1M (AMX) modernisation programme														
<b>Fighter aircraft</b>														
FX-2 programme (F-39E/F Gripen)		●												●
<b>AEW&amp;C aircraft</b>														
EMB-145 AEW&C aircraft		●		●										●
P600 future AEW aircraft									●					
<b>Transport aircraft</b>														
C-390 Millennium tactical transport aircraft*****	●	●				●	●		●				●	
<b>Radar and C4ISR systems</b>														
SABER-M60, SABER M200, SABER-S200 3D surveillance radars							●							
SISFRON integrated border monitoring system		●							●					●
<b>Satellite</b>														
SGDC-1 Geostationary Defense and Strategic Communications Satellite				●				●						
<b>Naval system</b>														
Tamandaré-class corvette						●	●						●	

\*Defence Research and Development Organization (India) \*\*Centro Tecnológico do Exército (Brazil)

\*\*\*Formerly Rockwell Collins, Raytheon Technologies group (merger of Raytheon and UTC) \*\*\*\* Israel Aerospace Industries (IAI) group

\*\*\*\*\* ThyssenKrupp Marine Systems, ThyssenKrupp group \*\*\*\*\* Formerly known as KC-390

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Embraer revenues reached \$5.46bn (€4.88bn) in 2019, up 7.7% in U.S. dollars over one year. Growth was driven by the Defense & Security (+26.7%), Business Aviation (+26.5%) and Services & Support (+6.7%) divisions. The group's poor operating performance (related in particular to a \$72m (€64m) impairment charge on business jets) as well as costs related to the disposal of the Commercial Aviation business line weighed on net income, which decreased to -\$322m (€228m).
- ▶ On 25 April 2020, after two years of negotiations, Boeing announced it would not acquire Embraer's Commercial Aviation business. The proposed acquisition, worth \$4.2bn (around €3.8bn), involved the U.S. aircraft manufacturer taking an 80% stake in a joint venture that would integrate the Brazilian group's commercial activity and be named Boeing Embraer-Commercial.
- ▶ The plan to create a joint venture between the two companies in the military sector has also been abandoned. Named Embraer Boeing-Defense, this second joint venture was destined to promote the C-390 Millennium tactical transport aircraft (formerly known as the KC-390) internationally, and was to be 51% owned by Embraer. However, the framework agreement on the joint marketing and maintenance of the C-390 Millennium, already in place between Boeing and Embraer prior to the joint venture project, has been maintained.
- ▶ In the first half of 2020, the group's results were strongly impacted by the COVID-19 related health crisis and in particular by the decline in deliveries by the Commercial Aviation branch. Embraer's sales fell 47% compared to the same period in 2019, and the group recorded a net loss of \$607.3m (€551m).
- ▶ After having already implemented three voluntary redundancy plans (covering a total of 1,600 positions in Brazil), Embraer in September 2020 announced an additional 4.5% cut in its worldwide workforce (including 900 positions in Brazil). These measures follow the health crisis and the cancellation of the partnership with Boeing.

## Home market

- ▶ Embraer is the main beneficiary of the major military programmes launched by the Brazilian government over the last decade (Super Tucano, C-390 Millennium, FX-2, SISFRON, SGDC).
- ▶ After several incidents that delayed its delivery (initially scheduled for 2018), Embraer in September 2019 delivered the first of 28 C-390 Millennium tactical transport aircraft ordered in 2014 for the Brazilian Air Force (FAB). At the end of 2019, Embraer and FAB also signed a cooperation agreement for the development of a new light military transport aircraft.
- ▶ In March 2020, the contract for the construction of four Tamararé-class general purpose corvettes (estimated at around \$1.6bn, or €1.5bn) was officially signed between the Brazilian Navy and the Águas Azuis consortium (ThyssenKrupp Marine Systems, Embraer Defence and Security and Atech). Entirely built in Brazil, the future corvettes' design will be based on that of TKMS' MEKO-class vessels. Embraer will be in charge of supplying sensors and weapon systems. Atech, an Embraer subsidiary, will supply the integrated platform management system and the combat system, which will be subject to a technology transfer from Germany's Atlas Elektronik. The vessels should be delivered between 2025 and 2028.

## Export markets

- ▶ Export sales are being driven by the Super Tucano and the C-390 Millennium aircraft, for which the first international contract was signed in 2019 with Portugal (order for five aircraft, valued at \$827m, or €738m).
- ▶ In April 2020, the first of 12 A-29 Super Tucano light attack aircraft ordered by the Nigerian Air Force from Embraer and U.S. aerospace and national security company Sierra Nevada Corporation (SNC) in 2018, made its maiden flight at the Jacksonville site in Florida, where the aircraft are assembled by SNC.

## Technology and Innovation

- ▶ R&D spending increased by 55.6% to \$328.2m (€293m) in 2019.



# FINCANTIERI

World's leading cruise shipbuilding group, among the leading European players in naval defence and 58th-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial and military shipbuilding
- ▶ Offshore (drilling units, offshore support vessels)
- ▶ Naval systems (propulsion systems, guidance systems)
- ▶ Maintenance and services

## GOVERNANCE

Chairman	G. Massolo
Chief Executive Officer	G. Bono
General Manager Naval Vessels	G. Giordo

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	FACT
Listed on	Borsa Italiana
Market Cap (€m)	943

### Major shareholders (as of 10.11.2020)

Fintecna S.p.A. (state-owned)	71,30%
Cassa Nazionale di Previdenza ed Assistenza per gli Ingegneri	2,20%
Norges Bank Investment Management	1,60%
Dimensional Fund Advisors LP	0,92%

## MAIN JOINT VENTURES AND ASSOCIATES

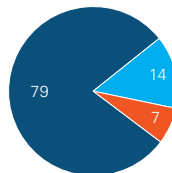
Name	%	Country
Orizzonte Sistemi Navali S.p.A	51%	Italy
Ethihad Ship Building LLC	35%	UAE
Marinette Marine Corp.	87,44%	United States
Centro Per Gli Studi Di Tecnica Navale Cetena S.p.A	86,1%	Italy
Vard Holdings Ltd	98,22%	Singapore
Naviris S.p.A	50%	Italy
Insis S.p.A	55,5%	Italy

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018*	2019
Revenue	4 429	5 020	5 416	5 849
Δ (%)	5,88%	13,34%	7,89%	7,99%
Defence (%)**	26%	24%	24%	23%
Export (%)	84%	85%	82%	82%
Operating profit/loss	157	221	285	153
Operating margin	3,54%	4,40%	5,26%	2,62%
Net income***	25	57	72	-141
Order book	18 231	22 053	25 524	28 590
Employees	19 181	19 545	19 274	19 823

\*Figures restated \*\*Naval vessels revenue  
\*\*\*Net income attributable to shareholders

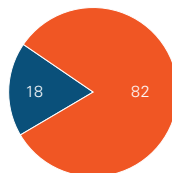
## REVENUE BY BUSINESS SEGMENT (%)\*



■ Shipbuilding  
■ Equipment, Systems and Services  
■ Offshore and Specialized Vessels

\*Revenue distribution based on total sales excluding eliminations

## REVENUE BY REGION (%)



■ Italy  
■ Rest of the World

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	TKMS*	Wärtsilä	Leonardo	Gibbs & Cox	Lockheed Martin	Naval Group	GE Aviation	Rolls-Royce	LMG Marin	MTU Aero Engines	Electronica	MAN
<b>Surface ships</b>												
Cavour aircraft carrier		●	●				●		●			
Trieste Landing Helicopter Dock (LHD)			●					●			●	●
San Giusto-class Landing Platform Dock (LPD)		●	●								●	
FFG(X) future guided-missile frigate				●								
Horizon-class air defence frigate			●			●	●					
FREMM Bergamini-class multi-purpose frigate			●			●	●				●	
Freedom-class LCS frigate				●	●			●				
Multi-Mission Surface Combatant (MMSC) frigate				●	●							
Doha-class guided-missile corvette			●									
BRF replenishment vessel (FLOTLOG programme)**						●						
PPA Thaon di Revel-class multi-purpose Offshore Patrol Vessel (OPV)			●				●			●	●	●
Jan Mayen-class coastguard vessel								●				
Vulcano-class Logistic Support Ship (LSS)			●								●	●
<b>Submarine</b>												
Todaro-class conventionally-powered attack submarine (U212 design under TKMS licence)	●									●		
<b>Propulsion and guidance systems</b>												
Shaft lines and propellers												
Propulsion systems												
Fin stabilizers												
Turbines												
Rudder roll governance and stabilization systems												

\*ThyssenKrupp Marine Systems, ThyssenKrupp group \*\*Based on Italian Navy's Vulcano-class LSS

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Fincantieri revenues rose 8.0% to €5.8bn in 2019, driven mainly by civil shipbuilding (+10.8%). However, the group reported a net loss of €141m (or 2.4% of sales) due to the financial difficulties of its Norwegian subsidiary Vard (formerly STX OSV).
- ▶ Defence revenues grew by only 4.8% to €1.5bn (before intercompany eliminations). Among the highlights of the year, Fincantieri delivered two Freedom-class LCS frigates (LCS-15 and LCS-17) to the U.S. Navy and one FREMM-class multi-mission frigate named Antonio Marceglia, the eighth of the 10 FREMM frigates ordered by the Italian Navy.
- ▶ In December 2019, Naval Group and Fincantieri formalised their alliance (Poseidon project) by creating the Naviris joint venture. The alliance will enable the two groups to conduct joint R&D projects and jointly prepare surface ship bids for binational programmes and export markets. Naviris won two contracts with OCCAR in 2020: a feasibility study for the mid-life refit of the Horizon frigates, and an R&T programme to improve the performance of Naval Group and Fincantieri ships.
- ▶ In the spring of 2020, Fincantieri and TKMS entered into discussions for a possible merger, which could take the form of a 50/50 joint venture. The combined entity would generate a total turnover of around €3.4bn.
- ▶ The coronavirus-related health crisis had a major impact on Fincantieri's business during the year, due to the halt in production at the group's shipyards. Revenue losses are estimated at €790m for the first six months of 2020, with Fincantieri recording a 15.6% decline in sales over the period.

### Home market

- ▶ Fincantieri, which has nine shipyards and more than 9,300 employees in Italy, is the prime contractor for the Italian Navy's main programmes (surface ships, special ships, German-licensed submarines, etc.). However, the group generates only a minor share of its turnover on its domestic market (around 18% in 2019).
- ▶ In November 2019, Fincantieri began sea trials of the first PPA-class multipurpose patrol boat, christened Paolo Thaon di Revel, that was ordered by the Italian Navy in 2014. A second ship, christened Francesco Morosini, was launched in June 2020. These patrol vessels are due for delivery in May 2021 and March 2022, respectively. A total of seven ships are to be built and delivered by 2026 as part of a €3.9bn contract.
- ▶ The group is due to deliver the 9th FREMM-class frigate, christened Spartaco Schergat, to the Italian Navy by the end of 2020. The 10th and final unit, christened Emilio Bianchi and launched in January 2020, is scheduled for delivery in April 2021.

### Export markets

- ▶ Export sales accounted for around 82% of the group's revenues in 2019. Thanks to its subsidiaries Marinette Marine and Vard, the group is well positioned in the United States, Nordic countries and Ireland.
- ▶ In December 2019, the U.S. Navy awarded Lockheed Martin and Marinette Marine a \$1.95bn (€1.74bn) contract to supply four Multi-Mission Surface Combatant (MMSC) light frigates to Saudi Arabia under an FMS procedure. Marinette Marine will build the frigates at its shipyard in Marinette, Wisconsin (USA), for \$1.3bn (€1.16bn).
- ▶ In April 2020, the U.S. Navy selected the bid from Fincantieri (via Marinette Marine) and Gibbs & Cox for its Constellation-class (formerly FFG(X)) missile-launching frigate programme, and awarded the two groups \$795m (€721m) for the design of the ships (based on the design of the Italian FREMM-class frigates) and the production of the lead ship, to be delivered in 2026. The contract includes an option for nine additional frigates at a total cost of \$5.58bn (€5.06bn). An additional 10 units could be ordered at a later stage.

### Technology and Innovation

- ▶ The group's total R&D expenditure amounted to €134m in 2019, up 9.8% year-on-year.



# GENERAL ATOMICS

Family-owned group, a leading player in the global UAV market (MQ-9 Reaper, MQ-9B SkyGuardian, MQ-1C Gray Eagle). Operates in the defence, space and energy sectors.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Unmanned aircraft systems
- ▶ Sensors
- ▶ Weapon systems
- ▶ Electromagnetic aircraft launch and recovery systems
- ▶ Satellite and space systems
- ▶ Nuclear engineering (fusion and fission technologies)

## GOVERNANCE

Chairman and CEO  
Chief Financial Officer  
CEO GA-ASI

James N. Blue  
Liam Kelly  
L'Indian P. Blue

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	≈ 2 710	≈ 2 572	≈ 2 440	≈ 2 979
Δ (%)	N/A	N/A	N/A	N/A
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss	N/A	N/A	N/A	N/A
Operating margin	N/A	N/A	N/A	N/A
Net income	N/A	N/A	N/A	N/A
Order book	N/A	N/A	N/A	N/A
Employees	N/A	N/A	≈ 15 000	≈ 15 000

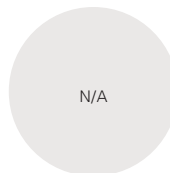
## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

Major shareholders (as of 10.11.2020)

Blue family	100%
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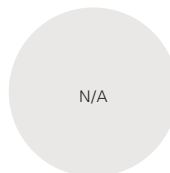
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
ConverDyn	50%	United States
TRIGA International	50%	United States

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Cobham	Lockheed Martin	Northrop Grumman	BAE Systems	Leonardo	Pratt & Whitney*	Huntington Ingalls Industries*	L3Harris Technologies**	SABCA	QinetiQ	Raytheon	Honeywell	GKN
<b>Unmanned aircraft systems</b>													
Predator XP MALE UAV													
Gray Eagle MQ-1C and Gray Eagle Extended Range (GE-ER) UAVs		•	•	•						•			
Predator B/Reaper MQ-9 UAV							•			•	•	•	
Skyguardian and Seaguardian MQ-9B ISTAR MALE UAVs	•				•			•		•	•	•	
Avenger/Predator C UCAV					•					•			
<b>Sensors</b>													
Lynx multi-mode radar													
Highlighter I and II future airborne electro-optical sensors													
Claw 3 integrated sensor payload control and analysis software													
<b>Weapon system</b>													
High Energy Liquid Laser Area Defense System (HELLADS)		•											
<b>Battery systems</b>													
Lithium-ion Fault Tolerant (LIFT) battery systems		•											
<b>Aircraft launch and recovery systems</b>													
Electromagnetic Aircraft Launch System (EMALS)							•			•			
Advanced Arresting Gear (AAG)							•			•			
<b>Ground control stations</b>													
Legacy GCS, STORM GCS and Advanced Cockpit GCS													

\*Raytheon Technologies group (merger of Raytheon and UTC) \*\*Merger of L3 Technologies and Harris Corporation

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ General Atomics, a private group 100% owned by the Blue family, had revenues of \$3.34bn (€2.98bn) in 2019. Its defence activities mostly consist of the supply of UAV systems, sensors, weapon systems, electromagnetic aircraft launch and recovery systems.
- ▶ In March 2020, General Atomics acquired U.S. company Neva Ridge Technologies, a specialist in synthetic aperture radar (SAR) imaging.
- ▶ In April 2020, General Atomics opened a new satellite production, integration and testing facility in Colorado, USA.

### Home market

- ▶ General Atomics is a key supplier to the U.S. government. However, the United States' UAV requirements are changing. After retiring its MQ-1 Predator UAVs from service in 2018, the U.S. Air Force might put an end, from as early as 2021, to purchases of MQ-9 Reaper UAVs which it believes are no longer adapted to new threats.
- ▶ General Atomics is supplying EMALS (Electromagnetic Aircraft Launch System) catapults and AAG (Advanced Arresting Gear) for the U.S. Navy's future Gerald R. Ford-class aircraft carriers. This equipment was certified in February 2020 during a test campaign on the first Gerald R. Ford-class ship, the CVN-78.
- ▶ In June 2020, General Atomics signed a \$12.1m (€10.8m) contract with the Air National Guard (ANG) for the modernisation of the MQ-9 Block 1 and MQ-9 Block 5 UAVs as well as the ANG's Block 25 and Block 30 ground control stations.

### Export markets

- ▶ The group's export strategy is constrained by the International Traffic in Arms Regulations (ITAR) and the U.S. administration's Missile Technology Control Regime (MTCR). Sales are mainly carried out within the framework of FMS (Foreign Military Sales) procedures.
- ▶ In December 2019, General Atomics was selected by the Australian government to equip the Australian Defence Force with armed MQ-9B SkyGuardian UAVs (Air 7003 programme). The group is partnering with several Australian manufacturers for this contract, including Cobham, CAE, Raytheon Australia, Flight Data Systems, TAE Aerospace, Quickstep, AirSpeed, Collins Aerospace, Ultra, and Sentient Vision Systems.
- ▶ In early 2020, General Atomics and Indian industrial conglomerate Bharat Forge Limited (BFL) signed a memorandum of understanding for the development of advanced projectiles as well as technologies for power generation, storage, control and distribution for surface ships and submarines, in order to address Indian defence requirements.
- ▶ In June 2020, the group signed a contract with the British Ministry of Defence (MoD) to supply 16 Protector RG Mk1 UAVs (a version derived from the MQ-9B SkyGuardian) and several ground control stations to the Royal Air Force. The contract includes a firm £65m (€74m) order for three aircraft as well as an option for 13 additional UAVs. First deliveries are expected in 2021.
- ▶ In August 2020, General Atomics signed an FMS contract with the U.S. Air Force for the sale of MQ-9B SkyGuardian UAVs to the Belgian Ministry of Defence for approximately \$190m (about €159m). The contract, which was approved in March 2019 by the United States, includes the supply of four UAVs, two ground control stations, spare parts and support equipment, with deliveries expected from 2023.

### Technology and Innovation

- ▶ In order to address the new needs of the U.S. Army, General Atomics in March 2020 presented a conceptual new UAV called "Defender", an aircraft that will be armed with air-to-air missiles and protect large and slow-moving aircraft (tanker aircraft, AWACS, etc.) in a contested environment.





# GENERAL DYNAMICS

Aerospace and defence group, mainly operating in the military segment (naval platforms, land armaments, weapon systems, C4ISR, etc.). Third-largest defence contractor.

## BUSINESS AREAS

- Platform manufacturer and systems integrator
- ▶ Commercial aircraft (Gulfstream, Jet Aviation)
  - ▶ Armoured vehicles
  - ▶ Weapon systems, artillery systems, ammunition
  - ▶ Naval (surface ships and submarines)
  - ▶ C4ISR
  - ▶ IT solutions and cybersecurity

## GOVERNANCE

Chairman and CEO	Phebe N. Novakovic
Chief Financial Officer	Jason W. Aiken
Executive VP Marine Systems	Robert E. Smith

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	GD
Listed on	NYSE
Market Cap (\$m)	42 125

### Major shareholders (as of 10.11.2020)

Longview Asset Management LLC	11,20%
Capital Research & Management Co.	10,90%
Evercore Trust Company, NA	7,56%
The Vanguard Group, Inc.	6,93%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
GR Dynamics LLC	50%	United States
Defense Munitions International LLC	50%	United States
GD Mission Systems International Middle East	N/A	UAE
Range Generation Next	50%	United States

## KEY FIGURES (Fiscal year ended: December 31st)

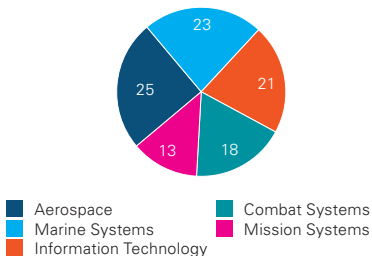
€ millions	2016**	2017	2018	2019
Revenue	27 607	27 410	30 646	35 134
Δ (%) / \$*	-3,84%	1,35%	16,85%	8,72%
Defence (%)	64%	63%	62%	62%
Export (%)	24%	24%	21%	19%
Operating profit/loss	3 382	3 749	3 774	4 150
Operating margin	12,25%	13,68%	12,31%	11,81%
Net income	2 323	2 577	2 832	3 111
Order book	59 019	52 690	59 276	77 422
Employees	98 800	98 600	105 600	102 900

\*Variation based on revenue in local currency

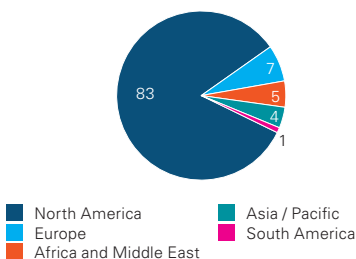
See €/\$, p.7

\*\*Figures restated

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



# GENERAL DYNAMICS

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Rafael	Thales	HI**	Northrop Grumman	Raytheon Technologies***	Lockheed Martin	L3Harris Technologies***	Honeywell International	BAE Systems	Leonardo	Austral USA	IAI
<b>Aeronautics</b>												
Gulfstream multi-mission jets												●
<b>Submarines</b>												
Columbia-class ballistic missile submarine		●	●									
Virginia-class nuclear-powered attack submarine		●	●				●					
<b>Surface ships</b>												
Zumwalt-class (DDG-1000) destroyer		●		●	●		●					
Arleigh Burke-class (DDG-51) destroyer		●		●	●		●					
<b>Armoured vehicles</b>												
Abrams M1A1, M1A2 et M1A2C main battle tanks	●						●		●			
Future Mobile Protected Firepower light tank												
Ajax armoured fighting vehicle		●		●	●							
Stryker armoured infantry fighting vehicle			●	●					●			
Piranha family of armoured infantry fighting vehicles												
<b>Weapon and artillery systems, ammunition</b>												
SAMSON remote controlled weapon station	●											
70 mm Hydra-70 family of rockets												
<b>Mission systems and C4ISR</b>												
Bowman and Morpheus future C4I systems				●	●		●	●				
Warfighter Information Network-Tactical (WIN-T)				●	●	●	●					
Open architecture computing infrastructure (OPEN CI) (LCS frigates)											●	
Common Hardware Systems-5 (CHS-5) programme												

\*Huntington Ingalls Industries \*\*Merger of Raytheon and UTC \*\*\*Merger of L3 Technologies and Harris Corporation

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ General Dynamics revenues reached \$39.4bn (€35.1bn) in 2019, up 8.7% year-on-year in local currency. The increase was mainly driven by deliveries of G500 and G600 business jets as well as new contracts for armoured vehicles and submarines with the U.S. government.
- ▶ In the defence segment (62% of revenue in 2019), the group has a highly diversified portfolio of activities: armoured vehicles (General Dynamics Land Systems division), weapons, artillery systems and munitions, surface ships and submarines (Electric Boat, Iron Works), cyber security, etc. On the other hand, the Aerospace branch is predominantly oriented towards civil applications (only 8% of defence-related sales in 2019). It offers Gulfstream business jets, some of which are adapted for military missions.
- ▶ Impacted by the measures taken to tackle the Covid-19 pandemic, activity in the Aerospace division fell by 16.2% in the first half of 2020, weighed down by a drop in business aircraft deliveries. The Information Technology (-10.5%) and Mission Systems (-5.7%) divisions also reported declines in activity.

### Home market

- ▶ The United States remain General Dynamics' largest market, accounting for 81% of its sales in 2019. The U.S. Department of Defense alone accounted for 50% of its business in 2019.
- ▶ In December 2019, General Dynamics Electric Boat (together with Newport News Shipbuilding, a Hill subsidiary, as its main subcontractor) signed a \$22.2bn (€19.8bn) contract with the U.S. Navy to build 9 Virginia-class nuclear-powered fast-attack submarines, with an option for a 10th unit for \$1.9bn (€1.7bn). Deliveries are scheduled between 2025 and 2029. In addition, the group signed a \$869m (€789m) contract with the U.S. Navy to continue work on the design and engineering of the future Columbia-class SSBNs.
- ▶ In January 2020, the U.S. Army cancelled its Optionally Manned Fighting Vehicle (OMFV) programme for a future armoured vehicle, possibly unmanned, that was destined to replace its Bradley armoured infantry fighting vehicles from 2026. Only General Dynamics had submitted a prototype for this programme in time.
- ▶ Construction work on the 72nd Arleigh Burke-class destroyer, which will be christened John Basilone (DDG-122), began in January 2020 at the Bath shipyard (Maine, USA). The ship should be delivered during 2022.
- ▶ In June 2020, the U.S. Army awarded a \$2.48bn (€2.25bn) contract to General Dynamics to upgrade an unspecified number of Stryker eight-wheeled armoured fighting vehicles by 2027, in particular to improve their resistance against mines and explosive devices.

### Export markets

- ▶ The group generated 19% of its revenues from exports in 2019, mostly via its subsidiaries General Dynamics European Land Systems (GDELS, positioned in the armoured vehicle segment), which gives it a solid presence in continental Europe (Germany, Austria, Denmark, Spain, Czech Republic, Romania and Switzerland), as well as General Dynamics UK (United Kingdom).
- ▶ In November 2019, GDELS and its Romanian partner UMB began production of the Piranha V infantry fighting vehicles ordered by the Romanian Armed Forces in 2018 for €895m. 30 vehicles are to be produced in Switzerland by MOWAG (a GDELS subsidiary), with the remaining 197 produced locally by UMB through a technology transfer.
- ▶ General Dynamics UK announced that it would begin production of the Ajax armoured fighting vehicle for the British Army in the second half of 2020 at a rate of eight units per month. 589 vehicles (in six variants) were ordered in 2014. The units will be equipped with the Bowman tactical communication system that General Dynamics is currently developing for the British Armed Forces.

### Technology and Innovation

- ▶ Self-financed R&D expenditure amounted to \$466m (€416m), or 1.2% of sales, in 2019.



# GENERAL ELECTRIC AVIATION (GE AVIATION)

Subsidiary of the General Electric conglomerate. One of the world's leading manufacturers of civil and military engines. 29th-largest defence contractor worldwide.

## BUSINESS AREAS

Engine manufacturer and systems integrator/  
equipment supplier

- ▶ Propulsion systems (fighter aircraft, transport aircraft and helicopter engines, gas turbines)
- ▶ Aircraft systems and equipment (avionics, structures)
- ▶ Support services and maintenance solutions

## GOVERNANCE

Chairman and CEO\*  
Chief Financial Officer  
CEO Military Systems

John Slattery  
Shane Wright  
Tony Mathis

\*In September 2020, John Slattery succeeded David L. Joyce as Chairman and CEO.

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	23 704	23 905	25 881	29 353
Δ (%) / (\$)*	6,41%	2,95%	13,15%	7,55%
Defence (%)	≈ 13%	≈ 15%	≈ 13%	≈ 13%
Export (%)	60%	60%	59%	59%
Operating profit/loss	4 809	4 752	5 475	6 089
Operating margin	20,29%	19,88%	21,15%	20,75%
Net income	N/A	N/A	N/A	N/A
Order book	146 584	166 972	195 197	243 277
Employees	≈ 45 000	≈ 44 500	≈ 48 000	≈ 52 000

\*Variation based on revenue in local currency  
See €/\$, p.7

## OWNERSHIP STRUCTURE

Symbol

Listed on

Market Cap

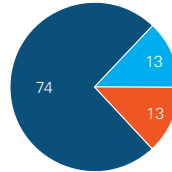
Unlisted subsidiary

Major shareholders (as of 10.11.2020)

General Electric

100%

## REVENUE BY BUSINESS SEGMENT (%)

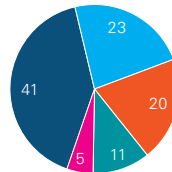


■ Commercial  
■ Military  
■ Systems & Other

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
CFM International	50%	United States
NGS Advanced Fibers	25%	Japan
TUSAS Engine Industries	46%	Turkey
Advanced Ceramic Coatings	50%	United States
GE Aviation / Woodward	50%	United States

## REVENUE BY REGION (%)



■ United States  
■ Europe  
■ Asia  
■ Africa and Middle East  
■ Americas (excl. U.S.)

# GENERAL ELECTRIC AVIATION (GE AVIATION)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Harwha	Safran	MTU Aero Engines	IHI	TPP	GKN Aerospace	TransCanada Turbines	Aviall*	Leonardo DRS**	Standard Aero	TAE Aerospace	Navantia	HAL
<b>Aircraft engines</b>													
<b>Adaptive Cycle Engine</b>													
F110 (F-16C/D, F-15SG, F-15SA, F-15S, F-2)	●		●	●		●			●				
F404 (F/A-18C/D Hornet, F-117, T-7A Red Hawk, JAS-39 Gripen E/F)	●					●				●			
F414 (F/A-18E/F, EA-18G, JAS-39 Gripen E/F, Tejas Mk II, KF-X)			●		●	●				●			
F108/CFM56-7B (Boeing AEW&C, P-8A Poseidon)		●											
F138/CF6 (C-5M, KC-10, B767 AWACS, A310 MRTT, C-2)		●											
<b>Helicopter engines</b>													
T700/CT7 (UH-60, AH-64D/E, NH90, Surion)	●			●	●			●					
T408 (formerly GE38) (CH-53K)			●										
T901 future turboshaft engine (AH-64, UH-60)													
<b>Gas turbines</b>													
GE LM2500 (FREMM, Arleigh Burke, Cavour, INS Vikrant, USS Independence)	●		●	●		●	●		●			●	●
GE LM500 (PKX-A, PKX-B, 24DDH, 22DDH)	●			●									
<b>Systems and aerostructures</b>													
<b>Landing gear systems (X-47B, T-38)</b>													
<b>External fuel tanks (F/A-18, Eurofighter Typhoon)</b>													
<b>Refuelling probes (A400M)</b>													
<b>Pylons (P-8A Poseidon)</b>													
<b>Propellers (C-27J, C-130J, US-2, Saab 2000, Fokker 50/60, Q400)</b>													

\*Boeing group \*\*U.S. subsidiary of Leonardo

# GENERAL ELECTRIC AVIATION (GE AVIATION)

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ General Electric Aviation (GE Aviation) is the leading branch of General Electric (GE) by turnover (34.5% of consolidated sales, 25.4% of total workforce). GE Aviation is the world's leading engine supplier for commercial aircraft (via CFM International, its joint venture with Safran), as well as one of the top three engine manufacturers for military aircraft, alongside Rolls-Royce and Pratt & Whitney.
- ▶ In 2019, the branch generated sales of \$32.9bn (€29.4bn), up 7.6% year-on-year in local currency. Nearly three-quarters of GE Aviation revenues are made from the sale of civil engines. The Military division accounts for about 13% of total revenues.
- ▶ While the outlook for GE Aviation in the military field is rather positive, the future is more uncertain in the civil segment. Boeing's difficulties on the 737 MAX, 777X and 787 Dreamliner programmes have or could have important consequences for the branch. GE Aviation has also been strongly impacted by the COVID-19 related health crisis. Two months after cutting 2,600 jobs in March 2020, GE announced the elimination of 10,000 additional jobs within the Aviation branch, for a total workforce reduction of 25%, as part of a global savings plan of \$3bn to be achieved during 2020.

### Home market

- ▶ GE Aviation generated 41% of its sales in the United States in 2019. However, the military engine business remains heavily dependent on orders from the U.S. Department of Defense.
- ▶ GE Aviation is developing the T901 engine (Improved Turbine Engine Program, or ITEP, won in February 2019) for the U.S. Army's AH-64 Apache and UH-60 Black Hawk helicopters. The branch will also supply the LM2500 turbines for the U.S. Navy's 10 new Arleigh Burke-class destroyers.
- ▶ In late 2019, the U.S. Army awarded GE Aviation a contract to supply engines for its T700 helicopters until 2024. The branch could produce up to 1,700 engines if the options are exercised in full (for a maximum contract value of \$1.34bn, or €1.21bn). In April 2020, the U.S. Air Force Life Cycle Management Center (AFLCMC) also awarded GE Aviation several contracts for the production of F110 engines (including sales of flight management systems, or FMS) worth \$707mn (€644m) in total.
- ▶ GE Aviation could also provide the T901 turboshaft engine for the U.S. Army's Future Vertical Lift helicopter programme as well as LM2500 turboshaft engines for the 20 frigates of the U.S. Navy's FFG(X) programme.

### Export markets

- ▶ Most of the export business is carried out in the civil engines segment, mainly in Europe and Asia. In Europe, GE Aviation also owns Italy's Avio Aero (a supplier of engine components, resulting from the takeover of Avio's aerospace division in 2013) and Britain's Dowty Propellers, a propeller blade manufacturer.
- ▶ In March 2020, the GE Aviation branch was selected by South Korea to equip patrol boats 13 to 16 of its PKX-B programme with LM500 gas turbines. The LM500 turbines will be produced, assembled and tested by local player Hanhwa Aerospace. It is also in a good position to equip batch 2 of the PKX-B programme's patrol boats. Moreover, GE Aviation is positioned on two new South Korean navy programmes, the KDDX destroyer and the LPX-II amphibious assault ship. In May 2020, GE Aviation also began deliveries of F414-GE-400K engines to KAI, a South Korean aerospace and defence company, as part of the future KF-X fighter aircraft programme.
- ▶ In June 2020, GE Aviation won a \$203m (€181m) contract to supply 12 CF6-80C2K1F turbofan engines for the C-2 transport aircraft of the Japan Air Self-Defense Force (JASDF).
- ▶ In July 2020, Morocco ordered 48 T700-701D turboshaft engines from GE Aviation to power its future AH-64E Apache attack helicopters (a contract signed with Boeing in June 2020).

### Technology and Innovation

- ▶ Self-financed R&D spending amounted to \$906m (€809m), or 2.8% of total sales, in 2019.



# HENSOLDT

Group resulting from the sale of Airbus' defence electronics business to the KKR investment company in 2017. 67th-largest defence contractor worldwide.

## BUSINESS AREAS

Systems integrator/equipment supplier

- ▶ Radar systems
- ▶ Defense electronics
- ▶ Optronics
- ▶ Communications and display systems
- ▶ Identification Friend or Foe (IFF) systems

## GOVERNANCE

Chairman and CEO  
Chief Financial Officer  
Head of Operations

Thomas Müller  
Axel Salzmann  
Peter Schlotte

## OWNERSHIP STRUCTURE

Symbol	HAG
Listed on	XETRA
Market Cap (€m)	1 019

Major shareholders (as of 10.11.2020)

KKR	63,50%
CI Investments, Inc.	4,52%
Thornburg Investment Management, Inc.	2,65%
DWS Investment GmbH	1,87%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
DEGFA GmbH	66,67%	Germany
Hensoldt Cyber GmbH	51%	Germany
Euro-ART International EWIV	50%	Germany
Euro-ART Advanced Radar Technology GmbH	25%	Germany
EuroMIDS SAS	25%	France
Atlas Optronics LLC	49%	UAE
SCAFSE SPA	49%	Algeria

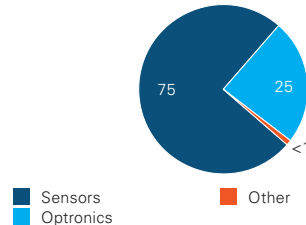
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	≈ 1 000	1 077	1 110	1 114
Δ (%)	N/A	N/A	3,06%	0,36%
Defence (%)*	N/A	≈ 95%	≈ 95%	≈ 95%
Export (%)	N/A	N/A	55%	57%
Operating profit/loss	N/A	N/A	22	62
Operating margin	N/A	N/A	1,98%	5,57%
Net income**	N/A	N/A	-61	6
Order book	N/A	N/A	2 261	2 202
Employees	≈ 4 000	≈ 4 300	4 456	5 461

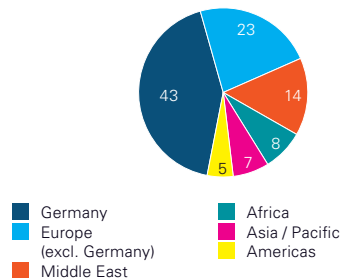
\*SIPRI estimation

\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)\*



\*Revenue distribution based on total sales excluding eliminations

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Thales	Indra Sistemas	Leonardo	BAE Systems	Lockheed Martin	Electronica	Safran	Rohde & Schwarz	Diehl Defence	Madses	ESG
<b>Radar systems</b>											
Future Captor-E AESA radar (Typhoon)		●	●								
PreclSR and ASR air surveillance radars											
Counter Battery Radar (COBRA)	●				●						
TRS-3D and TRS-4D naval radars											
<b>Defence electronics</b>											
Defence electronics of the NGF future fighter aircraft (FCAS programme)								●	●		●
Praetorian Defensive Aids Sub-System (DASS) (Typhoon)		●	●	●		●					
European MALE RPAS' future ISTAR solution	●	●				●					
Airborne Missile Protection System (AMPS)											
MILDS and MILDS-F missile warning systems											
Advanced Laser Threat Alerting System (ALTAS)											
Kalaetron family of radar warning receivers											
Multifunctional Self-protection System (MUSS) for armoured vehicles											
<b>Optronics</b>											
European MALE RPAS' Euroflir 610 future multispectral electro-optical targeting and observation system							●				●
SETAS optronic system for armoured vehicles											
<b>Communications and display systems</b>											
MIDS Low Volume Terminals (MIDS-LVT)	●	●	●								
<b>Identification Friend or Foe (IFF) systems</b>											
MSR 1000 I and MSSR 2000 I IFF interrogators			●								



## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Hensoldt revenues reached €1.11bn in 2019 (up 0.4% year-on-year), almost entirely generated in the defence sector.
- ▶ On 1 October 2019, Hensoldt finalised the acquisition of most of the activities of French electronic equipment company Nexeya (excluding space and nuclear deterrence), for an undisclosed amount. The scope of the transaction involves an entity with €95m in revenues and 620 employees in France and covers the supply of electronic equipment and services for the aerospace, defence, energy and transport sectors.
- ▶ In September 2020, KKR, Hensoldt's majority shareholder, listed the group on the Frankfurt stock exchange. The share held by the fund decreased from 74.9% to 63.5% of total capital.
- ▶ Excluding possible delays on certain programmes, the impact of the coronavirus-related crisis on Hensoldt's business, 95% of which is in the defence sector, should remain limited for the 2020 financial year.

### Home market

- ▶ A major supplier to the Bundeswehr, Germany's unified armed forces, Hensoldt generated 43% of its sales in its domestic market in 2019. The group plans to strengthen its positions in Germany, in particular by building on the major national and cooperative military programmes planned for the coming years.
- ▶ In February 2020, the French and German governments awarded the contract for the initial demonstrator of the Future Air Combat System (FCAS). Under this contract, Hensoldt is responsible, alongside Indra Sistemas and Thales, for the defence electronics of the future New Generation Fighter (NGF). The group is part of the FCMS (Future Combat Mission System) consortium, alongside Diehl Defence, ESG and Rohde & Schwarz.
- ▶ In March 2020, the Bundeswehr awarded Hensoldt a contract of an undisclosed amount for the supply of 368 IRV 900 A2 thermal sight attachments, with an option for 34 additional units.
- ▶ In June 2020, the German parliament approved an order to Hensoldt for ECRS Mk1 radars to equip the Luftwaffe's Typhoon fighter aircraft by the mid-2020s, a contract worth about €1.5bn. Airbus will be in charge of integrating the radars on the aircraft.
- ▶ The Federal Office of Bundeswehr Equipment (BAAINBw) placed an order for 300 sighting telescopes to equip its Leopard 2 battle tanks and PzH 2000 self-propelled howitzers by 2023. A first delivery of 30 units was made during the third quarter of 2020.

### Export markets

- ▶ Exports accounted for 57% of the group's turnover in 2019.
- ▶ The group is partnering with Elettronica, Indra Sistemas and Thales to offer an ISTAR solution for the European MALE RPAS UAV programme. It is also partnering with Safran and Spain's Mades to develop the Euroflir 610, an electro-optical targeting and observation system proposed for the future European UAV.
- ▶ Nexeya France, now a subsidiary of Hensoldt, signed a contract of an undisclosed amount with Socarenam, a French shipbuilding company, for the supply and integration of the LYNCEA embedded naval surveillance and defence combat management system on the six overseas patrol boats (Patrouilleur d'Outre-mer, or POM) ordered by the DGA from the French manufacturer in January 2020.

### Technology and Innovation

- ▶ The group's self-financed R&D expenditure amounted to €31m in 2019, representing 2.8% of sales.
- ▶ EuroDASS, a consortium led by Italy's Leonardo and also including BAE Systems, Elettronica, Hensoldt and Indra Sistemas, unveiled a concept called Praetorian Evolution, designed to modernise the Praetorian DASS Defensive Aids Sub-System equipping the Typhoon. The system might eventually also equip the future Tempest fighter aircraft.



# HINDUSTAN AERONAUTICS LTD (HAL)

Aerospace company mainly operating in military aeronautics. Prime contractor for the LCA Tejas national fighter aircraft programme, and 45th-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer, engine manufacturer and systems integrator

- ▶ Fighter aircraft
- ▶ Helicopters
- ▶ Structures and components
- ▶ Avionics
- ▶ Propulsion systems
- ▶ Modernisation and maintenance services

## GOVERNANCE

Chairman and CEO R. Madhavan  
Chief Financial Officer C.B. Ananthkrishnan

## KEY FIGURES (Fiscal year ended: March 31st)

€ millions	2016-17	2017-18	2018-19	2019-20
Revenue	2 392	2 422	2 448	2 693
Δ (%)   INR  *	6,53%	3,86%	8,41%	7,05%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	3%	2%	2%	1%
Operating profit/loss	487	429	462	499
Operating margin	20,35%	17,72%	18,88%	18,51%
Net income	355	263	290	359
Order book	N/A	7 612	7 538	6 389
Employees	29 526	29 035	28 345	27 384

\*Variation based on revenue in local currency  
See E/INR, p.7

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	HAL, 541154
Listed on	NSE & BSE
Market Cap (Rs Cr.)	24 029

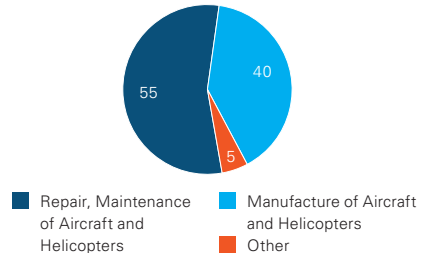
### Major shareholders (as of 10.11.2020)

Indian State	75,20%
Life Insurance Corp of India	7,00%
HDFC Asset Management Co. Ltd.	2,27%
ICICI Prudential Asset Management Co. Ltd.	0,78%

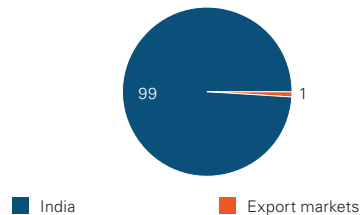
## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
BAeHAL Software Ltd	49%	India
Safran HAL Aircraft Engines Pvt Ltd	50%	India
Indo Russian Aviation Ltd	48%	India
HATSOFF Helicopter Training Pvt Ltd	50%	India
SAMTEL HAL Display Systems Ltd	40%	India
TATA-HAL Technologies Ltd	50%	India

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



# HINDUSTAN AERONAUTICS LTD (HAL)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Thales	Safran	RUAG	Dassault Aviation	BAE Systems	Boeing	Airbus	Elbit Systems	UEC Saturn	GE Aviation	Rolls-Royce	UAC
<b>Military aircraft</b>												
Future Advanced Medium Combat Aircraft (AMCA)*												
LCA Tejas Mk1/Mk1A future fighter aircraft	●						●		●			
Su-30 MKI* fighter aircraft	●						●					●
Hawk* trainer aircraft and Advanced Hawk* future trainer aircraft				●					●			
Do-228* surveillance and patrol aircraft		●										
HTT-40 future trainer aircraft												
<b>Military helicopters</b>												
Light Utility Helicopter (LUH) future multi-role helicopter		●										
Light Combat Helicopter (LCH) twin-engine multi-role helicopter		●										
ALH-Dhruv and Rudra** twin-engine multi-role helicopters		●										
Cheetah*, Chetak* and Cheetal*** multi-role helicopters						●						
<b>Aircraft modernisation</b>												
Mirage 2000 fighter aircraft	●			●								
Jaguar DARIN-III fighter aircraft												
<b>Aerostructures</b>												
Weapons bay doors (F/A-18E/F, P-8)					●							
<b>Propulsion systems</b>												
AL-31FP* turbojet engine (Su-30 MKI)								●				
Adour Mk 811* (Jaguar) and Mk 871* (Hawk) turbojet engines		●									●	
Artouste III B* (Cheetah, Chetak) and Ardiden 1H1* (Dhruv, LCH) turboshaft engines		●										
HTSE-1200 future turboshaft engine (ALH-Dhruv, Rudra, LUH, LCH)												

\*Sub-licensed production \*\*Armed version of ALH-Dhruv \*\*\*Re-engined version of Cheetah

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ HAL revenues reached 21,218 crores of rupees (€2.7bn) in 2019-2020, up 7% year-on-year in local currency. Almost all of the group's business is in the defence market. Its expertise was mainly acquired from Russian and European players through technology transfer agreements.
- ▶ In 2019-2020, the group produced 31 aircraft and helicopters, including Su-30 MKI and LCA Tejas combat aircraft, Do-228 patrol and surveillance aircraft, as well as Dhruv, Cheetal and Chetak multi-role helicopters. However, 55% of the group's revenues was generated by its maintenance business.
- ▶ The group's revenues are expected to be only slightly impacted by the health crisis related to the COVID-19 pandemic, as most of its activity is carried out in the defence sector. HAL should also benefit from the Indian recovery plan "Atmanirbhar Bharat Abhiyan" and receive new government orders for LCH and LUH helicopters, HTT-40 training aircraft and LCA Tejas combat aircraft.

### Home market

- ▶ The group remains highly reliant on its domestic market, which accounted for 99% of its sales in 2019-2020. Among its key operations during that year, HAL continued to deliver modernised Mirage 2000, Dhruv and Chetak helicopters as well as Do-228 patrol and surveillance aircraft to the Indian Army.
- ▶ In early 2020, HAL was selected by the Indian Coast Guard for the mid-life modernisation of 17 Do-228 maritime surveillance aircraft. The supply of 114 HTT-40 training aircraft to the Indian Air Force (IAF) was also approved by the Defence Acquisition Council (DAC) in August 2020. HAL is also expected to sign a new contract with the IAF by the end of 2020 for the supply of 83 LCA Tejas fighter aircraft.
- ▶ In February 2020, HAL signed a partnership agreement with Dynamic Technologies Limited (an Indian company specialising in precision engineering) and Israel Aerospace Industries for the production and marketing of Israeli unmanned aerial vehicles (UAVs) to the Indian Armed Forces. The group also signed a cooperation agreement with Elbit Systems' ISTAR division for the joint development of a 2,000 kg UAV helicopter.
- ▶ In partnership with Boeing, HAL is positioned to supply the F/A-18 Super Hornet or F-15EX to the Indian Air Force as part of the MMRCA 2.0 call for tenders, under which India will acquire 114 multi-role combat aircraft. Saab, Dassault Aviation, Lockheed Martin, UAC and the Eurofighter consortium are also taking part in the call for tenders.

### Export markets

- ▶ Export sales remain marginal and are largely based on maintenance activities.
- ▶ In February 2020, HAL signed a cooperation agreement with Russia's Rosoboronexport to provide, under the latter's licence, maintenance and modernisation services for aircraft, engines and sub-assemblies to third countries.
- ▶ In order to develop its international business, HAL is mainly focusing on exporting the Do-228 utility aircraft, the LCH and ALH-Dhruv helicopters, the LCA Tejas fighter aircraft, and the Hawk training aircraft.

### Technology and Innovation

- ▶ The group's R&D spending amounted to 1,232 crores of rupees (€156m) during fiscal year 2019-2020, representing approximately 6% of turnover. Among its main R&D initiatives, HAL continues to develop the LUH helicopter, the HTT-40 trainer aircraft, the LCA Tejas MK1A fighter aircraft as well as the HTFE-25 and HTSE-1200 engines.
- ▶ The development of the 5th-generation Advanced Medium Combat Aircraft (AMCA), initially entrusted to HAL and the Indian government agency ADA (Aeronautical Development Agency), will eventually be carried out under a public-private partnership. HAL and ADA will be partnering with a private player in a joint venture dedicated to the production of the AMCA.



# HONEYWELL INTERNATIONAL

Engine and systems manufacturer mainly operating in the civil sector and also present in the military aeronautics and space sectors. 25th-largest defence contractor worldwide.

## BUSINESS AREAS

Engine manufacturer, systems integrator/  
equipment supplier

- ▶ Commercial and military aerospace (propulsion systems, avionics, electric power)
- ▶ Defence electronics and ISR systems
- ▶ Protection solutions
- ▶ Infrastructures, energy
- ▶ Healthcare, pharmaceutical industry

## GOVERNANCE

Chairman	Darius Adamczyk
CEO Honeywell Aerospace	Mike Madsen
Chief Financial Officer	Greg Lewis

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	HON
Listed on	NYSE
Market Cap (\$m)	138 225

### Major shareholders (as of 10.11.2020)

The Vanguard Group, Inc.	7,10%
SSgA Funds Management, Inc.	4,21%
Capital Research & Management Co. (World Investors)	3,83%
Massachusetts Financial Services Co.	3,59%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
ITEC LLC	50%	United States
ATEC LLC	50%	United States
LHTEC	50%	United States
Integrated Guidance Systems LLC	50%	United States
Honeywell TAECO Aerospace (Xiamen) Co. Ltd	65%	China

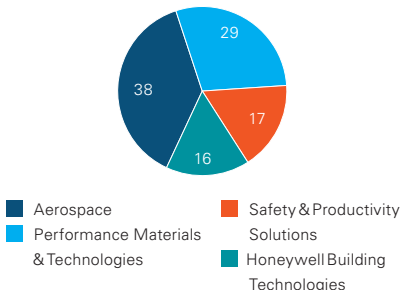
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	35 503	35 871	35 395	32 776
Δ (%)/[\$]*	1,87%	3,13%	3,13%	-12,18%
Defence (%)	11%	10%	11%	15%
Export (%)	56%	56%	56%	55%
Operating profit/loss	5 466	5 578	5 677	6 117
Operating margin	15,40%	15,55%	16,04%	18,66%
Net income **	4 347	1 367	5 728	5 485
Order book	16 392	14 754	21 703	22 807
Employees	131 000	131 000	114 000	113 000

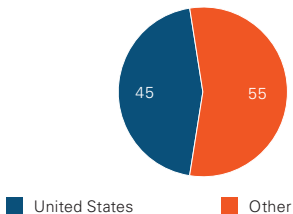
\*Variation based on revenue in local currency  
See €/\$, p.7

\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Rolls-Royce	Lockheed Martin	AIDC	Pratt & Whitney*	PT Dirgantara Indonesia	KHI	HAL
<b>Propulsion systems and Auxiliary Power Units (APU)</b>							
T55 turboshaft engine (CH-47, MH-47)						●	
HPW3000 turboshaft engine (via ATEC JV)			●				
TPE331 turboprop engine (MQ-9 Reaper, HTT-40, NC212i)				●			●
AGT 1500 gas turbine (Abrams M1)							
CTS800 turboshaft engine (TLUH)	●						
F124/F125 turbofan engines (M346, L-159, T-100, F/A-259 Striker)			●				
36-150 series APUs (AH-64, UH-60, CH-47)							
G230 and G250 series APUs (F-35, F-22)							
<b>Avionics</b>							
Enhanced Ground Proximity Warning System (EGPWS)							
Embedded GPS/INS (EGI)							
<b>Weather radar system</b>							
RDR-4000M 3-D weather radar system							
<b>Security and maintenance</b>							
Health and Usage Monitoring System (HUMS)							
<b>Control actuation system</b>							
Missile steering actuation and electronic control system for GMLRS	●						
<b>Satellite communications system</b>							
JetWave satellite communications system							

\*Raytheon Technologies group (merger of Raytheon and UTC)

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Honeywell revenues reached \$36.7bn (€32.8bn) in 2019, down 12.2% year-on-year in local currency. The decline was related to the spin-off of the Transportation Systems and Homes and Global Distribution businesses, which became two independent and listed companies at the end of 2018. Excluding the impact of the spin-offs, the group's revenues grew by 4% in 2019. The Defense and Space business, included within the Aerospace division, accounted for 15% of Honeywell's revenues, or \$5.3bn (€4.7bn).
- ▶ Against the backdrop of the COVID-19 related health crisis, Honeywell implemented a major cost reduction plan of around \$1.4-1.6bn (€1.3-1.4bn) over 2020, with the group anticipating a decline in activity in the civil aeronautics and construction segments. Honeywell should nevertheless benefit from good performances in the defence, supply chain and personal protection equipment segments. During the first half of 2020, the group cut nearly 10,000 positions (i.e. 8.8% of its total workforce), with further staff reductions expected by the end of the year.

### Home market

- ▶ In 2019, Honeywell generated 45% of its sales in the United States. Sales to the U.S. Department of Defense amounted to \$3.5bn (€3.1bn), representing approximately 66% of the group's defense business.
- ▶ Under multi-year contracts, the group is involved in the maintenance and modernisation of equipment for the U.S. Army. More specifically, Honeywell is in charge of modernising the T55 turboshaft engine powering the U.S. Army's C-47 Chinook helicopters. In October 2019, the group completed the new version of the T55, which is more powerful (+20% at sea level, +10% at high altitude) and less fuel-consuming (-9%). This new version of the T55 turboshaft engine could equip the U.S. Army's future military helicopters as part of the Future Vertical Lift (FVL) programme. In 2019, the T55 was also successfully integrated into the Sikorsky-Boeing SB-1 DEFIANT demonstrator in a test flight.
- ▶ The group also provides maintenance operations on the auxiliary power units (APUs) used on the U.S. Navy's P-3 Orion, C-2 Greyhound and F/A-18 Hornet aircraft.
- ▶ In 2020, the U.S. Department of Defense awarded Honeywell a \$99.1m (€88m), four-year contract to modernise onboard GPS navigation systems as part of the U.S. Air Force's EGI modernisation programme. The contract could potentially span a period of 15 years and reach a total value of \$3.5bn (€3bn).
- ▶ In the space sector, Honeywell was selected in early 2020 by Lockheed Martin to supply guidance and navigation systems, data processing systems, display and control systems, as well as flight software for the Orion manned space vehicles, which will be used in NASA's future Artemis lunar missions.

### Export markets

- ▶ Export sales accounted for 55% of Honeywell revenues in 2019. Around 40% of the company's output is produced outside the United States, mainly in Europe and Asia.
- ▶ Honeywell's export activity is being supported by maintenance, repair and operations (MCO) missions. The group mainly relies on international production licences and partnerships. In late 2019, it signed a cooperation agreement with S&K Logistics Services, a U.S.-based company that provides MRO services for FMS customers. In early 2020, Honeywell also signed a distribution partnership with U.S. original equipment manufacturer Sherwood Aviation for the worldwide distribution of mechanical components and other products on military platforms.

### Technology and Innovation

- ▶ Honeywell's self-financed R&D spending reached \$1.56bn (€1.4bn) in 2019, representing 4% of the group's revenues.



# INDRA SISTEMAS

IT and defence systems company with civil and military activities. Leader in the Spanish defence electronics market. 83rd-largest defence contractor worldwide.

## BUSINESS AREAS

Systems integrator/equipment supplier

- ▶ Defence and security (air defence systems, radar systems, defence electronics, surveillance systems, C4ISR systems)
- ▶ Transportation
- ▶ Energy and Industry
- ▶ Financial Services
- ▶ Public and Health sectors
- ▶ Telecom and media

## GOVERNANCE

Chairman and CEO	F. Abril-Martorell
Head of Defense & Security	M. Escalante
Chief Financial Officer	J. Lázaro

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	IDR
Listed on	Bolsa de Madrid
Market Cap (€m)	1 066

### Major shareholders (as of 10.11.2020)

SEPI (Spanish State)	18,70%
Corporación Financiera Alba, S.A.	10,50%
Fidelity Management & Research Co. LLC	8,76%
Norges Bank Investment Management	3,17%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Saes Capital SA	49%	Spain
Eurofighter Simulation System GmbH	26%	Germany
Euromids SAS	25%	France
A4 Essor SAS	21%	France
Inmize Sistemas SL	40%	Spain
UTE Indra-Eurocopter	62,5%	Spain
UTE VCR 8x8	37,94%	Spain

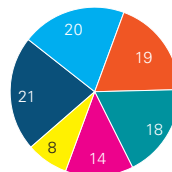
## Key figures (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	2 709	3 011	3 104	3 204
Δ (%)	-4,95%	11,15%	3,09%	3,22%
Defence (%)*	22%	20%	18%	18%
Export (%)	57%	54%	50%	50%
Operating profit/loss	162	196	199	221
Operating margin	5,98%	6,51%	6,41%	6,90%
Net income**	70	127	120	121
Order book	3 129	3 612	4 065	4 511
Employees	34 294	40 020	43 707	49 607

\*Defence & Security division

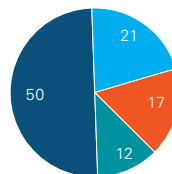
\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



- Financial Services
- Defense & Security
- Energy & Industry
- Public adm. & Healthcare
- Transportation
- Telecoms & Media

## REVENUE BY REGION (%)



- Spain
- Europe (excl. Spain)
- America
- Asia, Middle East, Africa



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Thales	Hensoldt	Airbus	Dassault Aviation	Boeing	Electronica	BAE Systems	Leonardo	Santa Bárbara Sistemas*	Lockheed Martin	Navantia
<b>Defence electronics</b>											
FCAS programme (concept study, Sensors pillar, Combat Cloud pillar)	●	●	●	●							
InSHIELD DIRCM countermeasure system (A400M)			●								
EuroDIRQM IR countermeasure system					●						
RF ALQ-500 countermeasure system (Spanish F/A-18)											
Praetorian Defensive Aids Sub-System (DASS) (Eurofighter Typhoon)		●				●	●	●			
RIGEL electronic defence system											
<b>C4ISR systems</b>											
Mission system of the future 8X8 DRAGON wheeled combat vehicles								●			
Lince Battlefield Management System (BMS)	●										
ISTAR system for European MALE RPAS	●	●				●					
<b>Simulators</b>											
Aircrew Synthetic Training Aids (ASTA) simulator (Eurofighter)											
Transport aircraft simulators (A400M, C130, A330 MRTT)			●								
Helicopter simulators (Tigre, NH90, AW159, Chinook, etc.)			●	●			●				
<b>Radar and sonar systems</b>											
Naval suite for submarines (209/212/214, S-80)											●
Lanza 3D radar family											
E-Captor and ECRS MK1 AESA radars (Eurofighter Typhoon)		●									
S-Band AESA naval radar (F-100/F-110)									●	●	
X-Band maritime surveillance radar (F-110)											●

\*Spanish subsidiary of General Dynamics

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Indra Sistemas revenues reached €3.2bn in 2019, up 3.2% year-on-year. Growth was driven by the group's IT branch (Minsait brand). Business in the Transport & Defence division was stable overall over the year, despite a 0.9% decline in revenue in the Defence & Security division.
- ▶ In December 2019, Indra Sistemas acquired Spanish IT company Sistemas Informáticos Abiertos (Grupo SIA, €57m in revenue in 2018, around 740 employees), which specialises in the field of cybersecurity.
- ▶ In January 2020, the group inaugurated a plant dedicated to the design and production of radars for civil and military applications in San Fernando de Henares (Madrid province, Spain).
- ▶ During the first quarter of 2020, the Defence & Security division reported an 18% decline at constant scope and exchange rates, mainly due to the coronavirus-related crisis which led to delays on certain programmes. However, the group's overall business remained fairly stable (-0.5%).

### Home market

- ▶ Indra Sistemas generated 50% of its revenues in Spain in 2019. In the military sector, the group is a key partner of the Spanish Armed Forces, mainly through its role as a subcontractor to Navantia and General Dynamics European Land Systems (GDELS). Indra Sistemas is also participating in various European programmes: Eurofighter Typhoon fighter aircraft, Future Combat Air System (FCAS programme), etc.
- ▶ In December 2019, Indra Sistemas signed a seven-year, €150m contract with Lockheed Martin to supply certain components for the Active Electronically Scanned Array (AESA) radar designed to equip the Spanish Navy's future F-110 frigates. In July 2020, Indra Sistemas also signed a €150m contract with Navantia (prime contractor for the programme) to equip the future F-110 frigates with electronic defence systems and X-Band maritime surveillance radars.
- ▶ In July 2020, Indra Sistemas signed an amendment to the existing contract between Airbus (German coordinator) and Dassault Aviation (French coordinator) to formally join the industry partners in charge of the FCAS programme's Joint Concept Study (JCS), one of the eight pillars upon which the programme is structured. In addition to becoming the coordinator of Spanish industry partners in the programme, the company strengthened its position as the leader on the Sensors pillar and positioned itself as the main partner, alongside Thales, in the Airbus-led Combat Cloud pillar.
- ▶ In August 2020, Indra Sistemas received a €150m order to equip the Spanish Army's 348 future VCR 8x8 Dragon armoured vehicles with mission systems. The vehicles will be produced by a joint venture comprising Santa Bárbara Sistemas (GDELS), Sapa Placencia, Indra Sistemas and Escribano Mechanical & Engineering.
- ▶ Indra Sistemas is also in charge, along with Hensoldt, of developing a new AESA radar, called ECRS MK1, which will equip the Eurofighter Typhoon of the German and Spanish Air Forces.

### Export markets

- ▶ Export sales accounted for 50% of revenues in 2019 and were mainly driven by the civil offer.
- ▶ In February 2020, the NATO Support and Procurement Agency (NSPA) awarded Indra Sistemas a contract to support and modernise three long-range air surveillance radars for the Lithuanian Armed Forces for a maximum period of 19 years (a firm 4-year tranche, followed by a series of optional 3-year tranches).
- ▶ In August 2020, Indra Sistemas was selected by South Korea's Ministry of National Defence to supply air traffic management and surveillance systems to the country's main air bases.

### Technology and Innovation

- ▶ The group's R&D spending amounted to €226m in 2019, representing 7.1% of its revenues.



# ISRAEL AEROSPACE INDUSTRIES (IAI)

Diversified group with civil and military activities. Highly export-oriented, particularly to the U.S. market. Currently diversifying into land vehicles. 41st-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Defence electronics
- ▶ Commercial and military aircraft
- ▶ Unmanned systems
- ▶ Missile and air defence systems
- ▶ Naval equipment and platforms
- ▶ Cyber defence
- ▶ Observation and communications satellites

## GOVERNANCE

Chairman	Harel Locker
Chief Executive Officer	Nimrod Sheffer
Deputy Chief Executive Officer	Eyal Younian

## OWNERSHIP STRUCTURE

Symbol	ARSPB1
Listed on	TASE
Market Cap	Unlisted group

Major shareholders (as of 10.11.2020)

Israeli State	100%
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## MAIN JOINT VENTURES AND ASSOCIATES

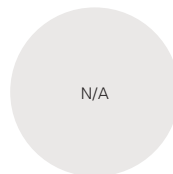
Name	%	Country
EAE Aerospace Solutions	50%	Brazil
D.T.S. Ltda.	50%	Chili
Tiltan Systems Engineering	30%	Israel
Pioneer UAV Inc.	50%	United States
HELA Systems Pvt Ltd	26%	India

## KEY FIGURES (Fiscal year ended: December 31st)

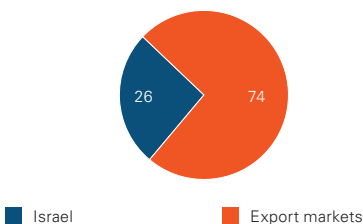
€ millions	2016	2017	2018	2019
Revenue	3 231	3 115	3 118	3 668
Δ (%) / \$]*	-3,53%	-1,59%	4,60%	11,57%
Defence (%)	73%	70%	72%	73%
Export (%)	77%	76%	74%	74%
Operating profit/loss	-95	107	10	108
Operating margin	-2,94%	3,44%	0,33%	2,95%
Net income	-99	72	-37	80
Order book	8 539	9 341	11 790	11 932
Employees	15 359	14 857	14 917	14 922

\*Variation based on revenue in U.S. dollars  
See €/\$, p.7

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



# ISRAEL AEROSPACE INDUSTRIES (IAI)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	Rheinmetall Defence	Boeing	DRDO*	Aero Vodochody	IMI Systems**	L3 MAS***	Honeywell	International	Embraer	Indra Sistemas	Rafael
<b>Defence electronics</b>												
ELL-8212, ELL-8222, ELL-8265, ELL-8260 and ELL-8270 systems for aircraft protection												
<b>Military aircraft</b>												
P600 Airbone Early Warning (AEW) aircraft (radar, electronic systems, etc.)										●		
F/A-259 Striker light attack aircraft					●							
ELM-2032 multimode airborne fire control radar												
GPS Anti-Jam Navigation System								●				
<b>Unmanned systems</b>												
Heron TP (Eitan) MALE UAS	●	●					●				●	
Heron MK II MALE UAS												
Green Dragon, Harop, Harpy and Rotem loitering munition systems												
<b>Missile and air defence systems</b>												
Rampage long range air-to-ground missile						●						
LORA long range surface to surface missile												
Arrow 2 and Arrow 3 missile defence systems				●								
LRSAM/MRSAM (Barak 8) defence system					●							●
ELM-2084 multi-mission radar		●										
<b>Naval equipment and platforms</b>												
Super Dvora MK3 fast patrol boat												
ELM-2248 and ELM-2258 multi-mission radars												
<b>Space</b>												
Dror 1 future communications satellite												

\*Defence Research and Development Organization (India) \*\*Elbit Systems group  
 \*\*\*L3Harris Technologies group (merger of L3 Technologies and Harris Corporation)

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ IAI revenues reached \$4bn (€3.7bn) in 2019, up 12% year-on-year. After several years of difficulties, the group reported its highest net profit in 10 years, at \$90m (€80m). The group's defence business grew 13.6% to around \$3bn (€2.7bn), accounting for 73% of total turnover.
- ▶ In early 2019, the group reorganised its activities around four divisions (compared with six previously): Elta Systems (defence electronics), Aviation Group (civil and military aeronautics), Military Aircraft (UAVs) and Systems, Missiles & Space.
- ▶ IAI continued diversifying its activities in the terrestrial sector with the signature, in May 2020, of a cooperation agreement with the Israeli manufacturer Ido Cohen, covering the integration of military technologies (radars, communication systems, anti-aircraft defence systems, etc.) developed by IAI into Ido Cohen's Zibar, Zmag and ZD all-terrain vehicles. Under the agreement, IAI will be able to design and distribute the vehicles in a military configuration. Ido Cohen on its part will remain in charge of the production and marketing of civilian vehicles.

### Home market

- ▶ IAI generated 26% of its revenues on its domestic market in 2019. In the military segment, the group provides the Israeli Air Force with Heron TP drones capable of carrying out intelligence, surveillance and target identification missions. IAI also equips the Israeli Navy's future Sa'ar-6 corvettes with its Barak 8 defence system.
- ▶ In January 2020, IAI was commissioned by the Israeli government to develop the Dror 1 telecommunications satellite, which will address Israel's communication needs for the next 15 years.

### Export markets

- ▶ IAI generated nearly three quarters (74%) of its revenues in international markets in 2019.
- ▶ In 2019, IAI strengthened its presence in the United States with the opening of a representative office in Washington. The group, which is already a partner of U.S. manufacturers Boeing, Lockheed Martin, General Dynamics and Honeywell, intends to continue forging alliances with local industry partners. IAI is a key supplier of aerostructures for U.S. manufacturers. In February 2020, the group won a \$240m (€214m) contract to replace the wings of the U.S. Air Force's T-38 aircraft.
- ▶ IAI also maintains close relations with India. Several contracts have been signed with the Indian Navy: contracts worth \$630m (€558m) in 2017, then \$777m (€679m) in 2018 for the supply of Barak 8 defence systems, and a \$143m (€130m) contract in 2019 for the supply of Medium Range Surface-to-Air Missile (MRSAM) naval systems. In February 2020, IAI set up a new maintenance centre for air defence systems in India in collaboration with India's Bharat Electronics Limited (BEL). In the same month, the group also signed a strategic partnership agreement in the field of aerial drones with local players Hindustan Aeronautics Limited (HAL) and Dynamic Technologies Limited (DTL).
- ▶ In Europe, IAI won a \$125m (€112m) contract in late 2019, via its subsidiary Elta Systems, to supply eight ELTA ELM-2084 multi-mission radars to the Czech Republic as part of the MADR (Mobile Air Defence Program). In May 2020, the Israeli group also signed an agreement with Greece for the 3-year lease of the Heron drone system in maritime configuration, intended for border surveillance.

### Technology and Innovation

- ▶ IAI's R&D expenditure amounted to \$909m in 2019, representing 22% of the group's total turnover.



## IVECO DEFENCE VEHICLES

Subsidiary of Italian industrial vehicle manufacturing company Iveco, a division of the CNH Industrial conglomerate. Dedicated to military vehicles.

### BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Military vehicles (light multi-role vehicles, armoured and amphibious vehicles)
- ▶ Civil security vehicles

### GOVERNANCE

President Commercial  
& Specialty Vehicles

Gerrit Marx

CEO Iveco Defence Vehicles

Claudio Catalanò

### KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	343	337	292	356
Δ (%)	45,96%	-1,75%	-13,35%	21,92%
Defence (%)	100%	100%	100%	100%
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss	12	1	2	-13
Operating margin	3,50%	0,19%	0,62%	-3,68%
Net income	-3	-7	-6	-19
Order book	N/A	N/A	N/A	N/A
Employees	N/A	N/A	N/A	814

### OWNERSHIP STRUCTURE

Symbol

Listed on

Unlisted subsidiary

Market Cap

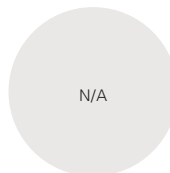
Major shareholders (as of 10.11.2020)

CNH Industrial\*

100%

\*CNH Industrial's majority shareholder (26,9%) is Exor, a Netherlands-based investment company controlled by the Agnelli Family.

### REVENUE BY BUSINESS SEGMENT (%)



### MAIN JOINT VENTURES AND ASSOCIATES

Name

%

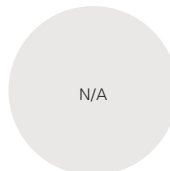
Country

Consorzio Iveco  
Oto-Melara

50%

Italy

### REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Leonardo	BAE Systems	KMW*	Lohr - Soframe	Cristanini	FPT Industrial**
<b>Main battle tank</b>						
Ariete main battle tank	●					
<b>Armoured infantry and fighting vehicles</b>						
Centauro II and Freccia armoured infantry fighting vehicles	●					
8x8 Superav amphibious armoured vehicle		●				
6X6 VBTP amphibious armoured vehicle						●
4x4/6x6 PUMA light armoured vehicles	●					
4x4 Medium Protected Vehicle (MPV)			●			
12kN medium multi-role protected vehicle						
4x4 VTM multi-role tactical vehicle			●			
<b>Tactical and logistic wheeled vehicles</b>						
8x8 PPT tactical vehicle				●		
Military Utility Vehicle (MUV) and M40.15 WM light range						●
8x8 M1250.70T WM tactical vehicle						●
Trakker and Eurocargo logistic vehicles						
<b>Light multi-role vehicles</b>						
Light Multi-role Vehicle (LMV/Lynx)		●			●	
Light Multi-role Vehicle 2 (LMV 2/Lynx 2)						

\*KNDS group

\*\*CNH Industrial group

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Iveco Defence Vehicles revenues reached €357m in 2019, accounting for approximately 1.4% of total turnover of the Dutch-based conglomerate CNH Industrial (CNHI).
- ▶ Iveco Defence Vehicles, which has been facing difficulties in recent years, is being supported by the Italian government with a planned major programme for the acquisition of Centauro II and Freccia armoured vehicles (for a total budget of €2.2bn over the 2020-2032 period) as well as LMV 2 Lynx tactical vehicles.
- ▶ In September 2019, CNHI announced its split into two independent, listed entities, named "On-Highway" (commercial vehicles and Powertrain branch) and "Off-Highway" (special vehicles, including Iveco DV, and Agriculture and Construction branches). The completion of the transaction, initially scheduled for early 2021, is expected to be delayed due to the current health crisis.

### Home market

- ▶ Iveco Defence Vehicles is a major supplier of land vehicles to the Italian Army, in particular through the Iveco-Oto Melara (CIO) consortium, in which it holds a 50% stake alongside Leonardo.
- ▶ In December 2019, the Italian Army ordered 30 Freccia 8x8 armoured infantry fighting vehicles from the Iveco-Oto Melara consortium, including 25 in anti-tank version and five in combat version. The contract also includes the provision of logistical support services for 10 years.
- ▶ After ordering a first batch of 10 vehicles in July 2018, the Italian Army ordered a second batch of 40 Centauro II armoured vehicles from the Iveco-Oto Melara consortium in May 2020. The total value of the contract, including options for 56 additional units, various equipment as well as the provision of logistical support services for 10 years, amounts to €1.16bn.

### Export markets

- ▶ Iveco Defence Vehicles is one of the main beneficiaries of the programme to renew the Brazilian Army's infantry vehicle fleet. It is benefiting from the Guarani programme (replacement of the Urutu and Cascavel armoured vehicles) launched in 2007. In 2019, the group delivered the 400th armoured vehicle to the Brazilian army as part of a €2bn contract won in 2009. The programme's vehicles have been produced in Brazil since 2013.
- ▶ The Italian manufacturer has supplied several vehicles to the Danish Army in recent years (Stralis 6x2 trucks, Trakker 8x8 trucks, etc.). In September 2019, Iveco Defence Vehicles won a new contract from the Danish Ministry of Defence for the delivery of 1,275 medium multi-role armoured vehicles between 2022 and 2026. In December 2019, Iveco Defence Vehicles received a first order under this contract for 918 vehicles, called "12KN".
- ▶ Iveco Defence Vehicles is also a key supplier to the Romanian Land Forces. After two orders for military trucks made in 2015 (53 units) and 2017 (173 units), the Italian manufacturer in December 2019 signed a framework agreement with the Romanian Ministry of Defence for the supply of 2,900 4x4, 6x6, 8x8 and 8x8 Prime Mover logistics trucks. About a third of these vehicles will be equipped with an armoured cab. In January 2020, an order for a first batch of 942 vehicles to be delivered within four years was awarded to the Italian company.
- ▶ CNHI's subsidiary is also in charge, as a partner of BAE Systems, of the supply of ACV amphibious combat vehicles to the U.S. Marine Corps. In February 2020, BAE Systems won a new contract worth \$113.5m (€103.4m) to supply 26 additional ACVs. These vehicles will be produced at several sites in the United States.
- ▶ In partnership with France's Soframe, Iveco Defence Vehicles is also involved in the Porteur Polyvalent Terrestre (PPT) Programme for the French Armed Forces.

### Technology and Innovation

- ▶ During the 2018 Eurosatory international Defence and Security industry trade fair, Iveco Defence Vehicles unveiled a new 4x4 light multi-role vehicle, the Military Utility Vehicle (MUV), the High Mobility 8x8 as well as the Eurocargo 4x4 and Trakker 8x8 trucks.





# KMW + NEXTER DEFENSE SYSTEMS (KNDS)

Land armaments manufacturer resulting from the July 2015 50-50 merger between Germany's KMW and France's Nexter. 43rd-largest defence contractor worldwide

## BUSINESS AREAS

Systems architect-integrator

- ▶ Armoured tracked and wheeled vehicles
- ▶ Artillery and weapon systems
- ▶ Ammunition
- ▶ Defence and security robotics
- ▶ Embedded electronics
- ▶ Simulation and training solutions

## GOVERNANCE

Chairman of the Board	Christian Jourquin
Co-CEO	Frank Haun
Co-CEO	Stéphane Mayer

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	2 624	2 648	2 245	2 539
Δ (%)	-	0,91%	-15,22%	13,10%
Defence (%)	100%	100%	100%	100%
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss	277	303	N/A	N/A
Operating margin	10,55%	11,43%	N/A	N/A
Net income	190	211	N/A	N/A
Order book	8 600	9 200	7 800	9 633
Employees	6 800	7 329	7 545	7 873

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

Major shareholders (as of 10.11.2020)

Wegmann & Co. GmbH	50%
Giat Industries S.A.	50%

## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
------	---	---------

### NEXTER

CTA International	50%	France
TNS-MARS	37,5%	France

### KMW

Projekt System & Management GmbH	50%	Germany
ARTEC GmbH	36%	Germany

## REVENUE BY REGION (%)



# KMW + NEXTER DEFENSE SYSTEMS (KNDS)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

Joint programmes  
 Nexter
  KMW

	Arquus	Thales	Safran	Texelis	BAE Systems	Rheinmetall Defence	Diehl Defence	Eldis Pardubice	Tatra	MAN
Armoured vehicles										
<span style="display: inline-block; width: 10px; height: 10px; background-color: #cccccc; border: 1px solid #000;"></span> Main Ground Combat System (MGCS) future French-German main battle tank						●				
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> VBCI 8x8 infantry fighting vehicle	●									
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Jaguar 6x6 armoured reconnaissance and combat vehicle	●	●	●							
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Griffon 6x6 multi-role armoured vehicle	●	●	●							
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Serval 4x4 light multi-role armoured vehicle				●						
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Titus ®* 6x6 multi-role armoured vehicle							●	●		
<span style="display: inline-block; width: 10px; height: 10px; background-color: #000080; border: 1px solid #000;"></span> Leopard 2 main battle tank						●				
<span style="display: inline-block; width: 10px; height: 10px; background-color: #000080; border: 1px solid #000;"></span> Boxer 8x8 infantry fighting vehicle (ARTEC GmbH consortium)						●				●
<span style="display: inline-block; width: 10px; height: 10px; background-color: #000080; border: 1px solid #000;"></span> Dingo 2 4x4 family of armoured vehicles										
Artillery and weapon systems										
<span style="display: inline-block; width: 10px; height: 10px; background-color: #cccccc; border: 1px solid #000;"></span> CIFS (Common Indirect Fire System) future French-German artillery system										
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Caesar 155 mm self-propelled howitzer	●								●	
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> 40 CTAS 40 mm case-telescoped autocannon (40 CTA International joint venture)					●					
<span style="display: inline-block; width: 10px; height: 10px; background-color: #000080; border: 1px solid #000;"></span> PzH 2000 155 mm self-propelled howitzer						●				
<span style="display: inline-block; width: 10px; height: 10px; background-color: #000080; border: 1px solid #000;"></span> FLW 100, 200 and 500 remote controlled weapon stations										
Ammunition										
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Bonus Mk II 155 mm artillery shell						●				
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Tank (76, 90, 105, 120 mm) and medium caliber (20, 25, 30, 40 mm) ammunition										
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Naval artillery ammunition (20, 40, 76, 100, 127 mm)										
<span style="display: inline-block; width: 10px; height: 10px; background-color: #008000; border: 1px solid #000;"></span> Spacido trajectory correction system**		●	●				●			

\*Rights reserved

\*\*Partnership between Junghans T2M (a joint venture between Thales and Diehl Defence), Nexter Munitions and Zodiac Aerospace (Safran)

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ KNDS revenues reached €2.5bn in 2019, up 13.1% year-on-year.
- ▶ While Nexter and KMW are still largely focused on their respective programmes launched prior to the merger, KNDS is involved in the development of joint programmes within the French-German defence collaboration framework, including the MGCS (Main Ground Combat System) tank programme, in which Rheinmetall Defence is participating, and the CIFS (Common Indirect Fire System) artillery programme. Nexter and KMW also presented a joint product, the European Main Battle Tank (EMBT), at the 2018 Eurosatory exhibition.
- ▶ The impact of the health crisis on the group's activity should be relatively limited. However, delays are expected on certain programmes due to the shutdown of Nexter's production sites in March 2020.

### Home markets (France, Germany)

- ▶ Nexter is participating, alongside Arquus, Texelis, Safran and Thales, in the French Army's Scorpion programme, aimed at developing three types of vehicles with interconnected battlefield management systems to enable collaborative combat: the EBRC Jaguar armoured reconnaissance and combat vehicle, the VBMR Griffon multi-role armoured vehicle and the VBMR-L Serval light multi-role armoured vehicle. 300 Jaguar, 1,872 Griffon and 978 Serval are scheduled for delivery by 2030, half of which by 2025.
- ▶ In September 2019, the French Ministry of the Armed Forces ordered 56 Nerva-S, Nerva-LG and Nerva-XX connected reconnaissance robots from Nexter (the Nerva-XX are produced in partnership with ECA Group) which can autonomously carry out reconnaissance missions on the battlefield. The robots, the last of which are scheduled to be delivered by 2025, will be piloted from the combat vehicles of the Scorpion programme.
- ▶ In April 2019, Germany awarded a €300m contract to KMW to upgrade 101 Leopard 2A6 tanks to the 2A7V version by 2026 (modernisation of the targeting system, fire control system, chassis, etc.). In late 2019, KMW delivered the first Leopard 2A4 tanks upgraded to the 2A7V version to the Bundeswehr as part of an order placed in 2017 (upgrade of 104 tanks).

### Export markets

- ▶ In June 2019, Belgium awarded a €1.1bn contract to Nexter for 60 EBRC Jaguar and 382 VBMR Griffon as part of the CaMo (Motorised Capability) programme, with deliveries scheduled by 2025.
- ▶ In June 2019, Nexter also received an order by the Czech Armed Forces for 62 Titus armoured vehicles worth €237m. The vehicles will be produced locally under licence by Eldis Pardubice, with Nexter obtaining approximately €50m from this contract. The Czech government might also acquire 52 Caesar 155 mm self-propelled howitzers, mounted on a chassis from Czech's Tatra (contract worth around €220m).
- ▶ In November 2019, the UK Ministry of Defence awarded a £2.8bn (€3.2bn) contract to ARTEC GmbH, a joint venture between Rheinmetall Defence and KMW, for the supply of 500 Boxer armoured vehicles to be delivered from 2023 as part of the Mechanised Infantry Vehicles programme.
- ▶ In December 2019, Danish Defence ordered seven Leguan CSB (Close Support Bridge) bridge laying systems from KMW, with deliveries to start from 2022. Meanwhile, KMW delivered the first two of eight Leguan CSB ordered by the Armed forces of the Netherlands in 2016, with deliveries spread until 2021.
- ▶ In early 2020, Nexter signed a €200m contract with Morocco for the supply of 36 Caesar 155 mm self-propelled howitzers (€170m) and related ammunition (€30m).

### Technology and Innovation

- ▶ Nexter's total R&D expenditure represented 16% of its revenue, or €150m, in 2018.
- ▶ In May 2020, Germany and France awarded Nexter, KMW and Rheinmetall Defence a contract for the system architecture study of the future French-German MGCS battle tank.



# KONGSBERG

Group with civil and military activities, 50% owned by the Norwegian State. In particular specialised in RWS and missile systems (NSM, JSM). 77th-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer, systems integrator/  
equipment supplier

- ▶ Remote weapon stations
- ▶ Missile and air defence systems
- ▶ Combat systems for surface ships and submarines
- ▶ C4ISR and communication systems
- ▶ Systems and equipment for commercial ships
- ▶ Aircraft and space systems (aerostructures, propulsion systems)

## GOVERNANCE

Chairman	E. Reiten
Chief Executive Officer	G. Håøy
President Kongsberg Defence & Aerospace	E. Lie

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	KOG
Listed on	Oslo Stock Exchange
Market Cap (NOK m)	27 142

### Major shareholders (as of 10.11.2020)

Norwegian State	50,00%
Folketrygdfondet	7,27%
MP Pensjon PK	2,84%
Danske Invest Asset Management AS	2,52%
Erik Must	2,41%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Kongsberg Satellite Services AS	50%	Norway
Patria Oyj	49,9%	Finland
Kta Naval Systems AS	50%	Norway
Kongsberg Aviation Maintenance Services AS (formerly AIM Norway)	50,1%	Norway

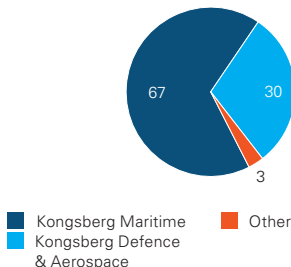
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	1 705	1 554	1 498	2 445
Δ (%) (INOK)*	-6,97%	-8,55%	-0,75%	67,45%
Defence (%)	40%	44%	42%	30%
Export (%)	83%	81%	81%	82%
Operating profit/loss	74	83	98	120
Operating margin	4,37%	5,33%	6,57%	4,91%
Net income**	70	59	73	71
Order book	1 862	1 588	1 737	3 359
Employees	7 159	6 830	6 842	10 793

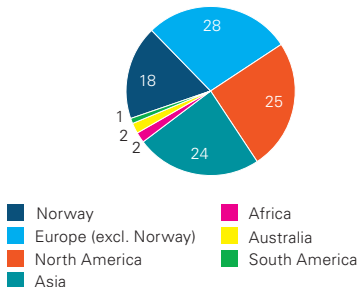
\*Variation based on revenue in local currency  
See E/INOK, p.7

\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Thales	PGZ	Raytheon Technologies*	Northrop Grumman	BAE Systems	Rheinmetall Defence	Marvin Group	Lockheed Martin	Leonardo	Patria	Nammo	TKMS
<b>Defence systems</b>												
PROTECTOR family of remote weapon stations (RWS, MCT, Lite)	●		●	●	●					●		
<b>Missile systems</b>												
Penguin anti-ship missile											●	
Naval Strike Missile (NSM)	●	●									●	
Joint Strike Missile (JSM)		●	●			●						
<b>Air defence systems</b>												
National Advanced Surface-to-Air Missile System (NASAMS)		●										
Coastal Defence System (CDS)												
<b>Naval systems</b>												
MCM C2 tactical system												
MSI-90U Mk2 submarine combat management system											●	
PROTEUS naval training solutions												
HUGIN Autonomous Underwater Vehicles (AUVs)												
<b>C4ISR and communication systems</b>												
Kongsberg Tactical Communication System (K-TaCS)		●										
NATO Alliance Ground Surveillance (AGS) System Master Archival/Retrieval Facility information (SMARF)			●									
<b>Military aircraft</b>												
F-35 Lightning II fighter aircraft (fuselage parts, main landing gear, JSM carriage)			●		●	●						
MRO (aircraft, helicopters)							●	●				

\*Merger of Raytheon and UTC

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Kongsberg revenues in local currency rose 67.5% in 2019, reaching NOK 24.1 bn (€2.4bn). Growth was boosted by two major acquisitions during the year: Rolls-Royce Commercial Marine (equipment and maintenance for civil ships) in April and AIM Norway (aircraft maintenance, now Kongsberg Aviation Maintenance Services) in May.
- ▶ The group operates in the defence sector through its Kongsberg Defence & Aerospace branch, which generated sales of NOK 7.2 bn (€735m) in 2019, or 30.1% of total sales, and has 2,917 employees. The branch's business grew by 18.7% year-on-year, driven by increased deliveries of NSM / JSM missiles, NASAMS air defence systems, as well as combat systems for submarines.
- ▶ In March 2020, Kongsberg sold its U.S. subsidiary Hydroid, specialised in submarine UAVs (REMUS and Seaglider product lines), to Huntington Ingalls Industries (HII) for \$350m (€318m). In this field, Kongsberg retains only its Norwegian activities (HUGIN product line, which in particular can be used for mine warfare).

## Home market

- ▶ The group generated NOK 4.3 bn (€441m) on its domestic market in 2019, i.e. 18.1% of total revenues. In the defence segment, Kongsberg's domestic business amounted to NOK 1.4 bn (€145m), or 19.7% of its defence revenues.
- ▶ In July 2019, Kongsberg entered a partnership with the Norwegian Defence Logistics Organisation (NDLO), mostly for the maintenance and logistical support of the Norwegian Army's aeronautical platforms. In December 2019, Kongsberg Aviation Maintenance Services signed a contract with the NDLO for the maintenance of the Norwegian fleet of NH-90 helicopters for the 2020-2026 period. The value of the contract is approximately NOK 400 m (€41m) for the first four years and could be renegotiated after two years.
- ▶ In October 2019, Kongsberg signed a NOK 583 m (€59m) contract with the Norwegian Defence Materiel Agency (NDMA) to supply a short-range air defence system based on the NASAMS system and equipped with the IRIS-T missile from Diehl Defence and a radar from Weibel Scientific.

## Export markets

- ▶ Kongsberg derived 80.3% of its sales from exports in 2019. Its main international market remains the U.S. (42% of the group's defence revenues), ahead of Europe excluding Norway (19.4%).
- ▶ In October 2019, Kongsberg Aviation Maintenance Services became the world's first Lockheed Martin-certified maintenance centre for F-16 Fighting Falcon aircraft, of which some 3,000 units are in service across 25 countries.
- ▶ In November 2019, Kongsberg signed a NOK 450 m (€46m) contract to equip Japan's fleet of F-35 Lightning II fighter aircraft with the JSM missile.
- ▶ The group signed several contracts for the supply of remotely-operated PROTECTOR turrets in December 2019: with the Swiss Army for NOK 230 m (€23m), with the Danish Army for NOK 270 m (€27m) and with Germany's Federal Office of Bundeswehr Equipment (BAAINBw) for NOK 250 m (€25m). The turrets for the German Armed Forces will be equipped with a 40 mm calibre automatic grenade launcher designed for anti-UAV defence as well as a Hensoldt radar designed to detect and track UAVs.
- ▶ In May 2020, BAE Systems selected Kongsberg to produce the remotely-operated turret for the U.S. Marine Corps' Amphibious Combat Vehicle (ACV) armoured personnel carrier (116 vehicles already ordered).

## Technology and Innovation

- ▶ R&D spending by the Kongsberg Defence & Aerospace branch reached NOK 92 m (€9.3m) in 2019.



# KOREA AEROSPACE INDUSTRIES

Group with civil and military activities, mainly operating in aeronautics (T-50 training aircraft, future K-FX fighter aircraft, etc.). 55th-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial and military aircraft
- ▶ Military helicopters
- ▶ Unmanned aerial systems
- ▶ Aerostructures
- ▶ Commercial and military aircraft maintenance and modernisation services
- ▶ Space
- ▶ Training

## GOVERNANCE

**Chief Executive Officer** Ahn Hyun-ho  
**Head of Operations** Hyun-Dae Shin

## OWNERSHIP STRUCTURE (as of 10.11.2020)

**Symbol** A047810  
**Listed on** Korea Exchange  
**Market Cap (KRW bn)** 2 266

### Major shareholders (as of 10.11.2020)

South Korean State	26,40%
National Pension Service of Korea	7,16%
Hana Financial Investment Co., Ltd. (Private Equity)	4,85%
The Vanguard Group, Inc.	2,10%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
KAI-EC	51%	South Korea
KAEMS	65%	South Korea

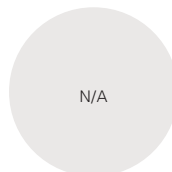
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	2 294	1 623	2 145	2 383
Δ (%) [KRW]*	-3,07%	-29,67%	34,44%	11,63%
Defence (%)	N/A	38%	38%	N/A
Export (%)	61%	61%	59%	54%
Operating profit/loss	296	-164	113	211
Operating margin	12,89%	-10,08%	5,25%	8,86%
Net income**	202	-184	44	129
Order book	N/A	N/A	14 477	13 037
Employees	3 905	3 905	4 142	4 968

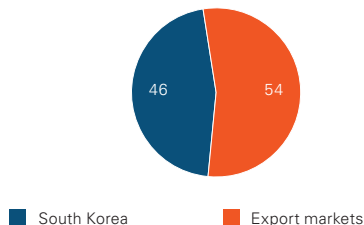
\*Variation based on revenue in local currency  
 See €/KRW, p.7

\*\*2016, 2017 and 2018 net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	Lockheed Martin	TAI	PT Dirgantara Indonesia	Boeing	Hanwha Systems	Thales Alenia Space	AAI Corp.*
<b>Military aircraft</b>								
KT-1 trainer aircraft		●						
T-50 trainer aircraft	●							
TA-50 trainer aircraft								
KA-1 and FA-50 light fighter aircraft								
KFX future fighter aircraft	●		●					
<b>Military helicopters</b>								
KUH Surion twin-engine transport helicopter	●							
Single-engine Light Attack Helicopter (LAH)	●							
<b>Unmanned aerial systems</b>								
Night Intruder-600 Vertical Take-off & Landing (NI-600 VT) unmanned helicopter								
<b>Aerostructures</b>								
F-15 fighter aircraft (fuselage, wings) AH-64 attack helicopter (fuselage)					●		●	
Avion de combat F-16 (fuselage)	●							
<b>Maintenance and modernisation services</b>								
ROKAF's KT/A-1, FA-50 and C-130H military aircraft maintenance and modernisation								
USAF's F-16 fighter aircraft maintenance								
<b>Space</b>								
Future observation radar satellites (425 Project)						●	●	
KSLV-II launcher								
<b>Training solutions</b>								
T-50, TA-50 and FA-50 aircraft simulators								

\*Textron group



## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ KAI revenues reached KRW 3,110 bn (€2.4bn) in 2019, up 11.6% year-on-year.
- ▶ In civil and military aeronautics, the group relies on several partnerships, such as with Boeing, Airbus and Lockheed Martin for the supply of aerostructures (fuselage, wings, tailplane); with Airbus for the co-development and co-production of the LCH and LAH helicopters; and for the marketing of the KUH Surion helicopter for export.
- ▶ In June 2019, KAI also signed a strategic cooperation agreement with Safran covering the two groups' civil, military and space activities. The French engine manufacturer is already supplying critical equipment for the KUH Surion, the engine of the LCH, and is collaborating with Hanwha Aerospace on the LAH engine.
- ▶ In the medium term, KAI aims to boost its export sales with the marketing of the T-50 and KT-1 training aircraft, the KUH-Surion helicopter, as well as the supply of aerostructures. In the longer term, the group plans to diversify into autonomous systems, avionics, commercial aircraft and vertical take-off and landing aircraft.

### Home market

- ▶ KAI is involved in the Republic of Korea Armed Forces' main military programmes. Among its key contracts, the group is in charge of the development of the future combat aircraft (KF-X programme) and LAH (Light Attack Helicopter) helicopters, as well as the production of the KUH Surion transport helicopter.
- ▶ KAI is pursuing the joint development of the KF-X (known as I-FX in Indonesia) alongside Indonesia's PT Dirgantara Indonesia. A first prototype is expected to be finalised in April 2021 and the first tests should begin in 2022, with final development expected in 2026. Lockheed Martin (technical assistance) and MBDA (integration of the Meteor long-range air-to-air missile) are also participating in this programme.
- ▶ KAI is also pursuing the development of LAH and LCH (Light Civil Helicopter) helicopters. Produced as part of the government's civil and military helicopter development programme, the LAH and LCH share more than 60% of their components. In July 2019, KAI passed the first test flight of the LAH helicopter, whose first deliveries are expected in 2023. Its main partner, Airbus Helicopters, co-develops and co-manufactures the aircraft with KAI in exchange for 50% in value of the LCH programme and 20% of the LAH programme.
- ▶ In June 2020, KAI won a KRW 688 bn (€516m) contract for the delivery and maintenance of 20 TA-50 training aircraft. The contract was awarded by the South Korean government to support the aeronautics industry in the face of the health crisis. Deliveries are expected by 2024.
- ▶ In the space sector, KAI is taking part in the "425 Project" programme for the development of radar reconnaissance satellites for the ADD (Agency for Defence Development, the South Korean agency in charge of defence programmes), alongside Thales Alenia Space and Hanwha Systems.

### Export markets

- ▶ KAI derived 54% of its revenues from exports in 2019.
- ▶ To strengthen its international sales, the group plans to develop an export offer for the TA-50 including technical support and training services for countries in South Asia as well as in Central and South America.
- ▶ Since 2019, KAI has also been in charge of the modernisation of the Thai Air Force's T50-TH training aircraft (a contract worth KRW 62.3 bn, or €47.8m). KAI also provides maintenance services for the F-16 fighter aircraft of the U.S. Air Force operating in the region since 2017.

### Technology and Innovation

- ▶ Following successful initial test flights in 2019, KAI is continuing to develop the NI 600 VT (Night Intruder-600 Vertical Take-off & Landing) UAV.



# L3HARRIS TECHNOLOGIES (L3 TECH. AND HARRIS CORP. MERGER)

Group with civil and military activities. Mainly operating in avionics, communication systems, ISR systems, etc. U.S.'s 6th-largest and world's 9th-largest defence contractor.

## BUSINESS AREAS

Systems integrator/equipment supplier

- ▶ ISR systems
- ▶ Electronic warfare systems
- ▶ Communication systems
- ▶ Avionics
- ▶ Air traffic control
- ▶ Space (payloads)
- ▶ Training

## GOVERNANCE

Chairman and CEO  
Head of Operations  
Chief Financial Officer

William M. Brown  
Christopher E. Kubasik  
Jesus Malave

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2018 (L3 Technologies)	2019** (Harris Corporation)	2019*** (L3Harris Technologies)
Revenue	8 674	5 961	16 138
Δ (%) / \$)*	7,01 %	10,26 %	10,18 %
Defence (%)	81 %	≈74 %	≈75 %
Export (%)	23 %	22 %	≈22 %
Operating profit/loss	948	975	2 674
Operating margin	10,93 %	16,36 %	16,57 %
Net income****	851	832	N/A
Order book	8 475	5 097	14 375
Employees	31 000	18 200	≈50 000

\* Variation based on revenue in local currency  
See E/S, p.7

\*\* Fiscal year ended: June 28th

\*\*\* 2019 financial statements consolidated after merger

\*\*\*\* Net income attributable to shareholders

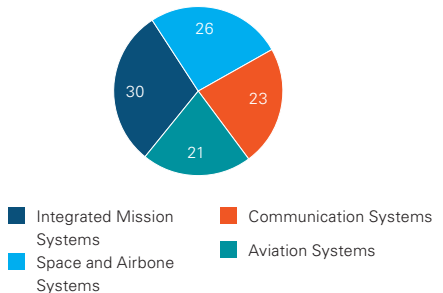
## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	LHX
Listed on	NYSE
Market Cap (\$m)	39 049

### Major shareholders (as of 10.11.2020)

The Vanguard Group, Inc.	7,94 %
SSgA Funds Management, Inc.	4,25 %
Capital Research & Management Co. (Global Investors)	3,71 %
United States Trust Co., NA	3,03 %

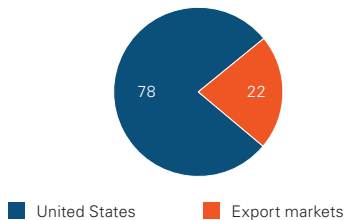
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
IBL LLC	33 %	United States
Aviation Communication & Surveillance Systems LLC (ACSS)	70 %	United States
AYESAS	40 %	Turkey
Global Military Aircraft Systems LLC (GMAS)	49 %	United States

## REVENUE BY REGION (%)



# L3HARRIS TECHNOLOGIES (L3 TECH. AND HARRIS CORP. MERGER)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	Boeing	General Dynamics	Lockheed Martin	BAE Systems	Textron	Northrop	Grumman	Imra/sat
ISR systems									
L3 Technologies					●				
Harris Corporation									
SPYDR and SPYDR II light tactical aircraft					●				
Airborne Pursuit and Exploitation (APEX) small unmanned tactical aircraft system									
MX-15 electro-optical and infrared sensors	●								
AN/SPS-48G surveillance radar									
Electronic warfare systems									
L3 Technologies		●		●					
Harris Corporation	●								
ALQ-214 IDECM F/A-18 countermeasure system	●								
Advanced Integrated Defensive Electronic Warfare Suite (AIDEWS)			●						
Communications systems									
L3 Technologies								●	
Harris Corporation									
Tactical SATCOM terminals (Panther, Hawkeye, Cheetah)								●	
Enhanced Night Vision Goggle - Binocular (ENVG-B)									
Falcon family of tactical radios									
Avionics									
Harris Corporation	●		●						
L3 Technologies			●						
F/A-18 and F-35 avionics			●						
USAF's C-130H Avionics Modernization Programme (AMP)			●						
Space									
L3 Technologies	●								
Harris Corporation			●						
Xenon ion propulsion system (702SP satellites)	●								
Navigation payloads for GPS III satellites			●						
Training									
L3 Technologies			●				●		
Harris Corporation									
USAF's F-16 fighter aircraft and B-2 strategic bombers training system programmes			●				●		

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ L3Harris Technologies was created from the merger, completed on 29 June 2019, between U.S. companies L3 Technologies (revenues of \$10.2bn (€8.7bn) in 2018) and Harris Corporation (revenues of \$6.8bn (€6.0bn) in 2018-2019). Harris shareholders hold 54% of the new entity and L3 shareholders the remaining 46%. With combined sales of \$18.1bn (€16.1bn) in 2019, L3Harris Technologies is now the sixth-largest U.S. defence contractor and one of the world's top 10.
- ▶ In order to approve the merger, the U.S. competition regulators required the sale of several activities: Harris Corporation's night vision systems to Elbit Systems for \$350m (€313m) in September 2019; holographic sighting systems (EOTech) to American Holoptics in March 2020; airport security and industrial automation to Leidos for \$1bn (€907m) in May 2020, etc.
- ▶ The group's activities are organised into four divisions: Integrated Mission Systems, Space and Airborne Systems, Communication Systems, and Aviation Systems. All these branches are involved, to varying degrees, in defence activities (75% of the group's total turnover).
- ▶ L3Harris Technologies is expecting a negative impact of the health crisis on the activity of its Aviation Systems division, which is expected to record a decline in sales over 2020. However, the decline should be offset by solid performances in the group's other divisions. L3Harris Technologies therefore expects to achieve organic growth of around 4% on a consolidated basis over 2020.

### Home market

- ▶ The U.S. are L3Harris Technologies' core market, with a 78% share in total sales in 2019. The U.S. Department of Defense alone accounted for around 57% of the group's sales during that year.
- ▶ L3Harris Technologies has received several orders from the U.S. Army for the supply of tactical radios: a \$86m (€77m) order from the U.S. Special Operations Command (USSOCOM) for Falcon IV AN/PRC-163s in November 2019; a \$50m (€45m) order from the U.S. Marine Corps for Falcon III AN/PRC-160s in December 2019; a \$89m (€81m) order from the U.S. Marine Corps for RF-300Hs in March 2020; a \$95m (€86m) order from the U.S. Army for AN/PRC-158s in April 2020, etc.
- ▶ In November 2019, L3Harris Technologies was selected by the SOSSEC consortium to present a new electronic warfare system for the U.S. Air Force's F-16 Fighting Falcon multirole fighter aircraft.
- ▶ In February 2020, as part of the MOSSAIC (Maintenance of Space Situational Awareness Integrated Capabilities) programme, the U.S. Space Force awarded L3Harris Technologies a 10-year, \$1.2bn (€1.1bn) contract to maintain and modernise the space surveillance sensors of the Space Force's network of telescopes that track objects in geostationary orbit.

### Export markets

- ▶ 22% of sales were made from exports in 2019. Key export markets included Australia, Canada and the U.K.
- ▶ In July 2019, L3Harris Technologies inaugurated a civil aircraft pilot training centre in the United Kingdom, for a total investment of \$100m (€89m). Located near Gatwick Airport (London), the site has 350 employees and offers several RealitySeven FFS (Full Flight Simulator).
- ▶ In April 2020, Australian company Naval Ship Management awarded L3Harris Technologies an 18-month subcontracting contract of an undisclosed amount for the maintenance of the integrated communication systems of the Royal Australian Navy's two Canberra-class amphibious assault ships.

### Technology and Innovation

- ▶ In February 2020, L3Harris Technologies announced that the experimental navigation satellite NTS-3 which it is developing for the U.S. Air Force had successfully passed the preliminary design review phase and would continue being developed. The U.S. Air Force could order up to nine such satellites, to be launched in 2022.



# LEIDOS

Among the leaders in IT systems in the United States. One of the main suppliers to the DoD, a major partner of the DARPA, and 23rd-largest defence contractor worldwide.

## BUSINESS AREAS

Digital services supplier and systems integrator

- ▶ Cybersecurity
- ▶ Data Science and Data Engineering
- ▶ Digital transformation
- ▶ IT systems maintenance, operation and modernisation services
- ▶ Maintenance and logistic support services

## GOVERNANCE

Chairman and CEO	Roger Krone
President, Defense Group	Gerry Fasano
Chief Financial Officer	James Reagan

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	LDOS
Listed on	NYSE
Market Cap (\$m)	13 468

### Major shareholders (as of 10.11.2020)

The Vanguard Group, Inc.	10,70%
Leidos Retirement Plan	5,25%
JPMorgan Investment Management, Inc.	5,11%
SSgA Funds Management, Inc.	4,03%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Cardno Tec-Leidos, LLC	N/A	United States
Hanford Mission Integration Solutions, LLC	N/A	United States
Mission Support Alliance, LLC	88%	United States

## KEY FIGURES (Fiscal year ended: January 3rd)

€ millions	2016	2017	2018	2019
Revenue	6 362	9 000	8 632	9 905
Δ (%)/[\$]*	39,11%	44,40%	0,24%	8,83%
Defence (%)**	55%	49%	49%	48%
Export (%)	9%	9%	9%	8%
Operating profit/loss	377	495	634	814
Operating margin	5,92%	5,50%	7,35%	8,22%
Net income***	220	324	492	596
Order book	16 827	14 575	18 194	21 451
Employees	≈ 32 000	≈ 31 000	≈ 32 000	≈ 34 000

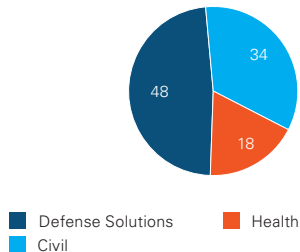
\*Variation based on revenue in local currency

See €/\$, p.7

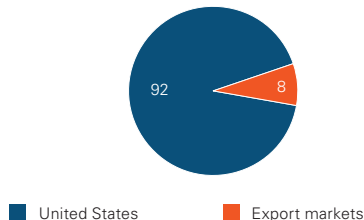
\*\*Changes in scope in 2019, 2018 and 2017 figures restated

\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

Paramount Group USA  
Vertex Aerospace  
Vigor Technologies

IT Systems operation, maintenance and modernisation services			
GSM-O II programme (DoD's communication and network modernisation)			
US Navy's NGEN-R SMIT programme			
CAMEO programme (cloud application development services)			
<b>Cybersecurity</b>			
Proven, Analytic-Centric Kill Chain Implementation and Transformation (PACKIT) cyber defense solution			
Foundational Automation Support Technology (FAST) cyber analytics solution			
<b>Maintenance and logistic support services</b>			
Aeronautical maintenance services			
Logistic support services (transportation, infrastructure building, etc.)			
<b>C4ISR</b>			
Bronco II future multi-role aircraft	●	●	
AgilePod multi-sensor platform			
Advanced Field Artillery Tactical Data System (AFATDS) command and control fires support system modernisation			
<b>Anti-submarine warfare</b>			
ADC MK5 anti-torpedo countermeasures system			
Transformational Reliable Acoustic Path System (TRAPS) sonar system			
<b>Unmanned systems</b>			
Sea Hunter and Sea Hunter II future Unmanned Surface Vessels (USVs)			●
<b>Training</b>			
Common Driver Trainer (CDT) virtual training system			

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Leidos revenues grew by 8.8% in local currency to \$11.1bn (€9.9bn) in 2019. The group generated 48% of its turnover (i.e. \$5.4bn, or €4.8bn) in the defence market in 2019.
- ▶ Following the acquisition of Lockheed Martin's Information Systems and Global Solutions division for approximately \$4.6bn in August 2016, Leidos in January 2020 acquired Dynetics, a U.S. applied science and information technology company, for approximately \$1.65bn (€1.5bn). Following the acquisition, Dynetics became a wholly-owned subsidiary of the group. Meanwhile, the group sold Leidos Cyber, its branch dedicated to cybersecurity for private sector companies, to French company Capgemini in February 2019.
- ▶ In the context of the COVID-19 related health crisis, Leidos has made a downwards revision of its revenue forecast for the financial year 2020. The group now expects revenues to reach \$12.3bn-\$12.5bn (€10.9bn-€11.1bn) compared to \$12.2bn-\$12.6bn (€10.8bn-€11.2bn) before.

## Home market

- ▶ Leidos is the leading provider of digital and telecom services to the U.S. government, according to a ranking established by Washington Technology (for the financial year ended 30/09/2018), ahead of General Dynamics (which strengthened its position with the acquisition of CSRA in 2018) and Northrop Grumman.
- ▶ In 2016, following the acquisition of some of Lockheed Martin's activities, Leidos became responsible for the modernisation of the U.S. Department of Defense's IT network as part of the GSM-O (Global Solutions Management-Operations) programme, a seven-year, \$4.6bn (€3.6bn) contract signed in 2012. In December 2019, Leidos won the GSM-O II contract, worth up to \$6.5bn (€5.8bn) for a five-year term and an option for five additional years. Phase II of the programme integrates new services, including cyber security solutions.
- ▶ In March 2019, Leidos won a contract potentially worth \$25.5bn (€22.8bn) to carry out logistics and maintenance operations (aircraft modifications, planning of maintenance operations, transport, infrastructure construction, etc.) for the U.S. Army's overseas aircraft and helicopter fleet. The contract covers a period of five years, with an option to renew for five additional years.
- ▶ In March 2019, Leidos was also selected by the U.S. Navy to provide aircraft maintenance operations. The contract, potentially worth up to \$12.6bn (€11.3bn), includes a fixed five-year term and an option for five additional years.
- ▶ In February 2020, Leidos was selected by the U.S. Navy to standardise, operate and maintain several computer networks as part of the Next Generation Enterprise Network Re-compete (NGEN-R) Service Management, Integration, & Transport (SMIT) programme. The contract, potentially worth up to \$7.7bn (€7bn), covers a period of five years and includes options for additional three-year period.

## Export markets

- ▶ International sales represented only 8% of Leidos' revenues in 2019. They included sales to foreign governments and related agencies, mainly in Australia and the UK.
- ▶ In Australia, Leidos is positioned on the LAND 129 Phase 3 programme to replace the 18 Shadow 200 tactical Unmanned Aerial Systems (UAS) designed by Textron Systems and AAI Corporation. Leidos Australia is one of the four remaining competitors alongside Insitu Pacific, Raytheon Australia and Textron Systems Australia.

## Technology and Innovation

- ▶ In February 2019, the Sea Hunter Unmanned Surface Vessel (USV), designed by Leidos and produced by Vigor Technologies, passed an autonomous navigation test between the San Diego Naval Base in San Diego, California, and Pearl Harbor, Hawaii. The demonstrator was designed as part of the ACTUV research programme, jointly conducted by the Office of Naval Research (ONR) and the Defense Advanced Research Projects Agency (DARPA).



# LEONARDO

Group with civil and military activities. Italy's leading defence contractor and 13th-largest worldwide. Mainly operating in the U.S. through Leonardo DRS and Leonardo US Aircraft.

## BUSINESS AREAS

Platform manufacturer, systems integrator/  
equipment supplier

- ▶ Aeronautics (aircraft and UAV)
- ▶ Helicopters
- ▶ Defence systems
- ▶ Defence electronics
- ▶ Space

## GOVERNANCE

Chairman	L. Carta
Chief Executive Officer	A. Profumo
Manufacturing and Program Management Optimization Director	F. Barsotti

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	LDO
Listed on	Borsa Italiana
Market Cap (€m)	2 901

### Major shareholders (as of 10.11.2020)

Ministry of Economy and Finance (Italy)	30,20%
The Vanguard Group, Inc.	2,08%
Schroder Investment Management Ltd.	1,63%
T. Rowe Price International Ltd.	1,33%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Orizzonte Sistemi Navali S.p.A	49%	Italy
NHIndustries SAS	32%	France
Electronica Spa	31,33%	Italy
Avio Spa	25,88%	Italy
MBDA	25%	France
Eurofighter Jagdflugzeug GmbH	21%	Germany
Telespazio Spa	67%	Italy
Thales Alenia Space	33%	France

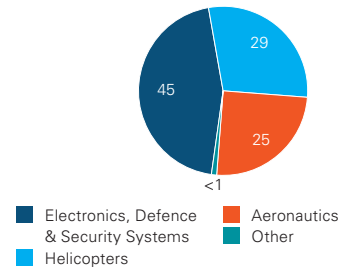
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017*	2018	2019
Revenue	12 002	11 734	12 240	13 784
Δ (%)	-764%	-2,23%	4,31%	12,61%
Defence (%)	64%	N/A	N/A	N/A
Export (%)	82%	84%	85%	84%
Operating profit/loss	982	844	715	1 153
Operating margin	8,18%	7,19%	5,84%	8,36%
Net income**	505	277	509	821
Order book	34 798	33 507	36 118	36 513
Employees	45 631	45 134	46 462	49 530

\*Figures restated

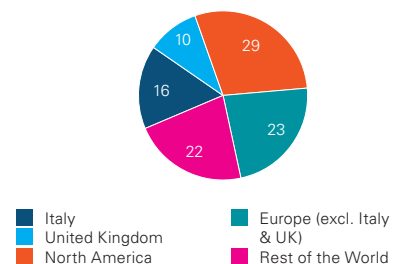
\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



\*Excluding revenue from Space Systems division (Telespazio and Thales Alenia Space)

## REVENUE BY REGION (%)





## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	PGZ	Boeing	Airbus	Naval Group	Dassault Aviation	Saab	General Dynamics	BAE Systems	Northrop	Grumman*	Lockheed Martin	Electronica	GKN
<b>Military aircraft and UAV</b>													
Tempest future fighter aircraft (sensors, electronics, avionics)								●					●
F-35 Lightning II fighter aircraft (wings, assembly** and MRO)									●				
Eurofighter Typhoon fighter aircraft			●					●					●
M-345 and M346/T-100 advanced trainer aircraft		●											
C-27J Spartan and MC-27J Praetorian tactical transport aircraft		●							●				
nEUROn UCAV demonstrator (smart integrated weapon bay, internal EO/IR sensors, electrical system, etc.)					●								
Falco Xplorer MALE UAV													
European MALE RPAS			●		●								
<b>Military helicopters</b>													
AW159 twin-engine multi-role helicopter (6t)							●	●					
AW139M/MH-139 twin-engine multi-role helicopter (6t)		●											
AW249 future twin-engine attack helicopter (8t)	●												
NH90 twin-engine multi-role helicopter (11t)			●								●	●	
AW101/MCH-101 three-engine transport helicopter (16t)													
<b>Weapon and artillery systems</b>													
127/64 LW Vulcano naval gun													
Black Shark heavyweight torpedo and MU90 lightweight torpedo					●								
<b>Defence electronics</b>													
Raven ES-05 AESA radar (JAS 39 Gripen E/F)						●							
Kronos family of land and naval radars													

\*Innovation Systems division, formerly Orbital ATK \*\*Produced for the Royal Netherlands Air Force and the Italian Air Force

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Leonardo revenues reached €13.8bn in 2019, up 12.6% year-on-year. The Aeronautics division recorded the strongest growth (+17.0%), driven in particular by the delivery of two C-27J Spartan tactical transport aircraft to an African country (probably Zambia) and continued deliveries of wings for the F-35 Lightning II fighter aircraft to Lockheed Martin.
- ▶ In January 2020, Leonardo and Cassa Depositi e Prestiti (an investment bank controlled by the Italian Ministry of Economy and Finance) signed a loan agreement of up to €100m to support investment projects in four main areas: helicopters, cyber security, digital infrastructure and new production processes.
- ▶ In the context of the COVID-19 related health crisis, the group recorded a 1.4% decline in revenue during the first half of 2020. The decline in business was mainly concentrated in the Helicopter division (whose sales decreased 10.7% over the period, before consolidation), which was hampered by declining demand in the commercial segment.

## Home market

- ▶ Leonardo is one of the main suppliers to the Italian Armed Forces. The group is involved in the design and production of military aircraft and helicopters for Italy and is a partner of Fincantieri on numerous naval programmes, including through their joint subsidiary Orizzonte Sistemi Navali. The group generated 16% of its turnover on its domestic market in 2019.
- ▶ In March 2020, the Italian Ministry of Defence awarded Leonardo a six-year, €75m contract to supply and install NGIFF (New Generation Identification Friend or Foe) systems for the Italian Armed Forces' land and naval platforms.

## Export markets

- ▶ The group generated 84% of its sales from exports in 2019, mainly to the United States and the United Kingdom (39% of turnover), where it operates through its subsidiaries Leonardo DRS and Leonardo US Aircraft on the one hand and Leonardo UK on the other.
- ▶ In September 2019, Leonardo DRS signed a \$382m (€341m) contract with the U.S. Navy, including options worth \$448m (€400m), for the development, production and integration of computer hardware (screens, workstations, processors, etc.) on various U.S., British and Australian naval platforms until 2026.
- ▶ In January 2020, the U.S. Department of Defense selected Leonardo to be part of the Navy Trainer (TH-XX) programme, a contract to supply training helicopters for future U.S. Navy pilots. The contract, worth \$177m (€161m), covers a first tranche of 32 AW119/TH119 helicopters, renamed TH-73A. A total of 130 helicopters could be ordered for a combined value of approximately \$650m (€590m).
- ▶ In July 2020, the U.S. Naval Air Systems Command awarded Leonardo DRS a \$120m (€105m) contract to provide engineering and testing services for AN/AAQ-45 DAIRCM (Distributed Aperture Infrared Countermeasure) advanced protection systems for military aircraft.

## Technology and Innovation

- ▶ The group's R&D spending amounted to €1.52bn in 2019, representing 11.1% of sales.
- ▶ In September 2019, Leonardo was selected to conduct a Royal Air Force research programme on anti-UAV technologies from the beginning of 2020 for a period of three years. The research will focus on ways to detect, track, identify and neutralise UAVs.
- ▶ Unveiled at the 2019 Paris Air Show, the MALE Falco Xplorer UAV, designed in particular for SRI missions, successfully completed its first flight for about 60 minutes in January 2020. It could be marketed during the course of the year.



# LOCKHEED MARTIN

World's leading defence contractor, prime contractor for the F-16 and F-35 fighter aircraft and largest supplier to the U.S. Department of Defense.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Aeronautics (aircraft, helicopters, unmanned aircraft systems)
- ▶ Missile and air defence systems
- ▶ Naval systems (surface ships, combat systems)
- ▶ Defence electronics and cybersecurity
- ▶ Space (satellites, launchers)

## GOVERNANCE

Chairwoman	Marillyn A. Hewson
Chief Executive Officer	James D. Taiclet
Executive VP Aeronautics	Michele Evans

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	LMT
Listed on	NYSE
Market Cap (\$m)	101 827

### Major shareholders (as of 10.11.2020)

SSgA Funds Management, Inc.	15,20%
The Vanguard Group, Inc.	7,54%
Capital Research & Management Co. (World Investors)	5,94%
Putnam LLC	5,32%

## MAIN JOINT VENTURES AND ASSOCIATES

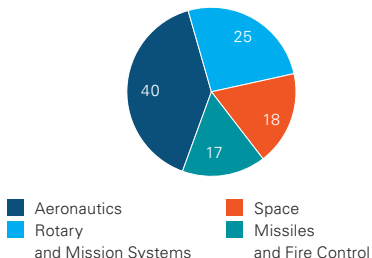
Name	%	Country
AWE PLC	51%	United Kingdom
MEADS International Inc.	58%	United States
United Launch Alliance LLC	50%	United States
Tata Lockheed Martin Aerostructures Limited	50%	India
Raytheon-Lockheed Martin Javelin JV	50%	United States
TLVS GmbH	40%	Germany

## KEY FIGURES (Fiscal year ended: December 31st)

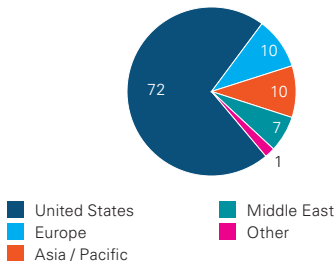
€ millions	2016**	2017**	2018	2019
Revenue	42 719	44 212	45 522	53 404
Δ (%)/(\$)*	2,51%	5,65%	7,61%	11,25%
Defence (%)	89%	88%	88%	90%
Export (%)	27%	29%	28%	28%
Operating profit/loss	4 294	4 642	4 943	6 465
Operating margin	10,05%	10,50%	10,86%	12,11%
Net income	4 673	1 737	4 273	5 563
Order book	98 157	87 984	113 946	128 211
Employees	97 000	100 000	105 000	110 000

\*Variation based on revenue in local currency  
See €/\$, p.7  
\*\*Figures restated.

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	MHI	TASL	Boeing	Raytheon Technologies*	BAE Systems	Northrop Grumman	GE Aviation	Rolls-Royce	Rheinmetall Defence	Leonardo	Fincantieri	Gibbs & Cox
<b>Military aircraft</b>												
F-35 Lightning II fighter aircraft	●		●	●	●		●			●		
F-16 Fighting Falcon fighter aircraft		●	●			●						
C-130J Super Hercules tactical airlifter							●					
SB>1 Defiant future twin-engine multi-role helicopter			●									
CH-53K King Stallion three-engine transport helicopter						●		●				
Black Hawk (UH-60/S-70A) and Sea Hawk (SH-60/S-70B) twin-engine multi-role helicopters						●						
<b>Missile and air defence systems</b>												
Hellfire and Javelin anti-tank missiles			●		●							
Joint Air-to-Surface Standoff Missile (JASSM)					●							
Trident II (D5) Submarine-Launched Ballistic Missile (SLBM)												
PAC-3 and PAC-3 MSE interceptors			●									
THAAD missile defence system			●	●								
<b>Surface ships</b>												
Freedom-class Littoral Combat Ship (LCS) light frigate							●			●	●	
Multi-Mission Surface Combatant (MMSC) frigate*										●	●	
Canadian Surface Combatant (CSC) frigate**				●								
<b>Combat and mission systems</b>												
AEGIS combat system										●		
<b>Space</b>												
Vulcan Centaur launcher			●		●							

\*Merger of Raytheon and UTC \*\*Based on Freedom-class LCS frigate \*\*\*Based on BAE Systems' Type 26 frigates

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Lockheed Martin revenues reached \$59.8bn (€53.4bn) in 2019, up 11.3% year-on-year in local currency, of which approximately 90% was derived from defence activities. In 2019, growth was mainly driven by the Missiles & Fire Control (+19.4%) and Aeronautics (+11.5%) divisions.
- ▶ James D. Taiclet was appointed Chief Executive Officer as of 15 June 2020, replacing Marilyn A. Hewson, who remains Chairwoman of the Board.
- ▶ Lockheed Martin announced that the impact of the current COVID-19 related crisis on its turnover remained limited for the time being. The group's activity in fact grew by 10.1% in the first nine months of 2020 compared to the same period in 2019.

### Home market

- ▶ Lockheed Martin is heavily reliant on the U.S. market (72% of its revenues in 2019). The U.S. Department of Defense, its largest and main customer, accounts for 61% of its business, excluding FMS procedures.
- ▶ In December 2019, the U.S. Department of Defense awarded Lockheed Martin a third multi-year contract for the supply of up to 50 C-130J Super Hercules transport aircraft (24 for the U.S. Air Force, 20 for the U.S. Marine Corps and 6 as an option for the U.S. Coast Guard) worth \$3bn (€2.7bn) in total.
- ▶ After an initial order for 10 HH-60W Jolly Green II combat search and rescue helicopters in September 2019, the U.S. Air Force in February 2020 awarded a second contract to Lockheed Martin for the supply of 12 additional units. The total value of the orders amounts to more than \$1bn (€907m). Deliveries will begin in April 2021.
- ▶ In April 2020, Lockheed Martin was awarded a \$4.7bn (€4.3bn) contract by the Naval Air Systems Command to supply 78 F-35 Lightning II fighter aircraft (48 F-35A for the U.S. Air Force, 14 F-35B for the U.S. Marine Corps and 16 F-35C for the U.S. Navy) with deliveries scheduled by 2023.
- ▶ In April 2020, the U.S. Army awarded a \$6.1bn (€5.5bn) contract to Lockheed Martin for the production of PAC-3 MSE interceptor missiles and associated equipment for the U.S. Army and the armies of allied countries, with deliveries scheduled between 2021 and 2023.

### Export markets

- ▶ In 2019, the group generated less than 30% of its sales from exports (-0.6 percentage points compared to 2018). A large share of international sales are made through FMS procedures.
- ▶ In January 2020, Poland's government signed an agreement with the United States for the supply of 32 F-35 Lightning II fighter jets for a total amount of \$4.6bn (€4.2bn). Deliveries are scheduled to begin in 2024.
- ▶ In April 2020, the U.S. government awarded a \$932m (€846m) contract to Lockheed Martin for the supply of THAAD interceptor missiles to Saudi Arabia under an FMS procedure (as part of a contract signed in November 2018) as well as to the U.S. Missile Defense Agency.
- ▶ In April 2020, Lockheed Martin signed a \$519m (€471m) contract with Navantia under an FMS procedure for the supply and integration, by 2030, of the Spy-7 radar and the Aegis combat system on the Spanish Navy's five F-110 Bonifaz-class missile-launching frigates currently under construction.

### Technology and Innovation

- ▶ Self-financed R&D expenditure amounted to \$1.3bn (€1.1bn) in 2019, representing 2.2% of revenue.
- ▶ In April 2020, Lockheed Martin conducted tests for a future long-range missile as part of the U.S. Army's Precision Strike Missile (PrSM) programme at the White Sands (New Mexico, USA) test centre. The missile was fired from an M142 HIMARS rocket launcher.



# MBDA

Europe's leading missile manufacturer (MdCN cruise missile, Brimstone ground attack missile, Meteor air-to-air missile, etc.).

## BUSINESS AREAS

Missile manufacturer

- ▶ Air dominance (air-to-air missile, air-to-ground missile, guided missile system, cruise missile)
- ▶ Battlefield engagement (anti-tank missile, anti-tank unmanned ground vehicle)
- ▶ Ground based air defence
- ▶ Maritime superiority (anti-ship missile system, naval air defence system, naval cruise missile)

## GOVERNANCE

Chief Executive Officer                      Éric Béranger  
 Executive Group Director                 Stéphane Reb  
 Programmes  
 Chief Financial Officer                       Peter Bols

## OWNERSHIP STRUCTURE

Symbol  
 Listed on   Unlisted group  
 Market Cap

Major shareholders (as of 10.11.2020)

Airbus	375%
BAE Systems	375%
Leonardo	25%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Eurosam	66,6%	France
TAURUS Systems GmbH	66,6%	Germany
Roxel	50%	France
PARSYS GmbH	50%	Germany
L&T MBDA Missile Systems	49%	India
MEADS International Inc.	42%	United States
Inmize	40%	Spain
TLVS GmbH	60%	Germany
RAM-System GmbH	50%	Germany

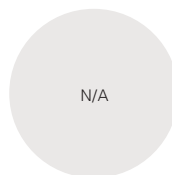
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017*	2018	2019
Revenue	2 955	2 982	3 164	3 703
Δ (%)	2,78%	0,91%	6,10%	17,04%
Defence (%)	100%	100%	100%	100%
Export (%)	50%	N/A	N/A	N/A
Operating profit/loss	213	201	239	268
Operating margin	7,21%	6,74%	7,55%	7,24%
Net income**	-2	346	244	189
Order book	15 900	16 800	17 400	17 500
Employees	10 338	10 700	11 300	11 500

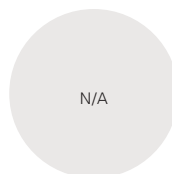
\*Figures restated

\*\*Total comprehensive income

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Thales	Safran	Diehl Defence	Indra Sistemas	Lockheed Martin	Dassault Aviation	Milrem Robotics	Zodiac Milpro	Sener	Saab
<b>Air dominance</b>										
SPEAR 3 future air-to-surface precision missile										
Brimstone long-range air-to-ground missile										
Meteor beyond-visual-range air-to-air missile			●					●	●	
MICA and MICA NG medium-range air-to-air missiles	●	●								
SCALP-EG/Storm Shadow air-launched cruise missile	●	●								
TAURUS KEPD 350E air-launched cruise missile										●
Viper-E air-launched guided munition										
SPECTRA integrated electronic warfare suite	●				●					
<b>Battlefield engagement</b>										
MMP medium-range anti-tank missile	●	●				●	●			
Trigat-LR / PARS 3 LR / AC 3G air-to-ground anti-tank missile			●							
Spectre Unmanned Aerial Vehicle (UAV) for close air support of ground forces										
<b>Ground-based air defence</b>										
Mistral 3 short-range ground-to-air missile		●								
CAMM and CAMM-ER air defence missiles	●									
SAMP/T ground-based air defence system	●									
Medium Extended Air Defense System (MEADS) project					●					
<b>Maritime superiority</b>										
Future Cruise (FC)/Anti-Ship Weapon (ASW) Missile Programme	●									
ANL/Sea VeNom future lightweight anti-ship missile										
ASTER 15 and 30 surface-to-air missiles	●	●								
Exocet MM38 and MM40 anti-ship missiles		●								
MdCN/NCM Naval Cruise Missile		●								

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ MBDA consolidated revenues reached €3.7bn in 2019, up 17.0% year-on-year. Business is growing both in its domestic markets (Germany, France, Italy and the United Kingdom) and on export markets.
- ▶ The group's order book increased by 0.6% to €17.5bn at the end of 2019, representing almost five years of sales. However, due to intensifying competition in Europe, in particular from U.S. manufacturers, order intake fell for the third consecutive year to €3.6bn in 2019 (compared with €5.2bn in 2016).
- ▶ MBDA's objective is to reach sales of €4bn in 2020, but this target might be compromised by the coronavirus-related crisis which is affecting all of the group's domestic markets (France, United Kingdom, Germany, Italy) and is having a direct impact on its production capacities.

## Home markets (France, Germany, United Kingdom, Italy)

- ▶ In November 2019, the Council of the European Union approved the TWISTER (Timely Warning and Interception with Space-based Theater Surveillance) project, involving France (and in particular MBDA), Spain, Finland, Italy and the Netherlands. The project aims to develop a multi-role interceptor for defence against emerging threats (intermediate-range manoeuvring ballistic missiles, hypersonic cruise missiles, hypersonic gliders, anti-ship missiles, new-generation combat aircraft, etc.) by 2030.
- ▶ In late 2019, Germany's Federal Office of Bundeswehr Equipment (BAAINBw) awarded MBDA two contracts: a contract for Meteor air-to-air missiles, intended to equip the Typhoon fighter aircraft fleet, as well as a contract for Enforcer man-portable missile system, intended for the infantry and Special Forces of the Bundeswehr. The respective values of the contracts remained undisclosed.
- ▶ In February 2020, the French and German governments awarded Dassault Aviation, Airbus, MBDA, MTU Aero Engines, Safran and Thales the contract for the initial demonstrator of the Future Combat Air System (FCAS). This contract covers a first 18-month phase (Phase 1A) to launch the work that will lead to the development of the future NGF (New Generation Fighter) combat aircraft. MBDA is involved in the drones and missiles areas, and more generally in weapons systems in partnership with Diehl Defence.

## Export markets

- ▶ MBDA signed three major contracts in 2019: with the Brazilian Air Force in June for the supply of around 100 Meteor air-to-air missiles for the F-39E/F Gripen fighter aircraft (€200m), and with Cyprus in December for the supply of Mistral very short-range ground-to-air missiles for the National Guard (€150m) as well as Exocet anti-ship missiles for the Cyprus Navy (€90m).
- ▶ In July 2019, MBDA signed a contract of an undisclosed amount with the Serbian Ministry of Defence to supply Mistral 3 air defence missiles, the related Manpads launch systems, as well as technical assistance to integrate them into the Serbian Armed Forces' PASARS-16 vehicles.
- ▶ In November 2019, Korea Aerospace Industries (KAI), prime contractor for the KF-X multi-role fighter aircraft programme, awarded MBDA a contract for the integration of the Meteor air-to-air missile on this aircraft. The value of the contract was not disclosed.
- ▶ In May 2020, Morocco ordered MBDA's VL MICA short-range air defence system in a €192m contract.

## Technology and Innovation

- ▶ In March 2020, MBDA successfully completed the first qualification firing of the ANL / Sea Venom light anti-ship missile designed to equip the French Navy's Guépard helicopters and the Royal Navy's AW159. This programme is the first French-British cooperation programme to take full advantage of the centres of excellence created under the 2016 agreement between France and the United Kingdom.





# MEGGITT

Supplier of components and sub-systems, in particular for combat aircraft (including F-35s) and land vehicles (including Abrams tanks). 73rd-largest defence contractor.

## BUSINESS AREAS

- Equipment and sub-systems supplier
- ▶ Aircraft wheel and braking systems
  - ▶ Control sub-systems and sensors
  - ▶ Polymers and composite structures
  - ▶ Avionics
  - ▶ Defence sub-systems
  - ▶ Fuel systems
  - ▶ Thermal systems

## GOVERNANCE

Non-Executive Chairman	Sir Nigel Rudd
Chief Executive Officer	Tony Wood
Chief Financial Officer	Louisa Burdett

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	MGGT
Listed on	LSE
Market Cap (£m)	2 920

### Major shareholders (as of 10.11.2020)

Capital Research & Management Co. (World Investors)	13,10%
FIL Investment Advisors (UK) Ltd.	5,11%
T. Rowe Price Associates, Inc. (Investment Management)	4,97%
Harris Associates LP	4,91%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Parkway-HS, LLC	70%	United States
Parkway-Hamilton Sundstrand Mexico S. de R.L. de C.V.*	N/A	Mexico

\*Owned via Parkway-HS, LLC

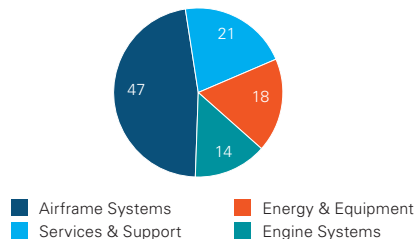
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017**	2018	2019
Revenue	2 432	2 274	2 351	2 592
Δ (%)   E*	20,95%	0,10%	4,34%	9,40%
Defence (%)	35%	34%	35%	36%
Export (%)	90%	90%	92%	92%
Operating profit/loss	285	311	290	371
Operating margin	11,73%	13,68%	12,33%	14,29%
Net income	209	334	202	254
Order book	2 325	2 344	2 500	2 901
Employees	11 210	11 226	11 739	12 599

\*Variation based on revenue in local currency  
See €/£, p.7

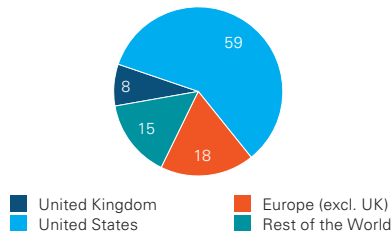
\*\*Figures restated

## REVENUE BY BUSINESS SEGMENT (%)\*



\*As of January 1st, 2019, new organisational structure established

## REVENUE BY REGION (%)



MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	BAE Systems	Airbus	Lockheed Martin	Boeing	Leonardo	General Dynamics	Dassault Aviation	Textron	Raytheon Technologies*	Northrop Grumman	GE Aviation
<b>Braking systems</b>											
Carbon brakes	●	●	●	●	●	●	●	●			
Steel brakes	●	●	●	●	●	●	●	●		●	
Brake control systems	●	●	●	●	●	●	●	●		●	
<b>Composite structures</b>											
Ice protection systems		●	●	●	●		●				
<b>Fuel systems</b>											
Fuel tanks	●	●	●	●	●		●			●	
<b>Electrical power systems</b>											
Power conversion systems		●		●							
<b>Thermal systems</b>											
Heat exchangers	●				●			●		●	
<b>Control sub-systems and sensors</b>											
Fluide and pression sensors		●	●	●	●		●	●	●		
Fire detection systems	●	●	●	●	●	●	●		●		
<b>Avionics</b>											
Flight displays			●	●	●		●				
<b>Defence sub-systems</b>											
AGTS-36 aerial gunnery target system, GT-400 glide target and countermeasure systems			●	●				●			
Systèmes d'approvisionnement en munitions	●		●	●		●	●				

\*Merger of Raytheon and UTC

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Meggitt revenues reached £2.3bn (€2.6bn), up 9.4% year-on-year in local currency. As of January 2019, the group restructured its operations around four new divisions (Airframe Systems, Services & Support, Energy & Equipment and Engine Systems), all of which contributed to revenue growth over the year.
- ▶ Meggitt generated 36% of its revenues in the defence segment in 2019, representing sales of £825m (€940m). The group particularly benefited from strong demand for equipment for the new F-35 fighter aircraft and Abrams tanks. Business was also boosted by equipment sales in the maintenance market, which accounted for 43% of the group's defence revenues in 2019. Meggitt is among others a supplier of equipment and sub-systems for the maintenance of F-35, F-15 and Typhoon combat aircraft, V-22 Osprey transport aircraft and numerous transport vehicles.
- ▶ In the context of the COVID-19 related health crisis, Meggitt embarked on a cost-cutting strategy and reduced its workforce by around 15% in 2020. The group's revenues for that year are expected to be strongly impacted by the decline in activity in the Civil Aerospace division.

## Home market

- ▶ The UK market accounted for 8% of Meggitt's total sales in 2019. In defence, the European market accounted for 17% of the group's total sales.
- ▶ The group is involved in several British and European defence programmes. For example, Meggitt supplies numerous types of equipment (wheels, carbon brakes, landing gear, etc.) for the Eurofighter Typhoon fighter aircraft.

## Export markets

- ▶ The United States remain the group's largest market with 73% of defence sales to U.S. customers in 2019 (and 59% of total sales).
- ▶ In 2020, Meggitt won several contracts with U.S. players: a three-year, \$65m (€58m) contract with Lockheed Martin for the assembly of spreader arms on F-35 fighter aircraft; a five-year contract worth an estimated \$73m (about €65m) with Bell Textron for the supply of anti-icing protection equipment for the V-22 Osprey transport aircraft; a three-year, \$20m (€17.8m) contract with Northrop Grumman to continue deliveries of fuel tanks for the F/A-18 Super Hornet fighter aircraft; and a five-year extension of the contract with GE Aviation to supply valves, sensors and heat exchangers for several engine programmes.
- ▶ After an initial contract signed in March 2019 with General Dynamics Land Systems (GDLS) over the supply of thermal control systems for the tanks of the Abrams programme (a contract worth \$37m, or €34m), a new \$22m (€20m) contract was awarded to Meggitt by GDLS in April 2020 for the supply of the same equipment.
- ▶ In June 2020, Meggitt won a \$15m (€13.3m) contract from its Australian partner Chemring Australia to supply protective equipment for countermeasures systems integrated into F-35 fighter aircraft. Chemring Australia is supplying these systems to Australian, U.S. and international F-35 operators, under a \$107.5m (€95.5m) contract signed in May 2020 with the U.S. Navy.
- ▶ Meggitt is also involved in South Korea's future fighter aircraft programme, the KF-X, for which Korea Aerospace Industries (KAI) is the prime contractor. The British equipment manufacturer supplies braking control systems, display systems, carbon brakes and wheels.

## Technology and Innovation

- ▶ Meggitt's R&D spending amounted to £118.5m (€135m) in 2019, representing 5.2% of total sales.



# MITSUBISHI HEAVY INDUSTRIES (MHI)

Industrial conglomerate. Japan's leading defence contractor (co-production of the Soryu submarines, sub-licensed production of the F-35), and 21st-largest worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Shipbuilding and industrial machinery
- ▶ Energy-related products
- ▶ Commercial aircraft
- ▶ Defence (military aircraft, air defence systems, missile systems, fighting vehicles, surface ships, submarines)
- ▶ Space (launchers and space vehicles)

## GOVERNANCE

Chairman	Shunichi Miyanaga
President and CEO	Seiji Izumisawa
Chief Financial Officer	Hisato Kozawa

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	7011
Listed on	Tokyo Stock Exchange
Market Cap (JPYbn)	829

### Major shareholders (as of 10.11.2020)

Asset Management One Co., Ltd.	3,91%
Nomura Asset Management Co., Ltd.	3,74%
The Vanguard Group, Inc.	2,49%
Meiji Yasuda Life Insurance Co.	2,37%

## MAIN JOINT VENTURES AND ASSOCIATES\*

Name	%	Country
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\*No information available

## KEY FIGURES (Fiscal year ended: March 31st)

€ millions	2016-17	2017-18**	2018-19**	2019-20
Revenue	32 952	31 481	31 762	33 463
Δ (%)/[JPY]*	-3,28%	4,38%	-0,18%	-0,91%
Defence (%)	12%	12%	11%	N/A
Export (%)	53%	55%	54%	52%
Operating profit/loss	1 267	448	1 562	-244
Operating margin	3,85%	1,42%	4,92%	-0,73%
Net income***	738	-56	858	721
Order book	58 791	43 530	43 346	45 588
Employees	82 728	80 652	80 744	81 631

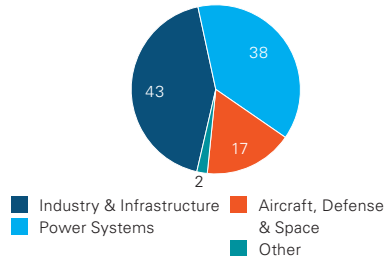
\*Variation based on revenue in local currency

See €/JPY, p.7

\*\*Figures restated

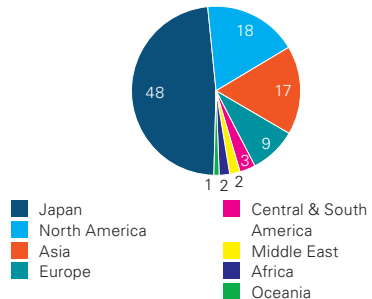
\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)\*



\*Revenue distribution based on total sales excluding eliminations

## REVENUE BY REGION (%)



# MITSUBISHI HEAVY INDUSTRIES (MHI)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	NEC	KHI	Lockheed Martin	Raytheon Technologies**	Mitsubishi Electric	Japan Steel Works	ATLA***	Mitsui	JAXA****
<b>Military aircraft</b>									
F-X future fighter aircraft (based on X-2 Shinshin demonstrator)							●		
F-35 fighter aircraft*		●		●					
UH/SH-60 transport helicopter*		●							
<b>Missile systems and guided ammunition</b>									
Patriot air defence system*		●	●						
Mk41 vertical launch system*		●							
ASM-2/ASM-3 anti-ship missiles									
AAM-5 air-to-air missile	●			●		●			
<b>Fighting vehicles</b>									
Type 16 Mobile Combat Vehicle (MCV)							●		
Type 10 main battle tank					●	●			
<b>Surface ships</b>									
30 FFM future frigate							●		
Akizuki-class (19DD) and Asahi-class (25DD) destroyers									
Kunigami-class patrol vessel									
<b>Submarine</b>									
Soryu-class conventionally-powered attack submarine		●							
<b>Space systems</b>									
H-IIA/H-IIB and H3 rocket engines									●
HTV/HTV-X transfer vehicle									●

\*Sub-licensed production

\*\*Merger of Raytheon and UTC

\*\*\*Acquisition Technology and Logistics Agency (formerlyTRDI)

\*\*\*\*Japan Aerospace Exploration Agency

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Mitsubishi Heavy Industries generated revenues of JPY 4,041 bn (€33.5bn) in 2019/2020 (the financial year ended 31 March), down 0.9% year-on-year in local currency. The decline was mostly related to difficulties in the Industry & Infrastructure division.
- ▶ Defence and space activities (aircraft, vehicles, ships, launchers, etc.) accounted for 11% of the group's sales in 2019 (JPY 457 bn, or €3.6bn). These activities are grouped within the Aircraft, Defence & Space division, which also includes commercial aviation operations.
- ▶ In May 2020, MHI completed the acquisition of Bombardier's Canadair Regional Jet (CRJ) programme for \$550m (€482m). The delivery of the first aircraft of its SpaceJet (formerly MRJ) regional aircraft programme was again postponed during the year, raising the total delay to at least eight years.
- ▶ The 2020/2021 financial year is set to be a difficult one for the group, which anticipates a major impact of the COVID-19 related health crisis on its civil activities. Sales and order intake declined in the first quarter (April to June), despite the growth in defence activities.

### Home market

- ▶ MHI is Japan's leading defence group. It is in charge of the production of Soryu-class conventional submarines (alternating with Kawasaki Heavy Industries, or KHI) as well as various U.S. aircraft, air defence systems and equipment (under licence).
- ▶ The group will provide the first two units of the new class of 30 FFM frigates for the Japanese Maritime Self-Defence Force (JMSDF), which is to be delivered in March 2022. The first batch of frigates will consist of eight ships, built in a partnership between MHI and Mitsui E&S and in alternation with KHI.
- ▶ At the end of 2019, the Japanese Ministry of Defence reversed initial plans to suspend assembly activities for the F-35 aircraft at the Nagoya facility in order to refocus it on MRO services. The turnaround was a result of MHI's efforts to reduce production costs.
- ▶ In partnership with the Japan Aerospace Exploration Agency (JAXA), MHI has been developing the H3 launch system, whose maiden flight is scheduled for late 2020. The vehicle will mostly be used to launch military satellites of the Japanese IGS (Information Gathering Satellite) programme.

### Export markets

- ▶ MHI generated 52% of its 2019/2020 revenues from exports, but sales mainly consisted of civil machinery and equipment.
- ▶ Since 2014, conditions for the export of Japanese defence equipment have been relaxed. Since then, MHI's efforts to get into foreign markets have mostly been focusing on the naval defence sector, even though no major military contract has been won by the group so far.
- ▶ In March 2020, the Philippines ordered two multi-mission ships based on the Kunigami-class patrol vessels. The contract, worth JPY 14.55 bn (€120m), is partly financed by the Japanese government, as only Japanese groups (MHI, Japan Marine Industry and Mitsui E&S) took part in the tender.
- ▶ In July 2020, the group successfully launched the UAE's Mars Hope probe with an H-IIA launch system from the Tanegashima space centre located on the namesake Island south of Kyushu, Japan.

### Technology and Innovation

- ▶ R&D spending amounted to JPY 147 bn (€1.2bn) in 2019/2020. MHI has around ten R&D centres in Japan and several research units in China, Singapore, the United Kingdom and the United States.
- ▶ The 11th Soryu-class submarine (the 6th unit built by MHI), entered service in March 2020 and is the first worldwide to be equipped with lithium-ion batteries.



# MTU AERO ENGINES

Aircraft engine manufacturer specialised in the production of aeronautical propulsion components and sub-systems. Also a major player in aeronautical maintenance.

## BUSINESS AREAS

Engine manufacturer and equipment supplier

- ▶ Aircraft propulsion systems and subsystems
- ▶ Equipment and components
- ▶ Engine MRO and gas turbines

## GOVERNANCE

Chairman of the Supervisory Board	Klaus Eberhardt
Chairman and CEO	Reiner Winkler
Chief Program Officer	Michael Schreyögg

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	MTX
Listed on	XETRA
Market Cap (€m)	10 157

### Major shareholders (as of 10.11.2020)

Capital Research & Management Co. (World Investors)	7,47%
Allianz Global Investors GmbH	5,04%
Comgest SA	3,09%
The Vanguard Group, Inc.	3,07%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
EUROJET Turbo GmbH	33%	Germany
EPI Europrop International GmbH	28%	Germany
MTU Turbomeca Rolls-Royce GmbH	33,33%	Germany
MTU Turbomeca Rolls-Royce ITP GmbH	25%	Germany
AES Aerospace Embedded Solutions GmbH	50%	Germany
Turbo Union GmbH	39,98%	United Kingdom

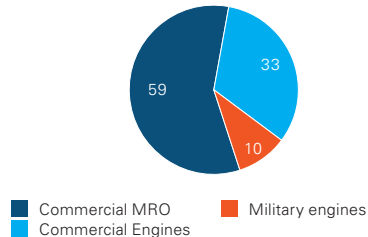
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017*	2018	2019
Revenue	4 733	3 897	4 567	4 628
Δ (%)	6,72%	-17,66%	17,19%	1,34%
Defence (%)	11%	11%	9%	10%
Export (%)	89%	88%	89%	89%
Operating profit/loss	453	521	620	706
Operating margin	9,57%	13,37%	13,58%	15,25%
Net income**	312	355	447	478
Order book	14 172	14 893	17 573	19 821
Employees	8 368	8 846	9 731	10 660

\*Figures restated

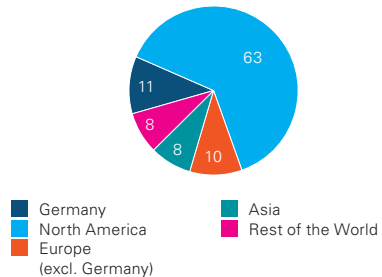
\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)\*



\*Revenue distribution based on total sales excluding eliminations

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Safran	ITP Aero*	Rolls-Royce	Avio Aero**	GE Aviation	Magellan Aerospace	Pratt & Whitney***	Japanese Aero Engines	Lockheed Martin	GKN Aerospace
<b>Fighter aircraft engines</b>										
NEFE (Next European Fighter Engine, FCAS programme)	●									
F414 (F/A-18E/F, EA-18G, JAS-39E/F)				●	●					●
EJ200 (Eurofighter Typhoon)		●	●	●						
F110 (F-15, F-16)	●			●	●					●
<b>Transport aircraft engines</b>										
TP400-D6 (A400M)	●	●	●							
V2500 (KC-390)						●	●			
PW2000 (C-17)				●		●				●
<b>Helicopter turbines</b>										
T408 (CH-53K)					●					
MTR390-2C (Tiger)	●	●	●							
<b>Gas turbines</b>										
LM2500 series		●			●					
LM5000 and LM6000					●					
ASE series										
TF series										
<b>MRO and spare parts</b>										
Larzac 04 engine (Alpha Jet)	●		●							
CF6-50C2 engine (KC-10)								●		
Tyne Mk 21/22 engine (C-160, Breguet Br 1150 Atlantic)	●		●							
MTR390 turbine series (Tigre)	●		●							
T64 turbine (CH-53G)			●		●					

\*Rolls-Royce group \*\*GE Aviation group \*\*\*Raytheon Technologies group (merger of Raytheon and UTC)



## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ MTU Aero Engines revenues reached €4.6bn in 2019, up 1.3% year-on-year. Growth was driven by the Civil Engines division (+10.1%) amid the success of the V2500 (Airbus A320 family) and PW1100G-JM (Airbus A320neo) engines. On the other hand, after several years of strong growth, sales in the Civil Maintenance division declined by 3.2%.
- ▶ Sales in the Military Engines division, which has been experiencing difficulties in recent years, grew by 6.4% in 2019 to €459m, thanks to more favourable demand for the EJ200 engine powering Typhoon fighter aircraft (related to contracts won with Qatar and Germany in 2018-2019). However, the division's share in the group's total revenues has halved over the past decade (20.1% in 2009 and 9.9% in 2019).
- ▶ In June 2020, MTU Aero Engines announced that Klaus Eberhardt, Chairman of the group's Supervisory Board since 2008, will remain in office until 2023.
- ▶ Being highly dependent on demand in the civil aviation market, the group was severely impacted by the coronavirus crisis. MTU Aero Engines' military business has also been suffering due to the production stoppage at its main sites in Germany for three weeks in April 2020. Against this backdrop, the group's sales declined by 8.7% in the first half of 2020. In response to the crisis, MTU Aero Engines announced a 10% to 15% reduction in its workforce by the end of 2021.

### Home market

- ▶ MTU Aero Engines generated 10.5% of its revenue in Germany in 2019, a share that has been declining in recent years (down 10 percentage points compared with 2009).
- ▶ In October 2019, the group inaugurated a new test centre for engine parts at its Munich site. MTU Aero Engines has invested €25m in this new centre, which took almost two years to build.
- ▶ In December 2019, MTU Aero Engines and Safran Aircraft Engines signed an agreement to develop the Next European Fighter Engine (NEFE, a component of the FCAS programme). Safran Aircraft Engines will be the prime contractor and MTU Aero Engines the main partner for phase 1A. The two manufacturers will also create a 50/50 joint venture by 2021 to handle development, production and after-sales support activities for the future engine.
- ▶ In February 2020, the French and German governments awarded Dassault Aviation, Airbus, MBDA, MTU Aero Engines, Safran and Thales the contract for the initial demonstrator of the FCAS (Future Combat Air System). The contract covers an 18-month phase and marks the beginning of the development of the NGF (New Generation Fighter).

### Export markets

- ▶ MTU Aero Engines' export sales increased 1.7% year-on-year to €4.1bn in 2019, representing more than 89% of the group's total sales. To continue enhancing its international presence, MTU opened new maintenance centres (Serbia in June 2019) and representative offices (Singapore in September 2019, United Arab Emirates and Ireland in February 2020, etc.).
- ▶ In February 2020, MTU Maintenance Canada was awarded a 10-year, \$225m (€204m) contract for the maintenance, repair and modernisation of the F138 engines of the U.S. Air Force's C-5M Super Galaxy (Lockheed Martin) transport aircraft. The contract was awarded via the Canadian Commercial Corporation.

### Technology and Innovation

- ▶ Total R&D expenditure at MTU Aero Engines amounted to €214m in 2019, up 16.9% on the previous year, of which 86% were self-financed. Total R&D expenditure represented 4.6% of group sales, compared with 4.4% in 2018.



# NAMMO

Group equally controlled by the Norwegian State (50%) and Finland's Patria (50%).  
94th-largest defence contractor worldwide.

## BUSINESS AREAS

Ammunition provider, systems integrator/  
equipment supplier

- ▶ Ammunition (all calibre)
- ▶ Weapon systems (shoulder fired systems, warheads and fuzes)
- ▶ Explosives and pyrotechnics (hand grenades, initiation systems)
- ▶ Propulsion systems (solid rocket motors for tactical missiles, booster rockets, hybrid rockets)
- ▶ Demilitarisation services (conventional ammunition)

## GOVERNANCE

Chairman

E. Rautalinko

Chief Executive Officer

M. Brandtzæg

Head of Operations

K. Kringsjå

## OWNERSHIP STRUCTURE

Symbol

Listed on

Unlisted group

Market Cap

Major shareholders (as of 10.11.2020)

Norwegian State

50%

Patria Oyj

50%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
SN Technologies SA	50%	Switzerland
Komm-In AS	8%	Norway
Sintef Raufoss Manufacturing AS	14%	Norway
Raufoss Industripark Holding	2%	Norway
MAC LLC	55%	United States

## KEY FIGURES (Fiscal year ended: December 31st)

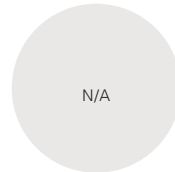
€ millions	2016	2017	2018	2019
Revenue	445	478	513	515
$\Delta$ (%) (NOK)*	9,23%	7,99%	10,26%	3,11%
Defence (%)	≈80%	≈80%	≈80%	≈80%
Export (%) **	76%	82%	80%	77%
Operating profit/loss	41	39	38	36
Operating margin	9,29%	8,23%	7,36%	6,94%
Net income***	30	22	25	19
Order book	525	472	584	755
Employees	2 102	2 217	2 409	2 377

\*Variation based on revenue in local currency  
See €NOK, p.7

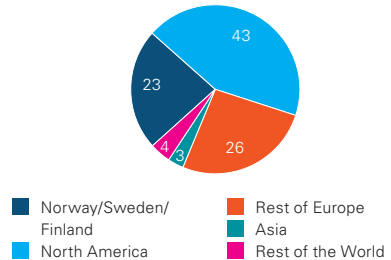
\*\* Total revenue excluding Norway/Sweden/Finland

\*\*\* Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Saab	PGZ	Boeing	General Dynamics	Raytheon Technologies*	ArianeGroup	Avio	Bertin Technologies**	Thales Alenia Space**	Diehl Defence	Kongsberg	MBDA
<b>Ammunition</b>												
Small caliber ammunition (4.6 mm - 12.7 mm)												
Medium caliber ammunition (12.7 mm - 57 mm)				●								
Large caliber ammunition (120 mm - 155 mm)			●	●	●							
Mortar rounds (60 mm, 81 mm and 120 mm)												
<b>Weapon systems</b>												
Warheads (M282) and fuzes (D652, Jupiter, Mercury, Venus)												
Shoulder-fired systems (M72 LAW, BDM, SMAW and SMAW-T)		●			●							
<b>Explosives and pyrotechnics</b>												
Hand grenades (fragmentation and smoke grenades)												
Hystrix grenade launch system												
Initiation systems												
<b>Propulsion systems</b>												
Solid propellant rocket motors for missiles (AMRAAM/SLAMRAAM, ESSM, IDAS, IRIS-T/IRIS-T SL, Penguin, Sidewinder)					●				●	●		
Auxiliary boost rocket motors (Exocet MM40, NSM)										●	●	
Separation and acceleration boosters (Ariane 5 launcher)						●						
Hybrid rocket motors	●						●		●			
Altair air-launch system (demonstrator)								●				
<b>Demilitarisation services</b>												
Demilitarisation and thermal treatment												●

\*Merger of Raytheon and UTC \*\*CNIM group

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Nammo revenues grew 3.1% to NOK 5.1 bn (€515m) in 2019. The group's order book also grew significantly (up 28% compared with 2018). Nammo generated 80% of its sales in the defence market in 2019, a share that has remained stable over the past years.
- ▶ In order to strengthen its position in the U.S. market, Nammo in late 2019 consolidated its production activities (previously spread over five U.S. states) into a single entity, Nammo Defense Systems, based in Mesa (AZ). The group will also invest \$20m (€18m) by mid-2021 for the purchase of new equipment at the Mesa site in order to support the delivery of new long-range artillery shells to the U.S. Army.
- ▶ In May 2020, the group additionally acquired Chemring Ordnance from British aerospace and defence technology group Chemring for \$17m (€15m). Based in Perry (Florida), the company specialises in the production of ammunition (40 mm ammunition, 57 mm naval ammunition) and pyrotechnic products (hand grenades, mine clearance systems).

### Finland, Norway, Sweden

- ▶ The result of the merger of three Nordic defence companies, Nammo remains very present in its domestic markets (Norway, Sweden, Finland) which accounted for 23% of its sales in 2019.
- ▶ Nammo is producing APEX 25 mm calibre ammunition for the Royal Norwegian Air Force's F-35 Lightning II (Lockheed Martin) fighter aircraft, under an agreement with the Norwegian Defense Materiel Agency (NDMA). The group aims to supply this ammunition to other armies using the F-35 as well.
- ▶ In June 2019, Nammo signed a four-year framework agreement with the Norwegian Defence Logistics Organisation (NDLO) for the supply of ammunition to the Norwegian Armed Forces for a total of NOK 1.7 bn (€173m).

### Export markets

- ▶ Nammo generated more than three-quarters of its sales from exports in 2019. North America remains the group's main market, accounting for 43% of its turnover.
- ▶ Nammo established various R&D partnerships with U.S. groups in 2019: with Boeing (over a 25-year period) to develop a wide range of artillery projectiles for the United States and allied countries, and with General Dynamics and U.S.-based Ordnance to develop a prototype 155 mm calibre RAP (Rocket Assisted Projectile) munition, the XM1113, for the U.S. Army.
- ▶ In January 2020, the U.S. Marine Corps awarded MAC LLC, a U.S. subsidiary of Nammo, a \$10m (€9m) contract to supply 2.4 million polymer casings for 50 mm calibre ammunition. Deliveries will take place between January 2021 and January 2024.

### Technology and Innovation

- ▶ Nammo's objective is to dedicate 10% of its annual revenues to R&D activities, including in the fields of long-range ammunition, medium-calibre ammunition (30 and 40 mm), ammunition for the F-35 Lightning II, and hybrid rocket engines.
- ▶ Since 2015, Nammo has been participating, alongside seven other European partners, in ONERA's Altair (Air Launch space Transportation using an Automated aircraft and an Innovative Rocket) microlauncher project. The last test flight campaign of the demonstrator was conducted in French Guiana in autumn 2019.
- ▶ The group presented various innovations over the recent months, including the Swimmer, a 30 mm calibre ammunition capable of shooting straight through water, as well as an advanced solid-fuel ramjet (SFRJ) designed to provide hypersonic speed (between Mach 3.5 and Mach 5) and greater range to missiles and artillery shells.

# NAVAL GROUP

Leading French and European naval defence company. Exporter, in particular, of first-class frigates and submarines, and 30th-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Surface ships
- ▶ Submarines (conventionally and nuclear-powered)
- ▶ Underwater weapons
- ▶ Combat systems, navigation systems, naval integration of unmanned systems
- ▶ Maintenance, modernisation and associated services for naval bases
- ▶ Marine energies and civil nuclear energy

## GOVERNANCE

Chairman and CEO

P.-É. Pommellet

General Secretary

J.-Y. Battesti

Executive VP Programs

O. de la Bourdonnaye

## OWNERSHIP STRUCTURE

Symbol

Listed on

Unlisted group

Market Cap

Major shareholders (as of 10.11.2020)

French State	62,25%
Thales	35,00%
FCPE Actions Naval Group	1,73%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Kership	45%	France
Itaguaí Construções Navais SA (ICN)	41%	Brazil
Boustead DCNS Naval Corporation Sdn Bhd (BDNC)	40%	Malaysia
Technicatome	20,32%	France
Les Chantiers de l'Atlantique	11,7%	France
DCNS Zamil	55%	Saudi Arabia
Naviris S.p.A	50%	Italy

## KEY FIGURES (Fiscal year ended: December 31st)

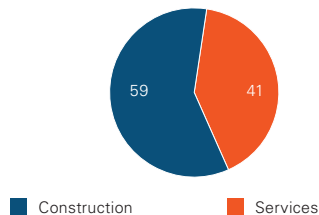
€ millions	2016	2017*	2018	2019
Revenue	3 191	3 194	3 608	3 712
Δ (%)	5,00%	0,09%	12,96%	2,88%
Defence (%)	≈ 95%	≈ 95%	≈ 95%	≈ 95%
Export (%)	38%	36%	30%	29%
Operating profit/loss**	103	98	266	282
Operating margin	3,23%	3,07%	7,37%	7,60%
Net income***	94	93	178	188
Order book	11 629	13 773	13 830	15 062
Employees	13 870	14 515	14 860	15 168

\*Figures restated

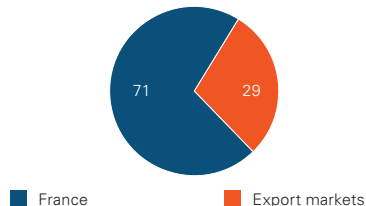
\*\*EBITA (Earnings Before Interest, Taxes and Amortization)

\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Thales	Technicatome	Fincantieri	Chantiers de l'Atlantique*	Leonardo	Mazagon Dock Limited	Odebrecht	Alexandria Shipyards	Boustead Naval Shipyard	Atlas Elektronik**	Lockheed Martin	ASC Pty Ltd	Pirou
<b>Submarines</b>													
Le Triomphant-class ballistic missile nuclear-powered submarine (SSBN)	●	●											
Barracuda-class nuclear-powered attack submarine (SSN)		●											
Scorpene-class conventionally-powered attack submarine (SSK)	●				●	●		●					
Attack-class conventionally-powered attack submarine (SSK)										●	●		
<b>Surface ships</b>													
Mistral-class amphibious helicopter carrier				●									
FREMM ASW/FREMM AAW multi-purpose frigates	●		●		●								
OPV, patrol vessels and corvettes (Gowind, OPV 90, MPV80, B2M)	●						●	●					●
FDI/Belharra-class frigates	●												
BRF replenishment vessel (FLOTLOG programme)***	●		●	●									
<b>Underwater weapons</b>													
F21 heavyweight torpedo	●								●				
MU90 lightweight torpedo	●				●								
<b>Systems and equipment</b>													
SUBTICS, SETIS and POLARIS combat management systems	●					●	●	●	●				●
Sylver vertical launching system			●										
<b>MRO and services</b>													
Horizon-class air defence frigates modernisation													

\*Formerly STX France \*\*TKMS, ThyssenKrupp AG group \*\*\*Based on Italian Navy's Vulcano-class LSS

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Naval Group's revenue reached €3.7bn in 2019, up 2.9% year-on-year. Growth was mainly driven by major national programmes (Barracuda-class SNAs and FREMM-class frigates) but also by a contract for the construction of conventional submarines in Australia (design phase).
- ▶ In December 2019, Naval Group and Fincantieri formalised their alliance (Poseidon project) by creating the Naviris joint venture. The alliance will enable the two groups to conduct joint R&D projects and jointly prepare surface ship bids for binational programmes and export markets. Naviris won two contracts with OCCAr in 2020: a feasibility study for the mid-life refit of the Horizon frigates, and an R&T programme to improve the performance of Naval Group and Fincantieri ships.
- ▶ Pierre-Éric Pommellet became Chairman and CEO of Naval Group, replacing Hervé Guillou. He previously held the position of Executive Vice President of Operations and Performance at Thales. At the same time, the group's Board of Directors was partly renewed.
- ▶ In response to the COVID-19 related health crisis and the slowdown in production, Naval Group implemented a series of cost-saving measures, including the postponement of non-priority investment projects.

### Home market

- ▶ Naval Group generated more than 70% of its turnover on its domestic market in 2019. The group is the prime contractor for the French Navy's main construction and modernisation programmes.
- ▶ In July 2019, the French defence procurement agency DGA awarded Naval Group and TechnicAtome the contract to build the sixth and last new-generation Barracuda-class nuclear attack submarine (SNA), which will be named Casabianca.
- ▶ Construction of the first Logistic Support Ship (LSS, or Bâtiment Ravitailleur de Forces, BRF) for the French Navy (FLOTLOG programme) began in May 2020. In 2019, OCCAr had awarded Naval Group and Chantiers de l'Atlantique a €1.7bn contract for the construction and MCO of four LSS.
- ▶ In June 2020, the French Ministry of the Armed Forces launched the programme aimed at equipping France with 10 ocean patrol vessels by 2030 (for an estimated €1bn). An initial design contract should soon be awarded to Naval Group.

### Export markets

- ▶ Naval Group generated 29% of its sales from exports in 2019.
- ▶ Naval Group won several export contracts in 2019, including orders for two Gowind-class corvettes by a Middle Eastern country (€750m), four Gowind-class corvettes in Romania (€1.2bn, in partnership with Santierul Naval Constanta, ongoing appeals filed by Damen and Fincantieri), twelve mine-hunting vessels in Belgium and the Netherlands via Belgium Naval & Robotics (Naval Group/ECA Group) (€2bn), and three OPV 58 patrol vessels in Senegal (in partnership with Piriou through the Kership joint venture).
- ▶ Naval Group is participating in the call for tenders for the supply of four submarines to replace the Royal Netherlands Navy's Walrus-class submarines (a contract worth approximately €2.5bn), as well as in the Indian P-75I project for the construction of six conventional submarines.

### Technology and Innovation

- ▶ Naval Group's self-financed R&D expenditure amounted to €117m in 2019, representing 3.2% of revenue.
- ▶ In 2019, the group has created two R&D centers of excellence in Australia and Singapore.
- ▶ Naval Group is also investing nearly €13m in a 4,700 square metre facility dedicated to innovation at its Ruelle-sur-Touvre site. The facility, which was inaugurated in late 2019, has been named Innov' Factory.



# NAVANTIA

Spain's leading defence contractor, 100% state-owned, mainly operates in naval construction (civil and military).

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Military shipbuilding (Landing Helicopter Dock (LHD) ships, frigates, corvettes, patrol vessels, submarines)
- ▶ Commercial shipbuilding
- ▶ Systems and equipment
- ▶ Propulsion systems
- ▶ MRO and modernisation services
- ▶ Marine energies

## GOVERNANCE

Chairwoman and CEO	S. de Sarriá Sopena
Head of Operations	G. Mateo-Guerrero Alcázar
Chief Financial Officer	J. Bagüés Oliver

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

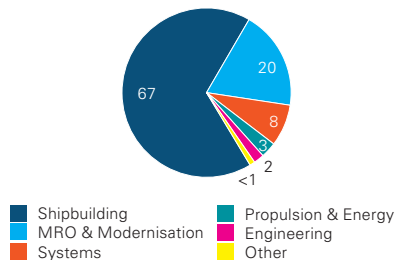
Major shareholders (as of 10.11.2020)

Spanish State (via SEPI)	100%
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## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	710	851	1 083	1 213
Δ (%)	3,05%	19,86%	27,26%	12,00%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	40%	33%	38%	61%
Operating profit/loss	-277	-367	-221	-124
Operating margin	-39,01%	-43,13%	-20,41%	-10,22%
Net income	-230	-297	-226	-146
Order book	2 163	1 680	4 671	8 257
Employees	5 296	5 172	4 953	3 865

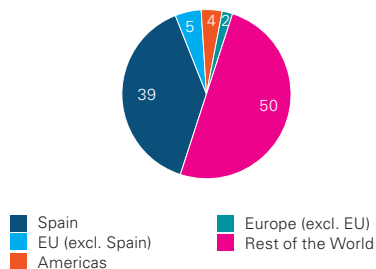
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Sociber Ltda.	50%	Chili
Inmize Capital S.L	20%	Spain
SAES Capital	51%	Spain
SAMI Navantia Naval Industries	49%	Saudi Arabia

## REVENUE BY REGION (%)





## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	SAMI*	MTU**	Seedef	Lockheed Martin	General Dynamics	Indra Systems	BAE Systems	Larsen & Toubro	Avio Aero***	ASC Pty Ltd	Raytheon Technologies****	Elbit Systems	GE Aviation	EXPAL
<b>Submarines</b>														
S-80 Plus-class conventionally-powered attack submarine			●	●	●			●						
<b>LHD and surface ships</b>														
Juan Carlos I/Canberra-class LHD		●		●	●	●							●	
Alfa 3000 and Alfa 4000/Alfa 4000 MM frigates														
F110 Bonifaz-class multi-mission frigate	●		●	●					●					
F100 Álvaro de Bazán-class multi-mission frigate			●	●					●		●			
Hobart-class air warfare destroyer			●	●		●		●	●		●			
Avante-class family of corvettes	●	●												
BAM Meteoro-class multi-purpose offshore patrol vessel		●		●										
<b>Auxiliary ships</b>														
Cantabria/Supply-class auxiliary oiler replenishment														
LCM-1E-class amphibious landing craft														
<b>Systems and equipment</b>														
SCOMBA naval combat management system (Juan Carlos I LHD, F-100-class frigates, BAM-class patrol vessels)			●											
DORNA fire control system			●											
<b>Propulsion systems</b>														
MTU series 396, 956, 1163 and 4000 marine engines (sub-licensed production)		●												
<b>Weapon systems</b>														
Tizona 30 mm turret (VCR 8x8)												●		●

\*Saudi Arabian Military Industries \*\*MTU Friedrichshafen, Rolls-Royce group \*\*\*GE Aviation group \*\*\*\*Merger of Raytheon and UTC

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Navantia revenues increased for the fifth consecutive year (+12.0%) to €1.2bn in 2019, driven by strong growth in the Shipbuilding and MCO and modernisation divisions. On the other hand, despite a restructuring plan launched in July 2017 and a significant reduction of its workforce in 2019, Navantia again reported operating losses of €124m in 2019 (representing an operating margin of -10.23%).
- ▶ The group's order book increased from €1.7bn in 2017 to €8.3bn in 2019, driven mostly by the Spanish Navy's S-80 Plus submarine and F-110 frigate programmes as well as Saudi Arabia's Avante 2200 corvette programme.
- ▶ Navantia, which generates the majority of its turnover in defence, is pursuing a diversification strategy focused on civil sector activities, particularly in the field of marine renewable energies.
- ▶ In August 2019, Navantia announced an investment of more than €160m to modernise the Ferrol shipyard located in Galicia (north-western Spain), mainly for the production of F-110-class frigates.

## Home market

- ▶ Despite a sharp decline in revenue in its domestic market in 2019 (-30.0% to €471m), the group remains highly reliant on orders from the Spanish Navy, with two programmes running until the end of the 2020s (S-80 Plus submarines and F-110 frigates).
- ▶ Delivery of the first of four S-80 Plus submarines is now scheduled for 2022 instead of 2015, with Navantia running seven years behind schedule due to major technical difficulties encountered during construction. The additional cost of the programme is estimated at between €1.5-€1.8 bn and is weighing on its operational performance.
- ▶ In May 2019, Navantia won a €4.3bn contract from the Spanish Ministry of Defence to build five F-110 frigates by 2027 which will replace the six Santa María-class frigates.

## Export markets

- ▶ 61% of the group's revenue was generated from exports in 2019, a share that was significantly higher than in 2018 (38%).
- ▶ Navantia has won several contracts in Australia in recent years for the construction of two Canberra-class helicopter carriers, 12 LCM-1E landing craft, three Hobart-class destroyers as well as two supply vessels, making the group a strategic partner of the Royal Australian Navy. The first supply ship should enter service at the end of 2020, and the second in 2022.
- ▶ In September 2019, Navantia and British maritime engineering company BMT (later joined by Harland and Wolff) joined forces to respond to the UK Ministry of Defence's Fleet Solid Support (FSS) programme for the construction of three support ships designed to supply solid cargo and munitions to the Royal Navy's new aircraft carriers.
- ▶ In September 2019, Navantia signed a €900m contract with Saudi Arabian state-owned defence company SAMI for the integration of combat systems into the Avante 2200-class corvettes ordered by Saudi Arabia in 2017. The works will be carried out locally by the two companies' joint venture SAMI Navantia Naval Industries. During the summer of 2020, the first ship was launched and the keel of the third was laid at the San Fernando shipyard near Cádiz (south-western Spain). The fifth and last ship is to be delivered by 2024.

## Technology and Innovation

- ▶ At the 2019 FEINDEF international defence trade fair in Madrid, Navantia, EXPAL and Elbit Systems together unveiled the 30 mm Tizona turret. Developed within the framework of a cooperation agreement signed at the end of 2018, the turret will equip the Spanish Armed Forces' 8x8 Dragón armoured vehicles, supplied by Santa Bárbara Sistemas (General Dynamics).



# NORTHROP GRUMMAN

Aerospace and defence company with a highly diversified portfolio of activities (military aircraft, drones, missiles, space, etc.). Fourth-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer, systems integrator/  
equipment supplier

- ▶ Military aircraft and unmanned aircraft systems
- ▶ Defence electronics and C4ISR systems
- ▶ Missile and weapon systems
- ▶ Space (equipment, payloads)
- ▶ Cybersecurity
- ▶ Modernisation and logistic services

## GOVERNANCE

Chairwoman and CEO	K. J. Warden
President Aerospace Systems	J. G. Pamijans
Chief Financial Officer	K. L. Bedingfield

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	NOC
Listed on	NYSE
Market Cap (\$m)	50 228

### Major shareholders (as of 10.11.2020)

Capital Research & Management Co.	18,90%
SSgA Funds Management, Inc.	9,91%
Capital Research & Management Co. (International Investors)	9,78%
The Vanguard Group, Inc.	7,29%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Longbow LLC	50%	United States
EuroHawk GmbH	50%	Germany

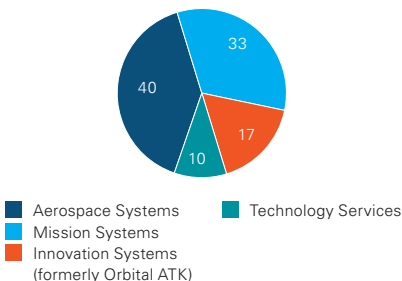
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016**	2017**	2018	2019
Revenue	22 318	23 012	25 483	30 215
Δ (%)/[\$]*	5,02%	5,25%	15,73%	12,45%
Defence (%)	82%	86%	85%	N/A
Export (%)	13%	13%	15%	15%
Operating profit/loss	2 960	2 848	3 201	3 544
Operating margin	13,26%	12,38%	12,56%	11,73%
Net income	1 846	2 539	2 734	2 007
Order book	43 016	35 554	46 725	57 738
Employees	67 000	70 000	85 000	90 000

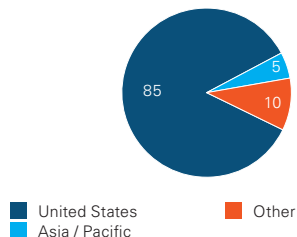
\*Variation based on revenue in local currency  
See €/\$, p.7

\*\*Figures restated

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Boeing	MBDA	Rolls-Royce	Lockheed Martin	Raytheon Technologies*	Bell Helicopter**	L3Harris Technologies***	Pratt & Whitney****	Collins Aerospace*****	Honeywell International	BAE Systems	GE Aviation
<b>Military aircraft</b>												
B-21 Raider future strategic bomber							●	●		●		
B-2 Spirit strategic bomber	●			●								●
E-2C/D Hawkeye surveillance aircraft			●	●	●		●		●		●	
E-8C Joint Surveillance Target Attack Radar Systems (JSTARS) surveillance aircraft	●						●					
F-35 Lightning II (fuselage, radar, etc.)				●							●	
F/A-18E/F Super Hornet (fuselage) and EA-18G Growler (electronic warfare suite)	●											
<b>Unmanned aircraft systems (UAS)</b>												
RQ-4 Global Hawk HALE UAS			●	●	●							
MQ-4C Triton HALE UAS			●	●	●					●		
MQ-8 Fire Scout VTOL UAS			●	●	●	●	●	●	●		●	
<b>C4ISR systems</b>												
Integrated Air and Missile Defense Battle Command System (IBCS) command and control (C2) system	●	●		●								
Battlefield Airborne Communications Node (BACN) system				●	●		●					
<b>Missile and weapon systems</b>												
AGM-88E AARGM and AARGM-ER air-launched tactical missile systems		●										
Bushmaster cannons (M242, Mk44, M230)											●	
<b>Space</b>												
Omega future launcher												
Advanced Extremely High Frequency (AEHF) payloads				●								

\*Merger of Raytheon and UTC \*\*Textron group \*\*\*Merger of L3 Technologies and Harris Corporation \*\*\*\*Raytheon Technologies group

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Northrop Grumman revenues rose 12.4% year-on-year to \$33.8bn (€30.2bn) in 2019. Growth was mainly driven by the acquisition of Orbital ATK (completed in June 2018) which became Northrop Grumman Innovation Systems, the group's fourth division (compared with three previously).
- ▶ The acquisition of Orbital ATK has enabled Northrop Grumman to broaden its offering, especially of missiles, weapons systems and space equipment (in particular the future Omega launcher), and to strengthen its role as a key supplier to the U.S. Department of Defense. The group also provides military aircraft, drones, radars, C4ISR, cyber security, etc. About 85% of the group's business is attributable to the defence sector.
- ▶ So far, Northrop Grumman reported only a minor impact from the COVID-19 related health crisis on its business. In fact, revenues grew by 5.8% in the first nine months of 2020 compared to the same period in 2019.

### Home market

- ▶ The U.S. remain Northrop Grumman's main market, accounting for 85% of its sales in 2019 (including under FMS procedures). The group is one of the main national players in the surveillance aircraft (E-2C/D Hawkeye) and military UAV (MQ-4C Triton) segments.
- ▶ Northrop Grumman is involved in several U.S. Air Force strategic programmes. Among others, it was selected in 2015 to develop the U.S. Air Force's future bomber, the B-21 Raider, and in December 2019 was commissioned to develop its future intercontinental ballistic missile (Ground Based Strategic Deterrent programme, or GBSD). The cost of the latter programme is estimated at \$63bn (€57bn) over a period of 20 years.
- ▶ In September 2019, Northrop Grumman signed a five-year, \$495m (€442m) contract with the U.S. Air Force for the modernisation and maintenance of its fleet of E-8C Joint STARS surveillance aircraft (17 aircraft, including 1 training aircraft).
- ▶ In December 2019, the U.S. Department of Defense awarded a \$1bn (€893m) contract to Northrop Grumman to develop and produce, by 2027, 372 new active antenna radars for the F-16 Fighting Falcon fighter aircraft (Lockheed Martin).
- ▶ In March 2020, Northrop Grumman signed a \$165m (€150m) contract for the production of batch 9 of AGM-88E AARGM missiles for the U.S. Navy and allied countries under the framework of FMS procedures.
- ▶ In May 2020, the U.S. Space Force awarded Northrop Grumman a \$2.37bn (€2.15bn) contract to produce two anti-missile warning satellites which will be put into polar orbit by 2027 as part of the Next-Gen OPIR (Next-Generation Overhead Persistent Infrared) programme.

### Export markets

- ▶ Northrop Grumman has strengthened its international presence over the recent years. The group generated 15% of its sales from exports in 2019, a share that has increased by 7 percentage points since 2011.
- ▶ Following the signing of a \$713m (€636m) contract in March 2019 to supply the C2 IBCS system to Poland as part of the first phase of the country's WISLA air and missile defence programme, Northrop Grumman in November 2019 opened an office in Warsaw in order to support the Polish Armed Forces' modernisation programmes.
- ▶ In September 2019, the U.S. Navy awarded a \$1.4bn (€1.3bn) contract to Northrop Grumman to supply nine E-2D Advanced Hawkeye surveillance aircraft to the Japan Self-Defense Forces (JSDF). In June 2020, Northrop Grumman signed a \$333m (€302m) contract with the U.S. Department of Defense for the supply of three MQ-4C Triton UAVs to Australia. The UAVs should be delivered by 2025.

### Technology and Innovation

- ▶ Self-financed R&D expenditure amounted to \$953m (€851m) in 2019, representing 2.8% of sales.



Leading German and third-largest European space technology company, responsible for the SAR-Lupe/SARah satellite systems and supplier to the Ariane 6 programme.

## BUSINESS AREAS

Platform manufacturer, systems integrator/  
equipment supplier

- ▶ Space systems (development and production of satellites and payloads)
- ▶ Production of structures, components and propulsion systems

## GOVERNANCE

Chairman of the Supervisory Board	Robert Wethmar
Chief Executive Officer	Marco R. Fuchs
Chief Financial Officer	Kurt Melching

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	OHB
Listed on	XETRA
Market Cap (€m)	660

### Major shareholders (as of 10.11.2020)

Marco R. Fuchs*	34,60%
VOLPAIA Beteiligungs-GmbH*	21,40%
Christa Fuchs*	8,03%
Mayrhofer Romana Fuchs*	7,89%

\*Fuchs family

## MAIN JOINT VENTURES AND ASSOCIATES

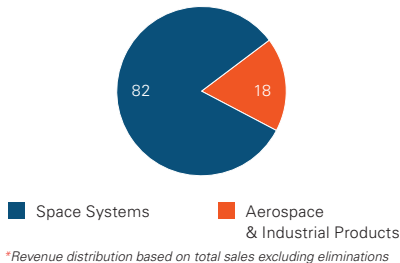
Name	%	Country
MT Aerospace Holding GmbH	70%	Germany
Arianespace Participation	5,8%	France
OHB COSMOS Space Systems AG	66,7%	Germany
Rocket Factory Augsburg AG	46,4%	Germany
Antares Scarl	24%	Italy

## KEY FIGURES (Fiscal year ended: December 31st)

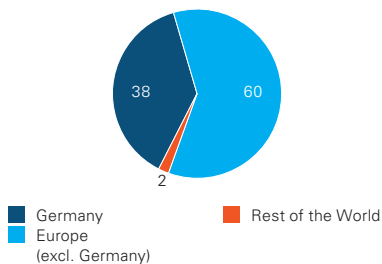
€ millions	2016	2017	2018	2019
Revenue	728	860	1 000	1 030
Δ (%)	-0,27%	18,13%	16,28%	3,00%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	66%	64%	66%	62%
Operating profit/loss	43	44	48	49
Operating margin	5,91%	5,12%	4,80%	4,76%
Net income*	22	23	25	26
Order book	1 560	2 439	2 399	1 840
Employees	2 298	2 420	2 769	2 933

\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)\*



## REVENUE BY REGION (%)\*



MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	Tesat-Spacecom*	Avio	ArianeGroup	Arianespace**	Collins Aerospace***	Surrey Aerospace***	Thales Alenia Space	RUAG	Stemme	Leonardo	Boeing
<b>Space launch</b>												
RFA One small-lift launch vehicle project												
<b>Satellite systems</b>												
SARah military satellite-based reconnaissance system	●											
SAR-Lupe military satellite-based reconnaissance system	●	●					●	●				
European Data Relay System (EDRS-C)	●	●	●	●								
Electra communications satellite	●				●							
Heinrich Hertz (H2Sat) communications satellite		●		●								
National Advanced Optical System (NAOS) military reconnaissance satellite				●								
Sentinel Earth observation satellites	●						●					
PRISMA Earth observation satellite				●							●	
Galileo European global navigation satellite system	●			●		●	●					
<b>Structures, components and propulsion systems</b>												
Structures, parts and components for launchers (Ariane 5 and Ariane 6)			●	●								
Propulsion systems (cold-gas, electrical, monopropellant and bipropellant systems)			●								●	
Antennas and mechatronics (ALMA programme)							●					
Aircraft components (A400M)	●											
<b>Airborne systems</b>												
OMCoSS multimission communication and surveillance system										●		
Aerial Reconnaissance Data System (ARDS)	●											

\*Subsidiary of Airbus \*\*Subsidiary of ArianeGroup \*\*\*Raytheon Technologies group (merger of Raytheon and UTC)

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ OHB revenues reaches €1.03bn in 2019, up 3.0% year-on-year. Growth was driven by the Space Systems division (up 5.4% before consolidation). By contrast, business in the Aerospace and Industrial Products division declined by 6.5% (before consolidation), hampered by the gradual end of the Ariane 5 programme.
- ▶ A key supplier to the European Space Agency (ESA), its largest customer, and to Germany, which is seeking to develop national expertise in the strategic space sector, OHB operates in the space sector via its two main subsidiaries OHB System AG and MT Aerospace AG.
- ▶ The group is responsible for several satellite programmes of the German Space Agency and the Bundeswehr (SAR-Lupe/SARah, Heinrich Hertz, EnMAP, etc.). OHB also supplies the satellites for the European Galileo positioning system and, through the production of structures and components, is responsible for 23% of the Ariane 6 space launcher (out of Germany's 26% share of the programme).
- ▶ For the financial year 2020, OHB revised its revenue projections downwards to just under €1bn (compared to €1.1bn before), due to the delay in the Ariane 6 programme (postponement of the inaugural flight to 2021) and the impact of the coronavirus-related health crisis on supply chains.

## Home market

- ▶ OHB generated 38% of its revenue in Germany in 2019, a share that has remained stable in recent years.
- ▶ As part of the SARah programme, for which OHB is the prime contractor, Germany's Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw) in August 2019 awarded OHB System AG a €91m contract to integrate cybersecurity solutions into the military intelligence satellite system.

## Export markets

- ▶ OHB's export sales amounted to €620m in 2019, down 3.9% year-on-year, and are almost exclusively related to space programmes. The share of export sales in total revenues has settled at over 60% since 2014.
- ▶ In the summer of 2019, OHB received the first two navigation payloads from its partner Surrey Satellite Technology (Airbus' British subsidiary) for the Batch 3 satellites of the Galileo programme. The group is responsible for the design, production and testing of these satellites, of which it must supply 12 units from 2020 (European Space Agency contract awarded to OHB in 2017).
- ▶ In October 2019, the future Ariane 6 launcher, in which OHB is participating via its subsidiary MT Aerospace AG, successfully passed its detailed design review and entered its final qualification phase. Initially scheduled for July 2020, the launcher's maiden flight was finally postponed to early 2021.
- ▶ In July 2020, the European Space Agency awarded a €2.55bn contract to several European manufacturers to produce six new Sentinel earth observation satellites between 2025 and 2029 as part of the Copernicus programme. OHB, which will receive €445m under this contract, is the prime contractor for the Sentinel 7 satellite, dedicated to monitoring CO2 emissions produced by human activity using infrared spectrometers (CO2M mission).

## Technology and Innovation

- ▶ OHB's total R&D expenditure reached €18.8m in 2019, representing 1.8% of sales. Nearly 80% of the group's R&D expenditure is related to the Space Systems division.
- ▶ Through its subsidiary Rocket Factory Augsburg (created in July 2018), OHB is developing the RFA One micro-launcher, whose maiden flight is scheduled for the end of 2021. The micro-launcher will be 19 metres high and have a payload capacity of 300 kg in low orbit. The group also plans to offer its own launch service and is looking for a site in Europe (Azores, Scotland, Norway, Sweden, etc.).





# OSHKOSH DEFENSE

Designer and manufacturer of military tactical and logistic vehicles. Defence subsidiary of the Oshkosh Corporation, and 50th-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Wheeled armoured vehicles
- ▶ Tactical and logistic vehicles
- ▶ Armoured vehicle propulsion systems
- ▶ MRO and modernisation services

## GOVERNANCE

Executive Vice President	John Bryant
Chief Operating Officer	Don Bent
Chief Financial Officer	Tim Bleck

## KEY FIGURES (Fiscal year ended: September 30th)

€ millions	2015-16	2016-17	2017-18	2018-19
Revenue	1 216	1 647	1 537	1 802
Δ (%)/\$)*	43,76%	34,71%	0,48%	11,11%
Defence (%)	100%	100%	100%	100%
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss	110	188	189	180
Operating margin	9,07%	11,42%	12,32%	10,00%
Net income	N/A	N/A	N/A	N/A
Order book	2 088	1 770	1 602	2 287
Employees	N/A	N/A	N/A	N/A

\*Variation based on revenue in local currency  
See €/\$, p.7

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted subsidiary
Market Cap	

Major shareholders (as of 10.11.2020)

Oshkosh Corporation	100%
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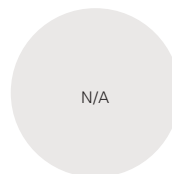
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Oshkosh Al Tadrea Manufacturing (OTM)	N/A	Saudi Arabia

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Plesian	Northrop	Leonardo	Grumman*	Collins Aerospace**	MTU***	EOS
<b>Light tactical vehicles</b>							
Joint Light Tactical Vehicle (JLTV)							
Light Combat Tactical All-Terrain Vehicle (LATV)	●						
Special Purpose All-Terrain Vehicle (S-ATV)							
<b>Medium tactical vehicles</b>							
FMTV and FMTV A2 families of tactical trucks							
4x4 and 6x6 MTT family of medium tactical trucks							
6x6 MTRV family of medium tactical vehicle replacement							
<b>Heavy tactical vehicles</b>							
8x8 HEMTT A4 tactical truck							
8x8 Heavy Equipment Transporter (HET)							
8x8 Logistics Vehicle System Replacement (LVSr)			●				
10x10 Palletised Load System (PLS)							
<b>Wheeled Tanker</b>							
<b>Highly protected armoured vehicles</b>							
MRAP M-ATV family of multi-purpose vehicles	●	●					●
<b>Vehicle systems and equipment</b>							
TAK-4 and TAK-4 new generation independent suspension systems				●			
TerraMax unmanned ground vehicle technology							
ProPulse hybrid propulsion system							

\*Innovation Systems division, formerly Orbital ATK

\*\*Formerly Rockwell Collins, Raytheon Technologies group (merger of Raytheon and UTC)

\*\*\*Rolls-Royce group

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ After stabilising in 2017-2018, Oshkosh Defense revenues increased by 11.1% in local currency to \$2.0bn (€1.8bn) during the 2018-2019 financial year, driven mainly by the Joint Light Tactical Vehicle (JLTV) and MRAP-ATV programmes. However, the company's activity remains far from its 2012-2013 level (\$3.0bn, or €2.3bn).
- ▶ In 2018-2019, Oshkosh Defense's business accounted for 24% of the consolidated sales of Oshkosh Corporation, a U.S. group specialising in the manufacture of trucks and truck bodies for defence, industrial and fire-fighting applications.
- ▶ As of 2020, Oshkosh Corporation did not expect any impact of the coronavirus crisis on the activity of its Oshkosh Defense subsidiary.

### Home market

- ▶ The U.S. Department of Defense is Oshkosh Defense's main customer (more than 80% of turnover, excluding Foreign Military Sales procedures). The contracts won are mainly multi-year contracts (production of land vehicles and systems/equipment for vehicles, maintenance in operational condition).
- ▶ Oshkosh Defense is involved in an eight-year, \$6.7bn (€5.8bn) contract signed in August 2015 with the U.S. Department of Defense to provide the U.S. Armed Forces and allied countries with approximately 17,000 JLTV light tactical vehicles (7,500 units have been delivered by October 2020). If all options are exercised, the contract could eventually provide Oshkosh Defense \$30bn over 20 years for the supply of 55,000 vehicles and associated services.
- ▶ In December 2019, the U.S. Department of Defense ordered 2,721 JLTV light tactical vehicles, mainly destined for the U.S. Armed Forces. The contract, worth a total of \$803.9m (€718m), also calls for the delivery of 30 such vehicles to Montenegro via an FMS procedure.
- ▶ In March 2020, the U.S. Army Contracting Command (ACC) awarded Oshkosh Defense a \$346.4m (€312m) contract to upgrade the U.S. Army and U.S. Army Reserve fleets of 8x8 HEMTT tactical trucks and 10x10 PLS (Palletised Load System) logistics trucks. New PLS vehicles (number of units undisclosed) will also be produced as part of this contract.

### Export markets

- ▶ Oshkosh Defense generated less than 20% of its turnover abroad, but aims to increase this share by 10 percentage points in the medium term. The Saudi market is a major target for the company. In this context, a joint venture was created in May 2020 with the Saudi group Al Tadrea Manufacturing, called Oshkosh Al Tadrea Manufacturing. Based in Saudi Arabia, the joint venture is dedicated to the production of armoured vehicles for the Armed Forces of Saudi Arabia.
- ▶ Under an FMS procedure, the U.S. Department of Defense in February 2020 approved the supply of 238 JLTV light tactical vehicles (200 for Lithuania and 38 for Slovenia), worth \$407.3m (€369m). Deliveries will be spread out until January 2022.
- ▶ In September 2020, the Belgian Council of Ministers confirmed an order for 322 JLTV light tactical vehicles worth €135m. Delivery of the first vehicles is expected in 2023.

### Technology and Innovation

- ▶ Oshkosh Defense's areas of innovation mainly include protection, remote operation and predictive maintenance systems. The entity is also currently working on autonomous military vehicles, particularly for the riskiest theatres of operation.



# PATRIA OYJ

Company mainly owned by the Finnish State (50.1%), mainly involved in the production of wheeled armoured vehicles and weapons systems. 90th-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Armoured wheeled vehicles
- ▶ Weapon systems (remote controlled weapon stations, mortar systems)
- ▶ C4ISTAR systems (ELINT systems, network management systems)
- ▶ Aerostructures
- ▶ Training, MRO and logistics support

## GOVERNANCE

Chairman	Panu Routila
Chief Executive Officer	Esa Rautalinko
Chief Financial Officer	Ville Jaakonsalo

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

Major shareholders (as of 10.11.2020)

Finnish State	50,1%
Kongsberg Defence & Aerospace AS	49,9%

## MAIN JOINT VENTURES AND ASSOCIATES

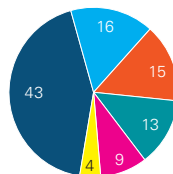
Name	%	Country
Defence Partnership Latvia SIA	70%	Lettonie
Millog Oy	61,8%	Finland
Milworks OÜ	60%	Estonia
Nammo AS	50%	Norway
Svensk Försvarslogistik AB	50%	Sweden
Kongsberg Aviation Maintenance Services AS (formerly AIM Norway)	49,9%	Norway
Silverskin Information Security Oy	25%	Finland

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	490	467	476	508
Δ (%)	14,54%	-4,63%	1,90%	6,60%
Defence (%)	95%	94%	92%	92%
Export (%)	41%	33%	27%	26%
Operating profit/loss	75	35	36	8
Operating margin	15,23%	7,41%	7,54%	1,54%
Net income*	56	22	25	0
Order book	858	692	687	649
Employees	2 750	2 762	2 816	3 055

\*Net income attributable to shareholders

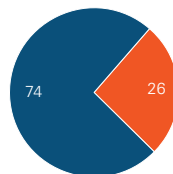
## REVENUE BY BUSINESS SEGMENT (%)



■ Millog\*      ■ Land  
 ■ Systems      ■ ISP\*\*  
 ■ Aviation      ■ Aerostructures

\*Détenu à 61,8% par Patria \*\*International Support Partnerships

## REVENUE BY REGION (%)



■ Finland      ■ Rest of the World

MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Saab	Airbus	RUAG	Gorenje	Roris	PGZ	Konstrukta Defence	Diuro Djakovic	Denel	Dienh Defence	Kongsberg	BAE Systems	LMT Defense	Leonardo	NHI
<b>Armoured wheeled vehicles</b>															
6x6 modular armoured vehicle prototype															
8x8 AMVXP and AMV modular armoured vehicles	●			●	●	●	●	●	●	●	●			●	
<b>Weapon systems</b>															
NEMO turreted remote-controlled 120 mm mortar system											●				
Advanced MOrtar System (AMOS) turreted 120 mm mortar system												●			
<b>C4ISTAR</b>															
Sonac DTS anti-submarine warfare sonar	●														
Compact Airborne Networking Data Link (CANDL)															
<b>Aerostructures</b>															
Composite components (A400M, 2000 Erieye, NH90)	●	●													●
<b>Training, MRO and logistics support</b>															
Military pilot training															
MRO for aircraft (F/A-18C/D, Hawk Mk51/51A/66, C-295M) and helicopters (NH90, HKP16 Black Hawk, AW169)		●	●								●	●		●	●
Aircraft engines MRO (F100, F404, Adour, RTM322)															
Military vehicles MRO (XA 6x6 Pasi, AMV 8x8, CV90, Bv 206)												●			
Automatic weapons MRO													●		
Hamina-class fast attack craft MRO	●														

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Patria revenues increased 6.6% to €508m in 2019, driven in particular by MCO (maintenance and modernisation) activities. Defence activities accounted for 92% of total sales. In addition to its activities in armoured vehicles, turrets, pilot training and MCO, the group is also present in the ammunition segment via Nammo, in which it holds a 50% stake alongside the Norwegian government.
- ▶ In February 2020, Panu Routila, former CEO of Konecranes and Ahlström Capital, was appointed Chairman of the group's Board of Directors, replacing Petri Vihervuori.
- ▶ During the summer of 2020, Patria reorganised its activities in the aerostructures segment (affected by the termination of the Airbus A380 passenger aircraft programme, for which the group supplied the spoilers) and in aircraft pilot training. As part of the restructuring, the group cut about 50 positions.
- ▶ The group nevertheless expects the COVID-19 related health crisis to have only a limited impact on its performance in 2020, despite declining demand in the civil aviation equipment and civil aircraft pilot training segments.

## Home market

- ▶ With nearly three-quarters of its revenue generated in Finland in 2019, Patria remains highly dependent on its domestic market. Amongst others, the group provides aircraft pilot training, maintenance of the L-70 Vinka and G 115E training aircraft, modernisation of the Leguan crossing systems and the mid-life modernisation of the Finnish defence forces' Hamina-class fast attack ships.
- ▶ In October 2019, Patria signed a €35m contract with Finland's Ministry of Defence for the modernisation of 139 XA-180 6x6 Pasi armoured personnel carriers. Once modernised (electrical systems, suspension, armour, etc.), the vehicles are expected to be operational until 2040.
- ▶ In early 2020, the defence ministers of Finland, Estonia and Latvia signed an agreement to develop and export an armoured vehicle based on the chassis of the new Patria 6x6. Deliveries of this future vehicle are scheduled to take place between 2021 and 2031. This programme could be opened to other countries if Finland and Latvia agree.
- ▶ As part of the replacement of the Finnish F/A-18C/D Hornet fleet (planned withdrawal by 2030), Patria is preparing to participate as a subcontractor in the HX Fighter programme for the acquisition of 64 fighter aircraft at a cost of around €10bn, including 30% for Finnish manufacturers (decision expected in 2021).

## Export markets

- ▶ In terms of exports, the group mainly operates in Europe (Norway, Sweden, Estonia, Latvia and Poland), the United Arab Emirates and South Africa.
- ▶ In December 2019, Bulgaria's Defence Minister announced that two groups had submitted a valid bid for its programme to acquire 150 wheeled armoured vehicles: Patria, which is offering the AMVXP 8x8, and MOWAG (General Dynamics), which is offering the Piranha 5. The winner of this programme, worth BGN 1.46 bn (€746m), will be announced during the second half of 2020.
- ▶ Patria and Kongsberg are forming a partnership to offer Patria's NEMO (NEw MOrtar) remote-controlled mortar turret in future calls for tenders in the United States. If successful, the turrets will be produced at Kongsberg's Johnstown (Pennsylvania) plant.

## Technology and Innovation

- ▶ The group's self-financed R&D expenditure amounted to €8.7m in 2019, representing 1.7% of sales.
- ▶ In 2018, Patria entered into a partnership with Diehl Defence to develop an unmanned version of its 8x8 AMVXP and AMV armoured vehicles.



# POLSKA GRUPA ZBROJENIOWA (PGZ)

Conglomerate of more than 50 Polish companies operating in all fields of defence.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Tracked and wheeled armoured vehicles
- ▶ Weapon and artillery systems
- ▶ Missile systems
- ▶ Aircraft systems (attack helicopters, UAS, MRO, modernisation)
- ▶ Defence electronics
- ▶ Military shipbuilding and naval MRO
- ▶ Energy and offshore (platform modules and metallic structures)

## GOVERNANCE

President of the Supervisory Board	Wojciech Dabrowski
Chairman and CEO	Andrzej Kensbok
Vice-Chairman	Michał Pietrzyk

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

### Major shareholders (as of 31.12.2019)

Polish Department of the Treasury	44,16%
Polski Holding Obronny sp. z.o.o (formerly Bumar)	28,88%
Agencja Rozwoju Przemysłu S.A.	26,96%

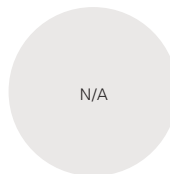
## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Cenzin sp. z.o.o.	≈70%	Poland
Nano Carbon sp. z.o.o.	51%	Poland
Huta Stalowa Wola S.A.	85,1%	Poland
Zakłady Mechaniczne Bumar - Labedy S.A.	94,3%	Poland

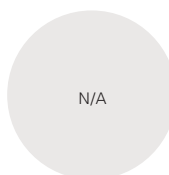
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	≈ 992	≈ 1 170	≈ 1 298	≈ 1 505
Δ (%)	N/A	≈ 15,01%	≈ 11,04%	≈ 17,00%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	13%	16%	13%	N/A
Operating profit/loss	N/A	N/A	N/A	N/A
Operating margin	N/A	N/A	N/A	N/A
Net income	≈ -24	≈ -26	≈ 9	≈ 43
Order book	N/A	N/A	N/A	N/A
Employees	N/A	≈ 17 500	≈ 17 500	≈ 18 000

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Patna	Rheinmetall Defence	Hanwha Defence	Pratt & Whitney**	Raytheon Technologies***	Lockheed Martin	WB Electronics	Leonardo	Kongsberg	Saab	MBDA
<b>Armoured vehicles</b>											
Ottokar-Brzoza tank-destroyer project											●
8x8 KTO Rosomak armoured wheeled vehicle	●										
6x6 KTO Rosomak armoured wheeled vehicle		●									
Armoured vehicle modernisation (Leopard 2A4/2A5, T-72, BWP-1 PUMA, TUMAK-4)		●									
<b>Weapon and artillery systems, missiles</b>											
KRAB 155 mm self-propelled tracked howitzer	●	●				●					
RAK 120 mm self-propelled mortar system						●					
Wisla air defence system (based on the Patriot system) (including PAC-3 MSE interceptors)				●	●						
Naval Strike Missile (NSM)								●			
<b>Aeronautics</b>											
AW249 attack helicopter project							●				
W-3 next-generation military helicopter project							●				
Aircraft and turbofan engine MRO and modernisation (Su-22, MiG-29, F-100, F-16)			●		●					●	
<b>Defence electronics</b>											
TRS-15 3D surveillance radar											
<b>Naval shipbuilding</b>											
Ratownik submarine rescue and salvage vessel											
Kormoran II-class mine warfare vessel										●	
HMS Artemis SIGINT vessel										●	

\*Hanwha group \*\*Raytheon Technologies group \*\*\*Merger of Raytheon and UTC



## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ PGZ revenues increased 17% to around PLN 6.5 bn (€1.5bn) in 2019. By 2030, the group aims to achieve sales of around PLN 12 bn (€2.7bn).
- ▶ In January 2020, Lockheed Martin and PGZ signed a letter of intent to set up maintenance centres for the F-16 Fighting Falcon multi-role fighter aircraft and the C-130J Super Hercules transport aircraft in Poland.
- ▶ PGZ is moreover involved in two helicopter cooperation agreements with Leonardo: one for the design of the next-generation W-3 military helicopter (resulting from the modernisation of the PZL W-3 Sokół) and one for the future AW249 attack helicopter, which could be chosen by the Polish Army as part of the Kruk programme. This latter partnership could however be called into question following the signature, in February 2020, of a letter of intent between PGZ and Bell to cooperate on the Kruk programme.

### Home market

- ▶ The group remains highly dependent on its domestic market, which accounted for around 85% of its turnover in 2019. It is the main beneficiary of the vast plan to modernise the Polish Armed Forces and is a key partner for foreign players wishing to enter the Polish defence market.
- ▶ In February 2020, Raytheon Technologies and several PGZ subsidiaries signed a contract for the production of components (in particular the actuators of the M903 launcher) in Poland under technology transfers, as well as cooperation on the future Wisla air defence system (which is based on Raytheon's Patriot system). Under this agreement, PGZ will also be able to export its own components to other Patriot system user countries.
- ▶ In May 2020, the Polish Ministry of National Defence ordered 40 RAK self-propelled mortars and 20 artillery command vehicles from PGZ subsidiary Huta Stalowa Wola for the 2022-2024 period. The order follows a previous contract signed in October 2019 for the supply of 18 mortars and eight artillery command vehicles over 2020-2021. The respective values of the contracts were not disclosed.
- ▶ In May 2020, PGZ subsidiary Bumar-Labedy and Rheinmetall Defence delivered the first two Leopard 2A4 tanks, upgraded to the 2PL version, to the Polish Army. The upgraded tanks include a new gun module adapted to new types of ammunition, improved ballistic protection as well as new optronic systems (thermal camera, sighting system, etc.). Bumar-Labedy had already delivered upgraded T-72 tanks at the end of 2019, while WZM, another PGZ subsidiary, had delivered upgraded and modified BWR-1D and BWR-1S reconnaissance vehicles.

### Export markets

- ▶ South America, the Middle East and South-East Asia are PGZ's target export markets.
- ▶ PGZ subsidiary Nauta Shiprepair Yard is participating, as a subcontractor of Sweden's Saab, in the construction of the Swedish Navy's future electronic intelligence ship, the HMS Artemis. Launched in the spring of 2019, the ship should be delivered in 2020.

### Technology and Innovation

- ▶ At the MSPO 2019 defence industry trade fair in Kielce (Poland), PGZ and MBDA UK together unveiled a tank destroyer armed with eight Brimstone precision strike missile, which could be offered as part of the Polish Ministry of National Defence's future Otokar-Brzoza armoured anti-tank vehicle programme.



# QINETIQ

Defence and security technology company mainly operating in the defence segment (engineering services, systems for aeronautics, etc.). 65th-largest defence contractor.

## BUSINESS AREAS

Engineering support services and systems integrator

- ▶ Aerospace (aerostructures, propulsion systems)
- ▶ Engineering services and naval systems development/integration
- ▶ Site and test centre management
- ▶ C4ISR
- ▶ Robotics
- ▶ Cybersecurity

## GOVERNANCE

Chairman	Neil Johnson
Chief Executive Officer	Steve Wadey
Chief Financial Officer	David Smith

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	QQ.
Listed on	London Stock Exchange
Market Cap (€m)	1 540

### Major shareholders (as of 10.11.2020)

Schroder Investment Management Ltd.	9,42%
Majedie Asset Management Ltd.	4,97%
Silchester International Investors LLP	4,91%
Ninety One UK Ltd.	4,90%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Inzpire Group Limited	85%	United Kingdom
BQ Solutions QSTP-LLC	49%	Qatar
Houbara Defence & Security LLC	49%	UAE
QinetiQ Dar Massader QDM Ltd	49%	Saudi Arabia
Redu Space Services S.A	48%	Belgium

## KEY FIGURES (Fiscal year ended: March 31st)

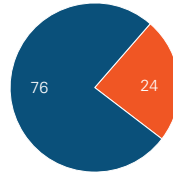
€ millions	2016-17	2017-18	2018-19	2019-20
Revenue	931	943	1 033	1 226
Δ (%) / E*	3,63%	6,37%	9,38%	17,76%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	22%	27%	30%	31%
Operating profit/loss	158	160	130	134
Operating margin	16,95%	16,93%	12,60%	10,96%
Net income**	147	156	129	121
Order book	2 360	2 292	3 652	3 504
Employees	6 154	6 065	6 061	6 787

\*Variation based on revenue in local currency

See €/E, p.7

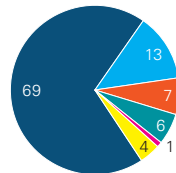
\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



■ EMEA Services  
■ Global Products

## REVENUE BY REGION (%)



■ United Kingdom  
■ United States  
■ Europe (excl. UK)  
■ Australia  
■ Middle East  
■ Rest of the World

MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	BAE Systems	General Atomics	Thales	Lockheed Martin	L3Harris Technologies*	Sierra Nevada Corp.	UMS SKELDAR**	Leonardo	RUAG	SES
<b>Military aircraft</b>										
Tempest future fighter aircraft	●									
Skeldar V-200 surveillance UAS (Canadian Armed Forces' programme)				●		●	●			
Avionics (Royal Air Force's Typhoon and F-35 fighter aircraft)	●		●							
<b>Naval platforms and systems</b>										
Type 26 frigate (Global Combat Ship programme)	●									
Queen Elizabeth-class aircraft carrier (electronic systems)	●									
Naval systems integration (C4ISR and combat systems)	●		●	●						
Electromagnetic Aircraft Launch System (EMALS)		●								
Advanced Arresting Gear (AAG)		●								
<b>Services</b>										
Aircraft services (engineering, test centre, training)										
Naval Combat Systems Engineering Course	●		●							
Land and naval target systems (Banshee, Rattler)										
<b>C4ISR</b>										
OBSIDIAN counter drone system										
Modular Electronic Warfare System (MEWS)					●					
<b>Space systems</b>										
International Berthing and Docking Mechanism (IBDM) for the ISS					●			●		
Communications satellite systems and ground-based equipment management										●
<b>Robotics</b>										
Reconnaissance and counter-IED operation robots (Dragon Runner, MAARS, Spartacus, TALON)										

\*Merger of L3 Technologies and Harris Corporation \*\*Joint venture between Saab and UMS AERO

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ QinetiQ revenues rose 17.8% in local currency to £1.07bn (€1.23bn) in 2019-2020, driven by the Global Products division. The group, which mostly operates in defence and security, generated more than 73% of its sales with the UK and U.S. governments.
- ▶ In late 2019, QinetiQ acquired Manufacturing Techniques Inc. (MTEQ), a U.S. group specialised in detection solutions for the U.S. Army, for \$105m (€94m). MTEQ had sales of \$167m (€149m) in 2018-19 and employs 360 people. As a result of the acquisition, QinetiQ doubled both its sales volume and number of employees in the United States.
- ▶ Despite the COVID-19 related health crisis, the group recorded organic growth of 8% during the first half of 2020. To strengthen its resilience, QinetiQ has been implementing cost control measures, including a freeze on salary increases for the year 2020.

## Home market

- ▶ The British government is the group's largest customer. QinetiQ is in particular a partner of BAE Systems on aircraft carriers such as the Queen Elizabeth and the Royal Navy's Type 26 frigates, as well as on the Royal Air Force's future Tempest fighter aircraft.
- ▶ The UK Defence Science and Technology Laboratory (DSTL) awarded QinetiQ two R&D contracts in 2020: in April a contract of an undisclosed amount to develop C2 solutions for the Royal Navy's future maritime UAVs (Maritime Autonomous Platform Exploitation (MAPLE) Phase 5 project), and in July a five-year, £300m (€343m) contract to develop future weapons for the British Armed Forces, including directed-energy weapons (Weapons Sector Research Framework (WSRF) contract). QinetiQ will work in partnership with several operators, including BAE Systems and L3Harris Technologies on the first contract and MBDA and Thales on the second.
- ▶ During Q2 2020, QinetiQ signed a five-year, £30m (€34m) contract with the Royal Air Force to provide mission data and technical services for its Typhoon fighter aircraft fleet as part of the Engineering Delivery Partner (EDP) programme.

## Export markets

- ▶ QinetiQ generated 31% of its sales from exports in 2019-2020, a share that the group aims to raise to 50%.
- ▶ In January 2020, the U.S. Army awarded QinetiQ and its partner Pratt & Miller Defense a contract for the production of four prototype unmanned ground combat vehicles (UGCV) as part of the Robotic Combat Vehicles-Light (RCV-L) programme. The two groups will supply four 7t EMAV (Expeditionary Modular Autonomous Vehicles) for a test phase by the end of 2021.
- ▶ In June 2020, QinetiQ signed a AUD 14.5 m (€8.7m) contract with the Queensland government (Australia) for the design and construction, by the end of 2020, of a flight test centre for UAVs. Boeing Australia could be the first group to use this centre once it becomes operational.
- ▶ In July 2020, BAE Systems and QinetiQ were selected by the U.S. Army to integrate a hybrid-electric transmission mechanism on two Bradley M2A2 armoured infantry fighting vehicles within two years. Under a \$32m (€29m) contract, QinetiQ will mainly supply its Modular E-X-Drive transmission system.

## Technology and Innovation

- ▶ QinetiQ's total R&D expenditure amounted to £292m (€334m) in 2019-2020, representing 27.2% of sales. Self-financed expenditure represented 2.0% of sales.
- ▶ In July 2020, QinetiQ and several other defence groups (including Britain's GKN, Martin-Baker and Thales UK) joined the Team Tempest consortium, led by BAE Systems and the British MoD, to develop the future Tempest fighter aircraft.



# RAFAEL ADVANCED DEFENSE SYSTEMS

Defence technology company entirely focused on the military segment, in particular on missiles and defence systems (Iron Dome, Barak-8). 44th-largest defence contractor.

## BUSINESS AREAS

Systems integrator/equipment supplier

- ▶ Missile systems, air and naval defence systems
- ▶ Unmanned systems
- ▶ C4ISR systems
- ▶ Land and naval weapon and artillery systems
- ▶ Defence electronics (countermeasure and protection systems)
- ▶ Space (microsatellites, propulsion systems, structures)

## GOVERNANCE

Chairman Uzi Landau  
 Chief Executive Officer Yoav Har-Even

## OWNERSHIP STRUCTURE

Symbol  
 Listed on Unlisted group  
 Market Cap

Major shareholders (as of 10.11.2020)

Israeli State | 100%

## MAIN JOINT VENTURES AND ASSOCIATES

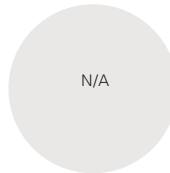
Name	%	Country
Shilat Optronics Ltd	50%	Israel
Opgal Optronic Industries Ltd	49,9%	Israel
GESPI Defense Systems	40%	Brazil
EuroSpike GmbH	20%	Germany
Kalyani Rafael Advanced Systems Pvt Ltd (KRAS)	49%	India
Varley Rafael Australia (VRA)	N/A	Australia
Astra Rafael Comsys Pvt Ltd	N/A	India
Raytheon RAFAEL Area Protection Systems	N/A	United States

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	1 834	1 998	2 195	2 431
Δ (%)/[\$] *	0,59%	11,23%	14,79%	5,05%
Defence (%)	100%	100%	100%	100%
Export (%)	45%	46%	45%	N/A
Operating profit/loss	103	N/A	N/A	N/A
Operating margin	5,59%	N/A	N/A	N/A
Net income	111	110	113	99
Order book	5 366	5 755	5 921	6 387
Employees	7 151	≈ 7 500	≈ 7500	≈ 8 000

\*Variation based on revenue in U.S. dollars  
 See €/\$, p.7

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



# RAFAEL ADVANCED DEFENSE SYSTEMS

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	IAI	Lockheed Martin	BAE Systems	Northrop Grumman	Raytheon Technologies*	Diehl Defence	Rheinmetall Defence	Astra Microwave Defence	Kalvini Products	General Dynamics	PGZ	Leonardo
<b>Missile and defence systems</b>												
David's Sling air defence system and Stunner and SkyCeptor interceptors					●							
Iron Dome short-range air defence system	●				●							
Tamir and SkyHunter interceptors (Iron Dome)					●							
SPYDER family of air defence systems	●											
Barak-1 and Barak-8 naval air defence systems	●							●				
C-Dome naval defence system												
Spike family of missiles (Spike ER/LR and ER2/LR2 anti-tank missiles, Spike NLOS multi-purpose missile system)					●	●						
SPICE family of guided bombs (250/1000/2000)		●			●							
Trophy Active Protection System (APS)	●								●			●
Drone Dome Counter Unmanned Aircraft Systems (C-UAS)												
<b>C4ISR systems</b>												
TopLite electro-optical system												●
Litening advanced targeting pod				●								
<b>Unmanned system</b>												
Protector USV		●	●									
<b>Weapon and artillery systems</b>												
SAMSON family of remote controlled weapon stations									●			
<b>Communication systems</b>												
BNET software defined radios							●					

\*Merger of Raytheon and UTC

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Rafael Advanced Defense Systems (Rafael) reported a revenue increase of 5.4%, to \$2.72bn (€2.43bn), in 2019.
- ▶ With 100% of its revenues generated in the defence market, the group has so far been almost unaffected by the COVID-19 related health crisis. Moreover, Rafael had an order book of \$7.17bn (€6.38bn) at the end of 2019, representing approximately two and a half years of sales.
- ▶ The acquisition, divided equally with businessman Avichai Stolero, of Israeli defence company Aeronautics Ltd in September 2019 enabled Rafael to enter the unmanned aerial market.

### Home market

- ▶ Rafael is a key supplier to the Israel Defense Forces along with its domestic peers Elbit Systems and Israel Aerospace Industries (IAI).
- ▶ In February 2020, Rafael was selected to supply the FIRE WEAVER networked sensor-to-shooter system. In May 2020, it received a contract to supply Spike FireFly loitering munitions to the Israel Defense Forces' ground forces.

### Export markets

- ▶ Rafael's export business is particularly focused on the United States, India, Europe and Australia. In 2019, Rafael won several major contracts, mostly in the United States (acquisition by the U.S. Army of two Iron Dome air defence systems), India (order for 1,000 Barak 8 MR-SAM missiles from Kalyani Rafael Advanced Systems, a joint venture between Rafael and India's Kalyani Strategic Systems) and Germany (order for 1,500 missiles from the Eurospike GmbH consortium).
- ▶ In April 2020, Rafael signed a partnership agreement with Poland's PCO S.A. (a subsidiary of PGZ) for the co-production of TopLite electro-optical systems that will be integrated into the Polish Armed Forces' Mi-24 helicopters. Rafael is also participating, alongside PGZ, in the tender for the "Ottokar-Brzoza" programme. Rafael proposes to equip PGZ's BWP-1 and KTO Rosamak armoured vehicles with long-range Spike-NLOS (Non Line of Sight) missiles. If selected by the Polish Army, the Spike-NLOS missiles will be co-produced by MESKO, a subsidiary of PGZ, which will also co-produce the short-range Spike SR missiles for the Polish Pustelnik programme (supply of an anti-tank defence system) on which Rafael is also positioned. The Israeli contractor also offered its SkyCeptor interceptor for the Polish Narew air defence system programme.
- ▶ In July 2020, Rafael signed a strategic partnership agreement with Australian precision engineering company Naeco Pty Ltd. to integrate Naeco's cooling system for electronic equipment into Rafael's solutions (airborne radars, communication systems, defence electronics systems, etc.). This new partnership followed the creation of a joint venture with Australian engineering and manufacturing company Varley Group in 2018.
- ▶ In August 2020, Rafael and its longstanding partner Raytheon Missiles and Defense (a branch of the Raytheon Technologies group) announced the creation of a U.S.-based joint venture named Raytheon RAFAEL Area Protection Systems, which will be the first production site for the Iron Dome air defence system (Tamir interceptors and launchers) outside Israel. The SkyHunter missile, the U.S. version of the Tamir, will also be produced there.

### Technology and Innovation

- ▶ R&D spending remained stable at 9% of revenues in 2019.
- ▶ In February 2020, Rafael passed the tests for the interception of a swarm of drones thanks to the use of the laser of its Drone Dome anti-UAV defence system.



# RAYTHEON TECHNOLOGIES (RAYTHEON AND UTC MERGER)

Conglomerate with civil and military activities. Formed by the merger between Raytheon and UTC on 3 April 2020, creating the world's second-largest defence contractor.

## BUSINESS AREAS

Missile manufacturer, systems integrator/  
equipment supplier and engine manufacturer

- ▶ Weapon systems (missiles and shells)
- ▶ Integrated defence systems (radar systems, air defence systems)
- ▶ C5ISR systems
- ▶ Commercial and military aircraft propulsion systems
- ▶ Commercial and military aerostructures and aircraft equipment
- ▶ Space systems

**Chairman** Thomas A. Kennedy  
**Chief Executive Officer** Gregory J. Hayes  
**Chief Financial Officer** Anthony F. O'Brien

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	RTX
Listed on	NYSE
Market Cap (\$m)	98 029

### Major shareholders (as of 10.11.2020)

SSgA Funds Management, Inc.	8,33%
The Vanguard Group, Inc.	7,99%
Capital Research & Management Co.	3,80%
Wellington Management Co. LLP	2,86%
BlackRock Fund Advisors	2,27%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Collins Elbit Vision Systems LLC	50%	United States
NetFires LLC	50%	United States
Raytheon-Lockheed Martin Javelin JV	50%	United States
Range Generation Next LLC	50%	United States
TRS AMDC2 SAS	50%	France

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2018 (Raytheon)	2018 (UTC)	2019** (Raytheon Technologies) ≈66 000
Revenue	22 911	56 309	
Δ (%)/(\$)*	6,75%	11,14%	N/A
Defence (%)	95%	14%	≈55%
Export (%)	30%	63%	≈48%
Operating profit/loss	3 843	7 242	N/A
Operating margin	16,77%	12,86%	N/A
Net income***	2 464	4 461	N/A
Order book****	37 048	100 873	≈63 000
Employees	67 000	240 200	195 000

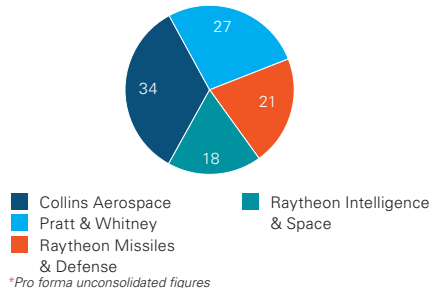
\*Variation based on revenue in local currency  
See €/€, p.7

\*\*Pro forma consolidated figures

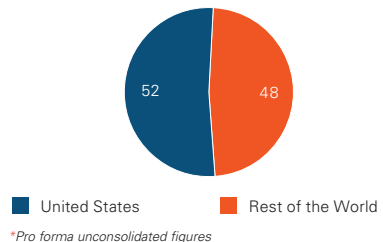
\*\*\*Net income attributable to shareholders

\*\*\*\*Defence activities only for 2019 figures

## REVENUE BY BUSINESS SEGMENT (%)\*



## REVENUE BY REGION (%)\*





# RAYTHEON TECHNOLOGIES (RAYTHEON AND UTC MERGER)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Rafael	Nahmo	L3Harris Technologies*	Northrop Grumman	BAE Systems	General Dynamics	Lockheed Martin	Kongsberg	Diehl Defence	Thales	MHI	GKN
<b>Weapon systems</b>												
Raytheon												
UTC												
Long Range Stand Off Weapon future nuclear ballistic missile												
Tomahawk cruise missile												
AIM-9 Sidewinder family of air-to-air missiles		●						●		●		
AIM-120 AMRAAM air-to-air missile	●	●	●		●							
NSM/JSM anti-ship missiles	●						●					
FMG-148 Javelin anti-tank missile						●						
BGM-71 TOW anti-tank missile									●			
Excalibur M982 advanced precision guided artillery shell	●			●								
<b>Integrated defence systems</b>												
AN/SPY-6 (AEGIS) AESA naval radar			●			●						
AN/TPY-2 (THAAD) early warning radar						●						
Patriot air defence system (integrator)						●				●		
David's Sling long-range air defence system and Stunner interceptor	●											
<b>Military aircraft propulsion systems</b>												
F135 turbofan engine (F-35)												●
F100 turbofan engine (F-15, F-16, X-47B)												●
PT6A turboprop engine (EMB 314, T-6, PC-21, HeronTP)												
<b>Aircraft systems</b>												
Landing gears (F-15, F-16, F-35, C-17, AH-64)												
Propeller systems* (A400M, C-130)												

\*Merger of L3 Technologies and Harris Corporation \*\*Produced by its French Ratier-Figeac subsidiary

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Raytheon Technologies reported pro forma sales of \$74bn (€66bn) in 2019, of which 55% in defence. This makes the group the world's second-largest defence company, behind Lockheed Martin, and the world's third-largest aerospace company (civil and military), behind Boeing and Airbus.
- ▶ In order to refocus the new group on defence and aeronautics activities, UTC divested its Carrier (air conditioning and refrigeration equipment) and Otis (lifts) divisions which became two independent, listed companies. In early 2020, the new group also sold Raytheon's tactical airborne radios and Collins Aerospace's military GPS businesses to BAE Systems for a combined amount of \$2.2bn (€2bn). The sale was among the conditions set by the U.S. competition authorities to authorise the merger between Raytheon and UTC.
- ▶ The group is organised into four divisions, two of which stem from Raytheon's former operations and generate more than 90% of their sales in defence: Raytheon Missiles & Defense (sales of \$16bn, or €14.3bn, specialised in missiles and air defence systems) and Raytheon Intelligence & Space (sales of \$14bn, or €12.5bn, specialised in cybersecurity, C5ISR and electronic warfare suites). On the other hand, the two branches that emerged from UTC only generate about 30% of their sales in defence: Collins Aerospace (sales of \$26bn, or €23.2bn, specialised in aeronautics and space components such as landing gear, wheels, carbon brakes, propeller systems, ejection seats, helmet sights, etc.) and Pratt & Whitney (sales of \$21bn, or €18.8bn, specialised in aircraft engines).
- ▶ The activity of the Collins Aerospace and Pratt & Whitney branches has been particularly impacted by the COVID-19 related health crisis, due to the difficulties encountered in the civil aeronautics market. The two branches respectively reported a 24% and 19% drop in sales over the first nine months of 2020.

### Home market

- ▶ Raytheon Technologies generated 52% of its consolidated sales on the U.S. market in 2019. The group is a privileged partner of the U.S. Department of Defense, alongside Lockheed Martin and Boeing.
- ▶ Pratt & Whitney has signed several contracts with the Department of Defense for the production of F135 engines for the F-35 Lightning II fighter aircraft: a \$763m (€681m) contract in November 2019 for 58 units by April 2022; a \$320m (€290m) contract in March 2020 for 32 units by December 2022; and a \$111m (€101m) contract in April 2020 for the production of four units by July 2022.
- ▶ In March 2020, the U.S. Missile Defense Agency awarded a \$2.1bn (€1.9bn) contract to Raytheon Technologies to produce RIM-161 SM-3 Block IB anti-ballistic missiles.
- ▶ In April 2020, the U.S. Air Force selected Raytheon Technologies to develop a new nuclear-armed air-launched cruise missile (Long Range Stand Off Weapon programme). The group won against Lockheed Martin, but the U.S. Air Force might encourage cooperation on this programme.
- ▶ In May 2020, Raytheon Technologies and Northrop Grumman joined forces to compete in the U.S. Missile Defense Agency's Next Generation Interceptor anti-ballistic missile programme (development budget of \$4.9bn, or €4.4bn, over five years). Boeing and Lockheed Martin are also competing for this programme.

### Export markets

- ▶ Export sales accounted for 48% of sales in 2019 and mainly involved the commercial segment. In the defence segment, the group particularly benefited from international demand for Patriot air defence systems as well as F135 engines powering the F-35.
- ▶ In November 2019, Raytheon signed a \$386m (€345m) contract with the U.S. Department of Defense to produce Paveway laser-guided bombs for allied countries.

### Technology and Innovation

- ▶ Raytheon Technologies' total R&D expenditure amounted to \$8bn (€7.1bn) in 2019.



# RHEINMETALL DEFENCE

Defence division of the Rheinmetall AG conglomerate. Germany's leading defence company, one of Europe's leading players in land armaments, and 33rd-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer, systems integrator/  
equipment supplier

- ▶ Military vehicles (armoured tracked and wheeled vehicles, military trucks, etc.)
- ▶ Cannons, turrets and weapon systems
- ▶ Ammunition
- ▶ Air defence systems
- ▶ Defence electronics and C4ISR systems
- ▶ Simulation and training solutions

## GOVERNANCE

Chairman and CEO	Armin Papperger
Head of Vehicle Systems	Michael Kara
Head of Weapon & Ammunition	Alexander Sagel

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted division
Market Cap	

Major shareholders (as of 10.11.2020)

Rheinmetall AG	100%
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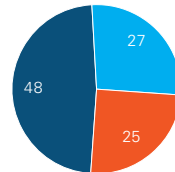
## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
ARTEC GmbH	64%	Germany
Rheinmetall BAE Systems Land Ltd	55%	United Kingdom
Rheinmetall MAN Military Vehicles GmbH	51%	Germany
Projekt System & Management GmbH	50%	Germany
Supashock	49%	Australia
EuroSpike GmbH	40%	Germany

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	2 946	3 036	3 221	3 522
Δ (%)	13,70%	3,05%	6,09%	9,34%
Defence (%)	100%	100%	100%	100%
Export (%)	73%	71%	65%	59%
Operating profit/loss	147	174	254	343
Operating margin	4,99%	5,73%	7,89%	9,74%
Net income	N/A	N/A	N/A	N/A
Order book	6 656	6 416	8 577	10 399
Employees	10 002	10 251	10 948	12 100

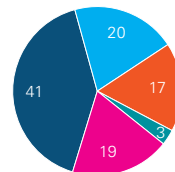
## REVENUE BY BUSINESS SEGMENT (%)\*



- Vehicle Systems
- Weapon & Ammunition
- Electronic Solutions

\*Revenue distribution based on total sales excluding eliminations

## REVENUE BY REGION (%)



- Germany
- Europe (excl. Germany)
- Asia
- America
- Rest of the World

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	KMW*	Nexter*	MAN	Supashock	Raytheon Technologies**	General Dynamics***	Supacat***	BAE Systems	UAC	Eurofighter GmbH	Airbus	NHIndustries	Thales
<b>Military vehicles</b>													
Main Ground Combat System (MGC) future French-German main battle tank	●	●											
Lynx armoured infantry fighting vehicle				●	●								
Puma armoured infantry fighting vehicle	●												
8x8 Boxer armoured infantry fighting vehicle	●		●			●	●						
6x6 Fuchs / Fox armoured personnel carrier			●										
4x4 AMPV light armoured vehicle	●												
HX and SX high mobility logistic vehicles			●	●									
<b>Guns and turret systems</b>													
L52 155 mm gun (PzH 2000 self-propelled howitzer)	●												
L44 and L55 120 mm guns (Leopard 2 and M1 Abrams tanks)	●					●							
LANCE and LANCE RC turret systems													
<b>Ammunition</b>													
Large-caliber artillery projectiles (120 mm and 155 mm) and medium-caliber ammunition (20 mm, 25 mm, 27 mm and 30 mm)													
<b>Air defence systems</b>													
Oerlikon Skyshield / MANTIS air defence system													
<b>Simulation and training solutions</b>													
Flight simulators (MiG-29K, Typhoon, A400M, NH90, Tigre, etc.)									●	●	●	●	●
<b>Future soldier systems</b>													
Gladius / Argus soldier systems													

\*KINDS group \*\*Merger of Raytheon and UTC \*\*\*SC Group

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Rheinmetall Defence revenues reached €3.5bn in 2019, up 9.3% year-on-year. Growth was mainly driven by the Vehicle Systems (+14.0%) and Electronic Solutions (+13.0%) divisions.
- ▶ Rheinmetall AG does not expect any impact from the health crisis on activity in its defence division in 2020.

### Home market

- ▶ Germany is a key market for Rheinmetall Defence, as it accounted for 41% of total sales in 2019 (compared to 35% in 2018). The planned increase in the budget of Germany's Federal Ministry of Defence (to €44.9bn in 2020 and over €48bn in 2023) could provide significant opportunities for the division.
- ▶ In January 2020, Rheinmetall Defence signed a €110m contract with the Bundeswehr, Germany's unified armed forces, for the modernisation (replacement of the drivetrain) of 71 Marder infantry fighting vehicles within three years. Additionally, the branch will modernise 272 6x6 Fuchs armoured personnel carriers to the 1A8 standard by the end of 2020 as well as 41 Puma tracked armoured fighting vehicles (new communication system, new cameras, missile integration) by 2024.
- ▶ Rheinmetall MAN Military Vehicles signed two contracts with the Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw) for the supply of HX logistics trucks: in December 2019 for 1,000 trucks for a total of €382m, with deliveries scheduled for 2020; and in June 2020 for 4,000 trucks and armoured cabins for a total of €2bn, with deliveries scheduled between 2021 and 2027.
- ▶ Rheinmetall Defence is partnering with Raytheon Technologies to supply the Patriot system as part of the Bundeswehr's TLVS programme. Their offer is in competition with that of Lockheed Martin, which is partnering with MBDA Deutschland and Diehl Defence. The winner of the tender could be announced during 2020.

### Export markets

- ▶ Rheinmetall Defence has a strong international presence (59% of sales from exports in 2019). The division intends to further strengthen its position in international markets, particularly in Eastern Europe, the Middle East & North Africa region, Asia and Australia.
- ▶ In August 2019, the British Army ordered more than 500 Boxer armoured infantry fighting vehicles from the ARTEC GmbH consortium (comprising Rheinmetall Defence and KMW) for £2.8bn (€3.2bn) as part of the Mechanised Infantry Vehicle (MIV) programme. The vehicles will mainly be produced in the United Kingdom by Rheinmetall's 55%-owned subsidiary Rheinmetall BAE Systems Land.
- ▶ In September 2019, the division was selected to participate in the Australian Land 400 Phase 3 programme, which amongst others provides for the supply of 450 tracked armoured infantry fighting vehicles at an estimated cost of AUD 10-15 bn (€6.3-9.4 bn). Rheinmetall Defence's Lynx KF41 is in competition with the AS21 Redback of South Korea's Hanwha Defense.
- ▶ In August 2020, the Hungarian government ordered an unspecified number of Lynx tracked armoured vehicles for around €2bn. The vehicles will be produced in Hungary by a joint venture between Rheinmetall Defence and local manufacturers.

### Technology and Innovation

- ▶ Total R&D spending increased by 1.4% to €145m in 2019, representing 4.1% of sales.
- ▶ In May 2020, Germany and France awarded Nexter, KMW and Rheinmetall Defence the contract for the system architecture study of the future Franco-German MGCS battle tank. A demonstrator should be presented between 2025 and 2030 and the tank should be operational in 2035.



# ROLLS-ROYCE

Aircraft engine and marine propulsion manufacturer. One of the world's top three manufacturers of civil and military aircraft engines, and 27th-largest defence contractor.

## BUSINESS AREAS

Engine manufacturer

- ▶ Aeronautics propulsion systems
- ▶ Naval propulsion systems (gas turbines, nuclear reactors, diesel engines)
- ▶ Distributed generation systems
- ▶ MRO services

## GOVERNANCE

Chairman	Ian Davis
Chief Executive Officer	Warren East
President, Defence	Tom Bell

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	RR
Listed on	LSE
Market Cap (£m)	8 355

### Major shareholders (as of 10.11.2020)

Causeway Capital Management LLC	9,11%
Capital Research & Management Co. (Global Investors)	6,13%
Harris Associates LP	5,01%
ValueAct Capital Management LP	4,50%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
AirTanker Holdings Ltd	20%	United Kingdom
EUROJET Turbo GmbH	46%	Germany
EPI Europrop International GmbH	44%	Germany
LHTEC	50%	United States
MTU Turbomeca Rolls-Royce GmbH	33,3%	Germany
TAEC Ucak Motor Sanayi AS	49%	Turkey

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017****	2018	2019
Revenue*	16 829	15 588	17 025	17 597
Δ (%)[E]**	3,21%	-0,81%	10,21%	2,54%
Defence (%)	25%	24%	23%	24%
Export (%)	88%	88%	90%	89%
Operating profit/loss*	1 117	349	696	920
Operating margin*	6,64%	2,24%	4,09%	5,23%
Net income***	674	49	336	344
Order book	94 521	62 007	70 503	71 563
Employees	49 900	50 000	54 500	51 700

\*Underlying and after eliminations

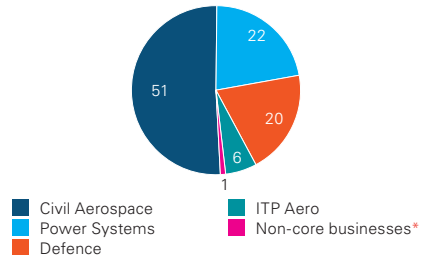
\*\*Variation based on revenue in local currency

See €/€, p.7

\*\*\*Net income attributable to shareholders

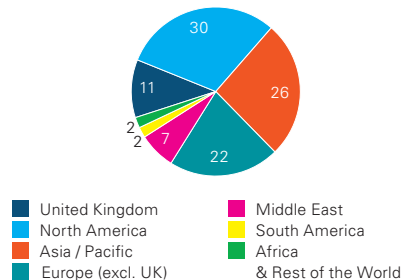
\*\*\*\*Figures restated

## REVENUE BY BUSINESS SEGMENT (%)



\*Mainly Commercial Marine and North America civil nuclear activities, businesses respectively sold on 2018 and 2019

## REVENUE BY REGION (%)\*



\*Revenue distribution based on total sales excluding eliminations

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Safran	MTU Aero Engines	Avio Aero*	Pratt & Whitney**	Honeywell	Standard Aero	Jiangsu A-Star	Reaction Engines	BAE Systems	TAI
<b>Aircraft engines</b>										
EJ200 turbojet engine (Eurofighter)		●	●							
LiftSystem for F-35B fighter aircraft				●						
Adour turbojet engine (Jaguar, Hawk / T45)	●								●	
TP400-D6 turboprop engine (A400M)	●	●								
T56 and AE2100 turboprop engines (C-130)					●					
AE3007 turbojet engine (Embraer ERJ / Legacy)					●					
Trent 700 turbojet engine (A330 MRTT)										
Engines for the Tempest future fighter aircraft									●	
Hypersonic propulsion systems project							●	●		
<b>Helicopter engines</b>										
MTR390-E turboshaft engine (Tiger)	●	●								
CTS800 turboshaft engine (Lynx / Super Lynx, AW159 Wildcat)				●						
AE1107 turboshaft engine (V-22 Osprey)					●					
M250 turboshaft engine (OH-58, AH-6, MQ-8 Fire Scout)					●	●				
<b>UAS propulsion system</b>										
AE3007 turbojet engine (MQ-4 Global Hawk, MQ-4C Triton, MQ-25 Stingray)										
<b>Naval and submarine propulsion systems</b>										
MT30 gas turbine (Queen Elizabeth-class aircraft carriers, T26-class frigates, Hunter-class frigates)									●	
PWR2 (Vanguard SSBN, Astute SSN) and PWR3 (Dreadnought SSBN) nuclear reactors									●	
MTU Series 4000 / 8000 diesel engines										

\*General Electric group \*\*Raytheon Technologies group (merger of Raytheon and UTC)

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Rolls-Royce revenues reached £15.5bn (€17.6bn) in 2019 (+2.5% year-on-year in local currency) excluding equity interests and equity method investments. Growth was mainly driven by the Civil Aerospace and ITP Aero divisions.
- ▶ The group generated 24% of its revenues in the defence market in 2019. The Defence division supplies engines and turbines for combat and transport aircraft, helicopters, UAVs, submarines (nuclear boilers) and military vessels. The Power Systems (diesel engines for naval and land platforms) and ITP Aero (sub-systems for military engines) divisions also carry out part of their activities in the defence sector.
- ▶ Rolls-Royce has taken a series of measures over the past six months to address the decline in activity, mainly caused by the COVID-19 related health crisis: a £5bn (€5.5bn) recapitalisation programme; asset disposals worth a total £2bn (€2.2bn), including ITP Aero; and a £1.3bn (€1.5bn) savings plan by the end of 2022. Additionally, the group plans to cut 9,000 jobs over 2020 (17% of the total workforce), mainly in the Civil Aerospace division, which has been hardest hit by the decline in activity.

### Home market

- ▶ Rolls-Royce generated 11% of its sales in the UK market in 2019. The group has a monopoly in the United Kingdom in the underwater nuclear propulsion segment and will supply, amongst others, the reactors for the four Dreadnought-class SSBNs built by BAE Systems.
- ▶ In July 2020, the United Kingdom, Sweden and Italy started trilateral talks to strengthen their cooperation within the Tempest programme. Under this programme, Rolls-Royce is in charge of developing the integrated electric starting system for the turbojet engines of the future fighter aircraft.
- ▶ In August 2019, the British Ministry of Defence (MoD) renewed the maintenance contract for the EJ200 turbojet engines powering the Royal Air Force's Eurofighter Typhoon aircraft. The £350m (€396m) contract includes the provision of MCO services until 2024.
- ▶ Rolls-Royce signed a £85m (€97m) contract in July 2019 for the maintenance of 30 Spey gas turbines powering the Royal Navy's Type 23 frigates as well as those of NATO countries (including Belgium, Portugal and the Netherlands).

### Export markets

- ▶ The USA are Rolls-Royce's main market, especially for the Defence division. At the end of 2019, the group signed a five-year, \$1.2bn (€1.1bn) contract for the maintenance of AE 1107C engines of the V-22 Osprey (Bell-Boeing) tiltrotor helicopters of the U.S. Navy, U.S. Air Force and U.S. Marine Corps.
- ▶ In 2019, Rolls-Royce received new orders for the LiftFan engine (a component of the LiftSystem aircraft propulsion system produced in partnership with Pratt & Whitney) for Lockheed Martin's F-35B fighter jet.
- ▶ In May 2020, the U.S. Air Force published a call for tenders for the re-engining of the B-52 (Boeing) bombers and is expected to order more than 600 engines. Rolls-Royce is in competition with GE Aviation and Pratt & Whitney. The winner is expected to be announced in mid-2021, for delivery of the first engines within 18 months.
- ▶ In July 2020, the group concluded an agreement with Bell (Textron group) to supply the propulsion system for the V-280 Valor helicopter, as part of the U.S. Army's Future Long-Range Assault Aircraft programme.

### Technology and Innovation

- ▶ Rolls-Royce's R&D expenditure amounted to £1.46bn (€1.66bn) in 2019, representing 9.4% of sales.
- ▶ In August 2020, Rolls-Royce increased its stake in British aerospace manufacturer Reaction Engines Ltd by investing £20m (€22m) over two years. The two partners are developing a hypersonic propulsion system for fighter aircraft alongside BAE Systems and the MoD.





# RUAG

Group currently undergoing reorganisation to refocus on services for the Swiss Army (defence platform maintenance and modernisation). 76th-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Aircraft and land systems and services for the Swiss Armed Forces (RUAG SA)
- ▶ Commercial and military aircraft systems for international clients, small-calibre ammunition, aerostructures, launcher and satellite structures and components (RUAG International)

## GOVERNANCE

Chairman RUAG International Remo Lütolf

Chairman RUAG SA Nicolas Perrin

Deputy CEO\* Urs Kiener

\*Until an executive committee is in place for both RUAG SA and RUAG MRO International entities

## OWNERSHIP STRUCTURE

Symbol  
Listed on Unlisted group  
Market Cap

Major shareholders (as of 10.11.2020)

Federal Authorities of the Swiss Confederation | 100%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Nitrochemie Wimmis AG	45%	Switzerland
Nitrochemie Aschau GmbH	45%	Germany
RUAG Simulation Company LLC	49%	UAE
Arianespace Participation	3,5%	France

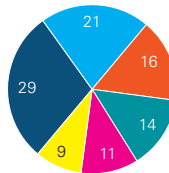
## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	1 705	1 758	1 730	1 801
Δ (%) [CHF]*	6,54%	5,22%	2,20%	0,25%
Defence (%)	43%	44%	44%	43%
Export (%)	63%	62%	63%	63%
Operating profit/loss	139	107	92	-6
Operating margin	8,13%	6,09%	5,31%	-0,35%
Net income**	105	80	63	-22
Order book	1 449	1 371	1 592	1 506
Employees	8 734	9 189	9 127	9 091

\*Variation based on revenue in local currency  
See €/CHF, p.7

\*\*Net income attributable to shareholders

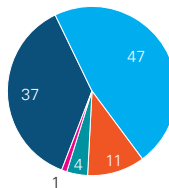
## REVENUE BY BUSINESS SEGMENT (%)\*



■ MRO Switzerland  
■ Ammotec  
■ Space  
■ Aerostructures  
■ MRO International  
■ Other

\*Revenue distribution based on total sales excluding eliminations

## REVENUE BY REGION (%)



■ Switzerland  
■ Europe (excl. Switzerland)  
■ North America  
■ Asia / Pacific  
■ Rest of the World

MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	HAL	Elbit Systems	United Launch Alliance	GDLs-Movvag	Seab	KMW	Dassault Aviation	BAE Systems	Arianespace	Safran	Thales
<b>Aeronautics</b>											
Dornier 228NG twin-turboprop aircraft	●										
Aerostructures (F/A-18, F-5 Tiger, JAS 39 Gripen, PC-21)				●							
Hermes 900 StarLiner/HFE UAS		●									
nEUROn UCAV demonstrator (wind tunnel tests and weapons interface unit)							●				
OPATS laser-based automatic landing system for UAS											
MRO and modernisation of military aircraft (Swiss and foreign Armies)											
<b>Land systems</b>											
COBRA 120 mm mortar system				●							
Vehicle Robotic Kit (VERO)				●						●	
SidePRO, RoofPRO and MinePRO passive side protection solutions											
MRO and modernisation of land platforms (Swiss Army)						●		●			
SITTAL Shooting simulator											
CERBERE programme (upgrade of the instrumentation for the French Army's live combat training centres)											●
Gladiator personal harness for training											
Small-calibre ammunition and explosives											
<b>C4ISR</b>											
ARANEA tactical communications system											
<b>Space systems</b>											
Launcher fairings (Ariane 5 and 6, Vega, Atlas V-500)		●							●		
Launcher guidance systems (S19 and GCS families)											

\*Boeing / Lockheed Martin \*\*General Dynamics Land Systems \*\*\*KNDS group \*\*\*\*ArianeGroup

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ In January 2020, RUAG completed its split into two independent companies: RUAG AG and RUAG International.
- ▶ RUAG AG is primarily responsible for the supply and integration of systems for the Swiss Armed Forces' air and land platforms and also provides maintenance and modernisation services.
- ▶ RUAG International combines the former group's other activities, in particular the Space, Ammotec (ammunition) and Aerostructures divisions. The entity is expected to be listed on the stock exchange from 2023 and certain activities (ammunition, cyber security) will be divested. Its UK-based cybersecurity subsidiary Clearswift was sold at the end of 2019.
- ▶ Revenues amounted to CHF 2bn (€1.8bn) in 2019 (before the split), of which CHF 855m (€769m, or 43% of total revenues) in defence. Restructuring costs and exceptional charges related to the production of the Dornier 228 twin-turboprop utility aircraft weighed on the group's operating performance.
- ▶ In addition to the ongoing restructuring initiative, the group's performance over 2020 is expected to be negatively impacted by the COVID-19 related health crisis. RUAG International, which recorded a 10.9% decline in revenue in the first half of 2020 compared with the first half of 2019, should be particularly affected due to its presence in the civil aviation sector.

### Home market

- ▶ Switzerland's DDPS (Federal Department of Defence, Civil Protection and Sport) is RUAG's largest customer, accounting for 32% of total revenues in 2019. The activities carried out for the DDPS are now mainly managed by RUAG AG.
- ▶ RUAG AG is in charge of the integration of the 120mm Mörser 16 COBRA mortar systems on the Piranha V 8x8 infantry fighting vehicle designed by Mowag, a General Dynamics subsidiary. The upgraded vehicles are scheduled to enter service in 2024.
- ▶ The group is continuing to modernise the Swiss Air Force's TH98 Cougar transport helicopters, which are scheduled to remain in service until 2022, by renewing their flight control, navigation and communication systems.

### Export markets

- ▶ 63% of RUAG's sales were generated in international markets in 2019. In defence, RUAG International provides maintenance services for military aircraft and training solutions for foreign armed forces (France, Germany, Italy, etc.).
- ▶ In May 2020, the RUAG Defence France subsidiary (which is now integrated into RUAG International) was selected to supply 13 Small Arms Technical Training Simulators (SITTAL) to Danish Defence, Denmark's unified armed forces. The first deliveries are scheduled for 2021.
- ▶ RUAG AG's contract for the maintenance of the propellers of the Royal Netherlands Air Force's Pilatus PC-7 training aircraft was extended until the end of 2022, with an option for a further extension until 2026.
- ▶ In May 2020, RUAG Australia was chosen to supply the landing gear systems for the prototype unmanned combat aircraft developed by Boeing Australia as part of the Royal Australian Air Force's Loyal Wingman Advanced Development Programme (LWADP).

### Technology and Innovation

- ▶ The group's R&D expenditure amounted to CHF 173m (€156m) in 2019, representing 8.6% of sales.



# SAAB

Aerospace company mainly operating in the military sector (including Gripen fighter jet).  
Leading supplier to the Swedish Armed Forces and 40th-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Military aircraft
- ▶ Naval platforms and systems
- ▶ Weapon and missile systems
- ▶ Defence electronics
- ▶ C4ISR and early warning systems
- ▶ Information security and system integration
- ▶ Simulation solutions

## GOVERNANCE

Chairman	M. Wallenberg
CEO and Executive President	M. Johansson
Head of Aeronautics division	J. Hjelm

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	SAAB B
Listed on	Nasdaq OMX Stockholm
Market Cap (SEK m)	30 329

### Major shareholders (as of 10.11.2020)

Investor AB	30,70%
Wallenberg Family	8,98%
Första AP-fonden	5,01%
Norges Bank Investment Management	2,62%
AFA Sjukförsäkringsaktiebolag	2,61%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
TAURUS Systems GmbH	33%	Germany
Akaer Participações S.A.	39,9%	Brazil
UMS Skeldar AG	47%	Switzerland
SN Technologies SA	50%	Switzerland

## KEY FIGURES (Fiscal year ended: December 31st)

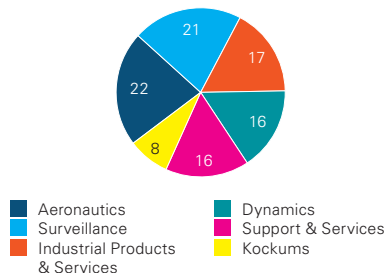
€ millions	2016	2017**	2018	2019
Revenue	3 024	3 287	3 232	3 346
Δ (%) / ISEK <sup>†</sup>	5,32%	10,60%	4,71%	6,87%
Defence (%)	84%	85%	85%	85%
Export (%)	57%	58%	59%	63%
Operating profit/loss	190	234	221	277
Operating margin	6,28%	7,11%	6,83%	8,29%
Net income***	120	153	128	187
Order book	11 264	10 911	9 964	8 930
Employees	15 465	16 427	17 096	17 420

<sup>†</sup>Variation based on revenue in local currency  
See e/SEK, p.7

\*\*Figures restated

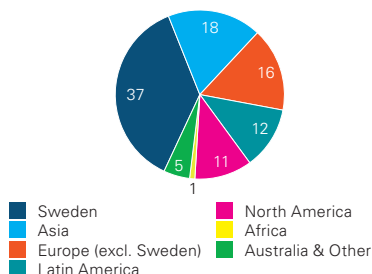
\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)\*



\*Revenue distribution based on total sales excluding eliminations

## REVENUE BY REGION (%)



MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	RUAG	Thales	MBDA	Embraer	BAE Systems	Dassault Aviation	Leonardo	AEL Systems*	Bombardier	UWS Aero Group	Diehl Defence	Boeing
<b>Military aircraft</b>												
JAS 39 Gripen E/F fighter aircraft		●	●	●		●	●					
T-7A Red Hawk future trainer aircraft**												●
Swordfish Maritime Patrol Aircraft (MPA) project (embedded system)								●				
GlobalEye and 2000 Erieye AEW&C surveillance aircraft				●				●				
Skeldar V-200 VTOL UAV									●			
nEUROn UCAV demonstrator (main fuselage, landing gear doors, avionics, etc.)					●							
<b>Missile and weapon systems</b>												
AT4 and Carl-Gustaf M4 man-portable shoulder-fired systems												
Light Anti-tank Weapon (NLAW) missile system												
RBS 70 NG very short-range ground-based air defence system												
RBS 15 Mk3 anti-ship missile											●	
IRIS-T short-range air-to-air missile											●	
METEOR beyond visual range air-to-air missile			●									
TAURUS KEPD 350 cruise missile			●									
<b>Defence and security solutions</b>												
Giraffe and Sea Giraffe family of radars (AMB, 1X, 4A, 8A)												
A26-class attack submarine												
<b>Defence electronics</b>												
BOL advanced countermeasure dispenser					●							
Integrated Defensive Aids System (IDAS)	●											

\*Elbit Systems group \*\*FX programme

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Saab consolidated sales reached SEK 35.4 bn (€3.3bn) in 2019, up 6.9% in local currency over one year. With the exception of the Kockums division, down 8.6% before consolidation, all of the group's divisions contributed to growth. The Dynamics division reported the strongest growth (+15.4% before consolidation), driven by increased deliveries of AT4 and Carl-Gustaf M4 rocket launchers.
- ▶ Saab generated 85% of its sales from defence activities in 2019. With the exception of the Industrial Products and Services branch, which focuses on civil aeronautics, defence accounts for more than 80% of sales in each of the company's divisions.
- ▶ The delay in certain programmes due to supply difficulties linked to the health crisis and low demand in the civil aeronautics market are expected to weigh on Saab's performance over 2020. The group's revenue decreased 8% in the first nine months of 2020 compared with the same period of the previous year, while operating profit fell 68%.

## Home market

- ▶ Saab generated 37% of its sales in the Swedish market in 2019. The group is the preferred partner of the FMV (Swedish Defence Materiel Administration), particularly in combat aircraft and naval defence, and participates in all of the country's military programmes. Amongst other contracts, Saab is scheduled to deliver 60 JAS 39 Gripen E and 36 JAS 39 Gripen F aircraft ordered by Sweden in 2014.
- ▶ Saab signed a contract worth SEK 687 m (€65m) with FMV to provide maintenance services for Sweden's fleet of Gripen fighters between 1 July 2020 and 31 March 2021.
- ▶ In July 2020, FMV awarded Saab a SEK 485 m (€46m) contract for the life extension of the Torped 62 heavy torpedo until 2040. Deliveries will take place between 2020 and 2024.

## Export markets

- ▶ Saab's export sales amounted to SEK 22.2 bn (€2.1bn) in 2019, representing 63% of total sales (compared with 59% in 2018).
- ▶ Saab signed a contract worth SEK 1.55 bn (€146m) with an unspecified customer for the supply of 2000 Erieye AEW&C surveillance aircraft by 2023. The group also signed a \$145m (€132m) contract with the United Arab Emirates for the maintenance of its GlobalEye surveillance aircraft over the 2020-2022 period.
- ▶ Saab has won several contracts for the supply of rocket launchers: in May 2020 for M4 Carl-Gustaf rocket launchers for the Estonian and Latvian armed forces, to be delivered over the 2021-2024 period (undisclosed contract value) and in July 2020 for AT4s and M4 Carl-Gustaf ammunition for the U.S. Army, to be delivered in 2021, for a total value of around \$100m (€91m).
- ▶ In July 2020, Saab submitted a bid for the Canadian Future Fighter Capability Project (FFCP) regarding the acquisition of 88 fighter aircraft as part of the "Gripen for Canada" consortium comprising CAE, IMP Aerospace & Defence, Peraton Canada and GE Aviation. Saab's JAS 39 Gripen E will compete with Boeing's F/A-18 Super Hornet Block III and Lockheed Martin's F-35 Lightning II. The winner of the tender will be announced in 2022.

## Technology and Innovation

- ▶ Saab's total R&D expenditure amounted to SEK 7.6 bn (€722m) in 2019, representing 21.6% of sales. Self-financed expenditure represented 6.7% of group sales.
- ▶ Despite the memorandum of understanding between the British and Swedish Ministries of Defence, Saab has not, at this stage, joined the Team Tempest consortium, which is responsible for developing the future Tempest fighter aircraft. However, the group is involved in the development of joint Swedish-British programmes and in July 2020 announced an investment of £50m (€57m) to open a research centre in the United Kingdom in the field of air combat systems integration.

One of the world's leading global aircraft engine and equipment manufacturers (civil and military aircraft and helicopters). 28th-largest defence contractor worldwide.

## BUSINESS AREAS

Engine manufacturer, systems integrator/  
equipment supplier

- ▶ Aircraft and helicopter engines, satellite and missile propulsion systems
- ▶ Aircraft systems and equipment
- ▶ Optronics, avionics, navigation systems, defence electronics and critical softwares
- ▶ Unmanned aircraft systems (UAS)
- ▶ Security systems

## GOVERNANCE

Chairman	Ross McInnes
Chief Executive Officer*	Philippe Petitcolin
Chief Financial Officer	Bernard Delpit
Pdt Safran Electronics & Defense	Martin Sion

\*On January 1, 2021, Olivier Andriès will succeed Philippe Petitcolin as Chief Executive Officer.

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	SAF
Listed on	Euronext Paris
Market Cap (€m)	48 327

## Major shareholders (as of 10.11.2020)

French State	12,00%
Employees	7,21%
TCI Fund Management Ltd.	5,71%
Capital Research & Management Co. (World Investors)	5,27%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
ArianeGroup	50%	France
Roxel	50%	France
Lynred (formerly Sofradir)	50%	France
CFM International SA	50%	France
EuroProp International GmbH	32,2%	Germany
Initium Aerospace	50%	United States

## KEY FIGURES (Fiscal year ended: December 31st)\*

€ millions	2016	2017**	2018	2019
Revenue	15 781	15 953	21 050	24 640
Δ (%)	1,58%	1,09%	31,95%	17,05%
Defence (%)***	≈ 20%	≈ 20%	≈ 17%	≈ 17%
Export (%)	79%	83%	84%	80%
Operating profit/loss	2 386	2 102	2 908	3 833
Operating margin	15,12%	13,18%	13,81%	15,56%
Net income****	1 804	2 393	1 981	2 665
Order book	62 320	68 583	N/A	N/A
Employees*****	57 542	58 324	92 639	95 443

\*Figures adjusted

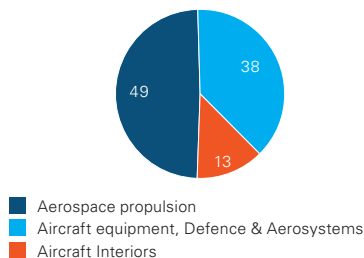
\*\*Figures restated

\*\*\*Estimated

\*\*\*\*Net income attributable to shareholders

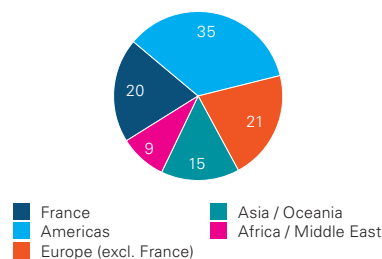
\*\*\*\*\*Excluding Security division since 2016

## REVENUE BY BUSINESS SEGMENT (%)\*



\*Figures adjusted. Following the integration of Zodiac Aerospace in July 2019, a new operational organization has been set up.

## REVENUE BY REGION (%)\*



\*Figures adjusted

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	ITP	AVIC	Rolls-Royce	MBDA	Diehl Defence	Ecrans	Thales	MTU Aero Engines	Hensoldt	Mads	Nexter*	HAL
<b>Aircraft engines</b>												
M88 afterburning turbofan engine (Rafale)												
TP400 turboprop engine (A400M)	●		●					●				
RTM322 engine family (NH90, EH 101, AH Mk.1)												
Ardiden turboshaft family (Druhv, LCH, LUH, Ka-62, AC352)			●									●
Ardiden 3TP future turboprop engine												
MTR390-2C (Tiger HAP, ARH, UHT) and MTR390-E (Tiger HAD) turboshaft engines	●		●					●				
Arrano 1A turboshaft engine (H160M)												
Next European Fighter Engine (NEFE, NGF/FCAS programme)								●				
<b>Space propulsion systems</b>												
Plasma propulsion (PPS 1350-G, PPS 1350-E, PPS 5000, TMA)												
<b>Missile propulsion systems</b>												
TR 60-30 (Apache, STORM SHADOW / SCALP EG) and TR 50 (MdCN / SCALP Naval) turbojet engines												
<b>Navigation systems and optronics</b>												
Geonyx™ inertial navigation system												●
Euroflir 610 future gyro-stabilized electro-optical system								●	●			
<b>Missile and weapon systems</b>												
Missile seekers (MICA IR, Mistral, MMP)			●									
HUSSAR future air-to-ground missile				●								
<b>Unmanned aircraft systems</b>												
Patroller tactical unmanned air vehicle						●						

\*KNDS group



## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Safran's adjusted revenue reached €24.6bn in 2019 (up 17.1% year-on-year), of which approximately 17% in the defence sector. Growth was supported by the acquisitions of Zodiac Aerospace and ElectroMechanical Systems as well as good momentum in all of the group's branches.
- ▶ In late 2019, Safran's Board of Directors announced the appointment of Olivier Andriès as the group's Chief Executive Officer, effective 1 January 2021, after a one-year transition period. Currently President of Safran Aircraft Engines, Mr. Andriès will replace Philippe Petitcolin.
- ▶ Safran has been directly impacted by the production shutdown of the Boeing 737 MAX (following two accidents), for which it supplies the LEAP engine alongside General Electric Aviation as part of the CFM International joint venture. The group has also been affected by the coronavirus crisis, which will have a major impact on its activity in 2020, as evidenced by the decline in revenue recorded over the first six months of the year (-27.6%, and even -29.0% on an organic basis).
- ▶ Against this backdrop, Safran has been implementing a number of cost-saving measures: site closures, reduced investment and R&D spending, the elimination of more than 10,000 jobs abroad, workforce adaptation plan and long-term partial activity scheme in France, etc.

## Home market

- ▶ Safran is a key player in several major ongoing defence programmes, including the French Army's future tactical UAV (Patroller programme) and Europe's New Generation Fighter (engine design and integration, in partnership with MTU Aero Engines). In early 2020, the French and German governments awarded Dassault Aviation, Airbus, MTU Aero Engines, Safran, MBDA and Thales the contract for the initial demonstrator of the FCAS (Future Combat Air System). The contract covers an 18-month phase and marks the beginning of the development of the NGF (New Generation Fighter).
- ▶ In February 2020, the French defence procurement agency DGA awarded Airbus Helicopters and Safran the contract for a new set of studies on the militarisation of the H160 helicopter, as part of the HIL programme for the future joint light helicopter Guépard. Under this contract, Safran will be responsible for the Turbomeca Arrano 1A turbines.

## Export markets

- ▶ Safran generated 80% of its sales from exports in 2019. The group has been stepping up its efforts to strengthen its international presence, particularly in emerging countries.
- ▶ In October 2019, Lockheed Martin Australia signed a \$36.8m (approximately €33m) contract with Safran Electronics & Defense Australasia for the design of the optronics search and attack mast, navigation radar and navigation data distribution components for the Royal Australian Navy's Future Submarine Programme (based on the Barracuda-class submarine).
- ▶ Safran Vectronix AG won a contract of an undisclosed value to supply the Swiss Army with 1,000 multifunctional binocular systems (JIM Compact and Moskito T1) and more than 8,000 stereoscopic night vision binoculars.
- ▶ Safran won several maintenance contracts: for the RTM322 engines of the Portuguese EH101 Merlin as well as the German and Norwegian NH90 helicopters; for the Makila engines of the Dutch Cougar Mk. II helicopters; and for the emergency flotation systems of the U.S. Coast Guard's HH-65 Dolphin helicopters.

## Technology and Innovation

- ▶ The group's self-financed R&D expenditure amounted to €1.3bn in 2019, representing 5.4% of sales.
- ▶ In July 2020, Safran Helicopter Engines and ZF Aviation Technology signed a memorandum of understanding to strengthen their partnership for the development of a turboprop engine (Ardiden 3TP) for military applications in Europe (UAVs, training and transport aircraft, etc.).



# ST ENGINEERING

Diversified engineering group mainly operating in the civil market but also involved in the military aeronautics, land and naval defence sectors. 57th-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer, systems-integrator

- ▶ Aerospace systems
- ▶ Defence electronics and space systems
- ▶ Land systems
- ▶ Naval systems

## GOVERNANCE

Chairman	Kwa Chong Seng
Chief Executive Officer	Vincent Chong
Chief Financial Officer	Cedric Foo

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	S63
Listed on	SGX
Market Cap (SGD m)	11 277

### Major shareholders (as of 10.11.2020)

Temasek Holdings	49,80%
Capital Research & Management Co. (Global Investors)	4,58%
The Vanguard Group, Inc.	1,54%
Temasek Capital Pte Ltd.	0,91%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Elbe Flugzeugwerke GmbH (EFW)	55%	Germany
Proteus Advanced Systems Pte. Ltd.	50%	Singapore

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017**	2018	2019
Revenue	4 374	4 183	4 205	5 153
$\Delta$ (%)/[SGD]*	5,51%	-4,37%	2,71%	17,47%
Defence (%)	35%	34%	31%	29%
Export (%)***	41%	39%	38%	45%
Operating profit/loss	308	348	358	428
Operating margin	7,05%	8,33%	8,51%	8,31%
Net income****	317	323	310	379
Order book	7 617	8 365	8 467	10 126
Employees	21 584	21 541	21 418	≈ 23 000

\*Variation based on revenue in local currency

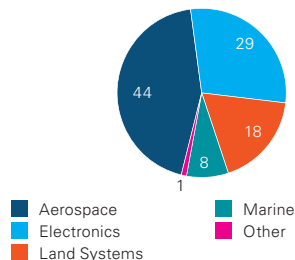
See €/SGD, p.7

\*\*Figures restated

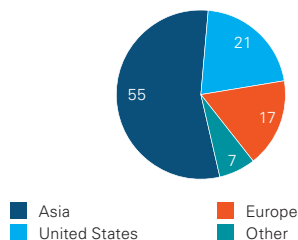
\*\*\*Home market = Asia

\*\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	SAIC	Lockheed Martin	DSO/DSTA*	Saab Kockums	Otokar	General Dynamics	Thales	Paramount Group	Rafael
<b>Aerospace</b>									
F-16 fighter aircraft MRO and modernisation	●								
C-130 Hercules transport aircraft MRO and modernisation	●								
Skyblade and USTAR families of UAVs		●							
<b>Electronics, cyber and space</b>									
Mercury AUV and Venus USV						●			
TeLEOS-1 and TeLEOS-2 Earth observation satellite		●							
DigiSAFE cybersecurity solution									
<b>Land systems</b>									
Hunter armoured tracked fighting vehicle (formerly NGAFFV)	●								●
Bronco / Warthog high mobility tracked carriers				●		●			
Belrex family of armoured wheeled vehicles							●		
8x8 Terrex family of armoured wheeled vehicles	●			●					
Spider light strike vehicle									●
40mm ammunition					●	●			
<b>Naval systems</b>									
Polar Security Cutter future icebreaker	●								
Littoral Mission Vessel (LMV) frigates			●			●		●	
Endurance-class Landing Platform Dock (LPD)									
Vanguard family of surface vessels									
Swift / Super Swift family of fast patrol boats									

\*Singapore government agencies

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ ST Engineering revenues reached SGD 7.9 bn (€5.2bn) in 2019, up 17.5% year-on-year in local currency. Growth was mainly driven by the takeovers of MRAS (a subsidiary of General Electric Aviation), Newtec and Glowlink.
- ▶ The group's defence business (SGD 2.3 bn, or €1.5bn) accounted for 29% of total sales in 2019. ST Engineering's defence activities mostly cover the supply of wheeled and tracked armoured vehicles, surface ships, aerial UAVs, electronic and communication systems, as well as MCO services.
- ▶ The group has been partly exposed, via its Aerospace and Marine branches, to the economic consequences of the coronavirus crisis. However, it expects the overall impact of the crisis to remain limited, thanks to its diversified offer and its position as a provider of critical services in Singapore.
- ▶ In July 2020, ST Engineering signed an agreement with Israel Aerospace Industries (IAI) to create a joint venture in the missiles segment. The entity, named Proteus Advanced Systems, will be dedicated to the development and marketing of new-generation anti-ship missiles.

### Home market

- ▶ ST Engineering is the result of the consolidation of Singapore's defence industry and is the leading supplier to the Singaporean Ministry of Defence.
- ▶ The new Hunter tracked armoured fighting vehicle (formerly NGAFV, Next Generation Armoured Fighting Vehicle), supplied by ST Engineering, was put into service by the Singaporean Army in June 2019.
- ▶ In early 2019, the group delivered the last of eight Independence-class LMV (Littoral Mission Vessel) frigates ordered by the Singaporean Navy in 2013.
- ▶ As a privileged partner of Lockheed Martin, ST Engineering is participating in the modernisation programme of the Singapore Armed Forces' fleet of F-16 aircraft (60 aircraft), which was launched in 2015. The first updated aircraft should be delivered in 2021.

### Export markets

- ▶ In 2018, VT Halter Marine, a U.S. subsidiary of ST Engineering, signed a \$78m (€67m) contract with NAVSEA (Naval Sea Systems Command) to design and build two units of the new class of berthing barges that will house U.S. Navy personnel. Two additional units were ordered in 2019-2020, bringing the total value of the contract to \$158m (€141m).
- ▶ VT Halter Marine was also chosen to supply an icebreaker (Polar Security Cutter) to the U.S. Coast Guard, to be delivered in 2024. The contract, worth \$746m (€664m), includes options for two additional vessels.
- ▶ In August 2019, Airbus Helicopters and Elbe Flugzeugwerke (EFW), a joint venture between ST Engineering (55%) and Airbus (45%), won an MCO contract for some 100 NH90 helicopters of Germany's Bundeswehr. The contract, the amount of which was not disclosed, covers a 10-year period and came into effect as of the first quarter of 2020.
- ▶ In July 2019, VT Halter Marine was shortlisted among the four U.S. shipyards in competition for the U.S. Navy's CHAMP (Common Hull Auxiliary Mission Platform) programme. The winner of the tender is expected to be announced in 2023, before a 10-year acquisition phase.

### Technology and Innovation

- ▶ ST Engineering's R&D expenditure reached SGD 101 m (€66m) in 2019, representing 1.3% of sales. The group's R&D activities are mainly focused on autonomous vehicles and robotics (including UAVs), cybersecurity, as well as the use of artificial intelligence for civil and military applications.

# TECHNICATOME

A major player in naval nuclear propulsion, resulting from the March 2017 sale of Areva's majority stake in Areva TA to a consortium led by French State Holdings Agency (APE).

## BUSINESS AREAS

Compact nuclear reactors designer

- ▶ Naval nuclear propulsion
- ▶ Support engineering for defence infrastructure
- ▶ Design and production engineering
- ▶ Reactors simulation and modelling physical phenomena
- ▶ MRO and services
- ▶ Civil nuclear energy

## GOVERNANCE

Chairman and CEO Loïc Rocard

Deputy CEO Olivier Huet

Director of Defence Reactors Bernard Gauducheau

## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

Major shareholders (as of 10.11.2020)

French State Holdings Agency (APE)	50,32%
Naval Group	20,32%
CEA	20,32%
EDF	9,03%

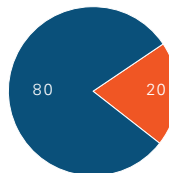
## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Arcys	51%	France

## KEY FIGURES (Fiscal year ended: December 31st)

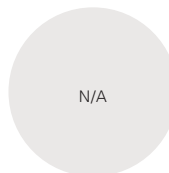
€ millions	2016	2017	2018	2019
Revenue	333	372	398	420
Δ (%)	7,77%	11,71%	6,99%	5,53%
Defence (%)	N/A	N/A	≈ 80%	≈ 75%
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss	42	48	57	72
Operating margin	12,61%	12,90%	14,32%	17,14%
Net income	48	44	41	51
Order book	N/A	N/A	≈ 1 000	≈ 1 000
Employees	≈ 1 530	≈ 1 540	≈ 1 610	≈ 1 700

## REVENUE BY BUSINESS SEGMENT (%)



■ Nuclear Propulsion & Defence    ■ Civil Nuclear Energy

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	CEA	Naval Group	Thales	Safran	MBDA	Chantiers de l'Atlantique	ArianeGroup
<b>Naval nuclear propulsion</b>							
Barracuda programme (Suffren-class nuclear-powered attack submarines)	●	●	●	●	●		
RES programme (shore-based nuclear test reactor for French naval propulsion and its related facilities construction and operation)	●						
SNLE 3G programme (future ballistic missile nuclear-powered submarine)	●	●	●				●
PANG programme (future new generation aircraft carrier)	●	●	●		●	●	
<b>MRO and services</b>							
Operational maintenance for steam supply systems on nuclear-powered vessels							
<b>Support engineering for defence infrastructure</b>							
Assistance with the infrastructure transformation of Toulon and Brest naval bases							
Operational maintenance of the infrastructure of Brest and Île Longue naval bases							
Assistance with the engineering and operation of Laser MegaJoule (Simulation programme)	●						

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ TechnicAtome revenues reached €420m in 2019 (+5.5% year-on-year), 75% of which were generated in the defence sector. The company's order book stood at nearly €1bn at the end of the financial year, representing more than two years of sales. The workforce has increased by around 10% over the past three years to keep pace with the growth in activity.
- ▶ The group is a major player in naval nuclear propulsion (French Navy submarines and Charles de Gaulle aircraft carrier). In the civil nuclear power segment, the group is involved in various major projects, including the design of a small modular power reactor (SMR - Small Modular Reactor).
- ▶ TechnicAtome's growth prospects are favourable in the medium term, with the 2019-2025 Military Programming Law (Loi de programmation militaire, or LPM) providing for the renewal of deterrence-based programmes, including those of the oceanic component.

### Home market

- ▶ Under the project management of Naval Group, TechnicAtome is providing the maintenance of the Charles de Gaulle aircraft carrier's two nuclear propulsion reactors, which included reloading the reactor cores with new fuel in 2007-2008 and 2017-2018 during the carrier's two major technical shutdowns.
- ▶ TechnicAtome is also involved in the Barracuda programme, which plans to build six new-generation nuclear attack submarines (SSN) by 2030. The group is in charge of the design and production of the nuclear propulsion boilers, their support system as well as their fuel.
- ▶ In July 2019, France's defence procurement agency DGA awarded Naval Group and TechnicAtome the contract to build the sixth and last new-generation SSN, to be named Casabianca.
- ▶ The first new-generation SSN (christened Suffren) successfully completed its static dive test in April 2020. Various sea trials over several months were carried out before the SSN's delivery to the French Navy in late 2020.
- ▶ TechnicAtome is also involved in project management assistance for the infrastructures of the Toulon and Brest naval bases, which will be the homeports for the SSNs of the Barracuda programme. The group's responsibilities include drafting the programmes for the adaptation of the basin infrastructures.
- ▶ In November 2018, TechnicAtome signed a framework agreement with the Defence Infrastructure Service (SID) of Brest (Brittany, France) regarding construction works and operational maintenance services for the infrastructures of the Brest and Île Longue naval bases.
- ▶ TechnicAtome started up two nuclear reactors within 14 months: the CEA test reactor at Cadarache in October 2018 (RES programme) and the nuclear boiler room of the Suffren SSN in December 2019 (Barracuda programme).

### Technology and Innovation

- ▶ Since 2017, TechnicAtome has been participating, alongside its co-contractor Naval Group, in the preliminary design studies for the 3rd-generation nuclear submarine programme (SNLE 3G), which plans to build four ships for the Strategic Oceanic Force (FOST) from 2023.
- ▶ TechnicAtome is also participating in the study phase of the French Navy's future new-generation aircraft carrier (porte-avions de nouvelle génération, or PANG). The group is working on the boiler rooms that could equip the vessel in a nuclear propulsion variant (preferred option, programme awaiting validation by the French President).



# TELEDYNE

Systems integrator and electronic components supplier. 80th-largest defence contractor worldwide.

## BUSINESS AREAS

Systems integrator and components supplier

- ▶ Aircraft systems and components
- ▶ Sub-systems and components for missile, defence and combat systems
- ▶ Naval Systems
- ▶ Space

## GOVERNANCE

Chairman

R. Mehrabian

Chief Executive Officer

A. Pichelli

President, Aerospace  
& Defense Electronics

G. C. Bobb III

## KEY FIGURES (Fiscal year ended: December 30th)

€ millions	2016	2017	2018	2019
Revenue	1 942	2 304	2 457	2 825
Δ (%)/[\$]*	-6,45%	21,11%	11,44%	9,02%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	23%	29%	30%	31%
Operating profit/loss	217	285	353	439
Operating margin	11,19%	12,36%	14,36%	15,54%
Net income**	172	201	283	359
Order book	869	1 043	1 370	1 513
Employees	8 970	N/A	10 850	11 790

\*Variation based on revenue in local currency  
See €/\$, p.7

\*\*Net income attributable to shareholders

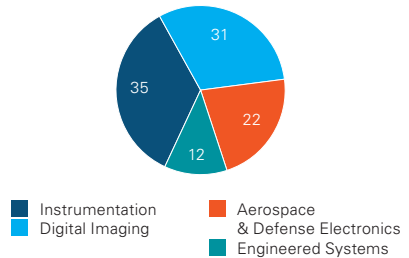
## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	TDY
Listed on	NYSE
Market Cap (\$m)	13 429

### Major shareholders (as of 10.11.2020)

The Vanguard Group, Inc.	10,30%
T. Rowe Price Associates, Inc. (Investment Management)	10,10%
SSgA Funds Management, Inc.	4,82%
Janus Capital Management LLC	3,68%

## REVENUE BY BUSINESS SEGMENT (%)

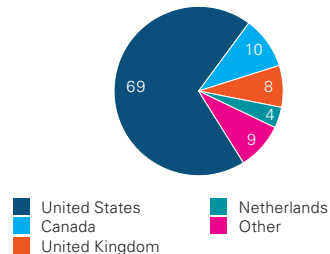


## MAIN JOINT VENTURES AND ASSOCIATES\*

Name	%	Country
*No information available		

\*No information available

## REVENUE BY REGION (%)





MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Elbit Systems	Raytheon Technologies*	L3Harris Technologies**	Lockheed Martin	Boeing	United Launch Alliance***	Northrop Grumman	Aeroflot Rocketbyne	Thales Alenia Space
Aircraft systems and components									
Sub-systems and components of the Joint Helmet Mounted Cueing System (JHMCS) (F-16, F/A-18, F-15)	●	●							
Fiber optic quad transceiver products for the F-35 fighter aircraft			●						
Ejection seat sequencers for fighter aircraft (F/A-18, F-35)									
Sub-systems and components for missile, defence and combat systems									
Surface-to-Surface Missile Module (SSMM) (LCS frigates)		●							
Cooling Equipment Units (CEU) of the AN/TPY-2 early warning radar system		●							
Zombie realistic-threat ballistic target missiles		●							
Traveling Wave Tubes (TWT) of the AEGIS combat system				●					
Naval systems									
Slocum-class autonomous underwater gliders (LBS-G programme)									
Gavia and SeaRaptor AUVs									
MK11 Shallow Water Combat Submersible (SWCS) future manned combat submersible vehicle									
Space									
Launch Vehicle Stage Adaptor (LVSA) of the Space Launch System (SLS)					●	●	●	●	
Image detectors for the Sentinel future observation satellites (Copernicus programme)									●
Payloads									

\*Merger of Raytheon and UTC

\*\*Merger of L3 Technologies and Harris Corporation

\*\*\*Joint venture between Boeing and Lockheed Martin

## STRATEGIC HIGHLIGHTS

## Business trends

- ▶ Teledyne revenues reached \$3.2bn (€2.8bn) in 2019, up 9% in local currency year-on-year. The group's four branches (Instrumentation, Digital Imaging, Aerospace & Defense Electronics, Engineered Systems) all contributed to growth.
- ▶ The Aerospace & Defense Electronics branch, which accounted for 22% of the group's sales in 2019, generates a significant part of its sales in the defense market. The group's other activities in the military field are distributed among the other three divisions.
- ▶ After several months of advanced negotiations for the acquisition of France's Photonis, a photo sensor technologies company, Teledyne is in the process of reaching an agreement with Ardian. The operation could reach approximately \$450m (€400m).

## Home market

- ▶ The group generated 69% of its turnover on the U.S. in 2019, a share that has declined over the last three years (-8 percentage points since 2016). Sales to the U.S. government, Teledyne's largest customer, accounted for a little less than a quarter of the group's turnover.
- ▶ Teledyne is involved in several major aeronautical programmes. Among others, the group is supplying components and sub-systems for the Joint Helmet Mounted Cueing System (JHMCS) display and sight helmet for pilots of the F-16, F/A-18 and F-15 fighter aircraft, as a subcontractor of Elbit Systems and Collins Aerospace (Raytheon Technologies). It is also involved in the F-35 programme, as a subcontractor of L3Harris Technologies, which is responsible for the fighter aircraft's avionics and communication systems.
- ▶ In August 2019, Teledyne's Instruments subsidiary won a contract worth up to \$22m (€20m) to supply Slocum Glider autonomous underwater gliders and acoustic systems to the Naval Undersea Warfare Center, the U.S. Navy's R&D and testing center for undersea warfare. The contract will run until December 2024.
- ▶ In October 2019, the U.S. Navy's Naval Sea Systems Command (NAVSEA) awarded Teledyne Brown Engineering a \$178m (€161m) contract to produce MK11 SWCS (Shallow Water Combat Submersible) underwater thrusters for the Special Forces. The thrusters, which are still in the development phase, should be delivered from 2023.
- ▶ In August 2020, Teledyne Brown Engineering signed a \$29m (€26m) contract with Raytheon Technologies for the production and maintenance, over the next three years, of cooling systems for the AN/TPY-2 (Army Navy/Transportable Radar Surveillance) early warning radars. The radars, produced by Raytheon Technologies, are integrated into Lockheed Martin's THAAD air defence system.

## Export markets

- ▶ Teledyne generated 31% of its revenues from exports in 2019. Canada, the United Kingdom and the Netherlands are the group's main export markets. Most of the turnover generated in these markets comes from the civil sector.
- ▶ In June 2020, the Teledyne e2v subsidiary was chosen by the European Space Agency (ESA) to supply the image sensors for the future Sentinel Earth observation satellites, as part of the Copernicus space programme, for which Thales Alenia Space is the prime contractor. The value of the contract was not disclosed.

## Technology and Innovation

- ▶ The group's areas of innovation in the defence segment mainly cover missile systems, naval systems and semiconductor components (FPGA chips in particular).



# TEXTRON

Civil and military industrial conglomerate with aerospace and defence activities (V-22 Osprey tiltrotor aircraft, UH-1Y and AH-1Z helicopters). 38th-largest defence contractor worldwide.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Commercial and military helicopters
- ▶ Military aircraft and business jets
- ▶ Unmanned systems (UAS, USV, RCV)
- ▶ Weapon systems
- ▶ Training solutions
- ▶ Industrial sector (E-Z-GO, Greenlee, Jacobsen, Kautex)
- ▶ Finance sector

## GOVERNANCE

Chairman and CEO Scott C. Donnelly  
 President and CEO, Ron Draper  
 Textron Aviation  
 President and CEO, Bell Mitch Snyder

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	TXT
Listed on	NYSE
Market Cap (\$m)	9 725

### Major shareholders (as of 10.11.2020)

T. Rowe Price Associates, Inc. (Investment Management)	15,30%
The Vanguard Group, Inc.	10,50%
Invesco Advisers, Inc.	5,66%
SSgA Funds Management, Inc.	4,70%

## MAIN JOINT VENTURES AND ASSOCIATES

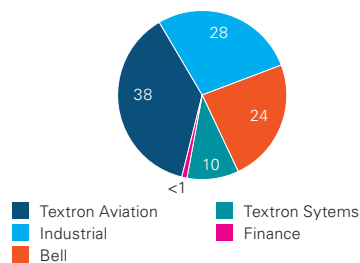
Name	%	Country
Textron Airland LLC	50,0%	United States
Bell-Boeing	50,0%	United States
Cessna-AVIC Aircraft (Zhuhai) Co., Ltd	N/A	China
Cessna-AVIC Aircraft (Shijiazhuang) Co., Ltd	N/A	China
TFS/Tri-Star Co., Ltd	80,0%	Taiwan

## KEY FIGURES (Fiscal year ended: December 31st)

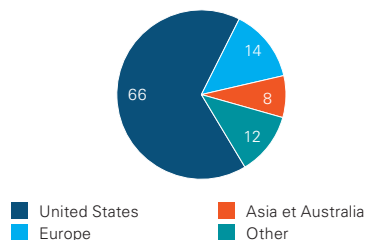
€ millions	2016	2017	2018	2019
Revenue	12 455	12 565	11 831	12 170
Δ (%)/[\$]*	2,72%	2,97%	-1,59%	-2,45%
Defence (%)	32%	29%	24%	24%
Export (%)	38%	38%	38%	34%
Operating profit/loss	762	271	1 035	728
Operating margin	6,11%	2,16%	8,75%	5,98%
Net income	869	272	1 035	728
Order book	7 820	5 992	7 945	8 751
Employees	≈ 36 000	≈ 37 000	≈ 35 000	≈ 35 000

\*Variation based on revenue in local currency  
 See €/\$, p.7

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Boeing	Lockheed Martin	Raytheon Technologies*	L3Harris Technologies**	AirLand Entreprises	Rolls-Royce	FLIR Systems	Northrop	Grumman	Spirit Aero System	GE Aviation	Piatius
Bell Helicopter (Helicopters)												
V-22 Osprey tiltrotor aircraft	●					●						
UH-1Y Venom utility helicopter							●			●		
AH-1Z Viper attack helicopter		●					●			●		
V-280 Valor future utility helicopter		●						●		●		
Bell 360 Invictus Future Attack Reconnaissance Aircraft (FARA)			●							●		
Textron Aviation (Cessna, Beechcraft, Scorpion)												
T-6C Texan II trainer aircraft			●									●
AT-6 Wolverine light attack aircraft	●	●	●									●
King Air 350 intelligence, surveillance and reconnaissance aircraft												
Special mission-configured Citation Latitude aircraft (ISR, flight inspection)												
Scorpion light attack/intelligence, surveillance and reconnaissance aircraft					●							
Textron Systems (Air, naval and land systems)												
Shadow Block III tactical UAS												
Aerosonde HQ Small Unmanned Aircraft System (SUAS)												
Common Unmanned Surface Vehicle (CUSV)												
Ship-to-Shore Connector (SSC)			●			●						
Ripsaw M5 Robotic Combat Vehicle (RCV)						●						
Textron Systems (Weapon systems and training solutions)												
U.S. Air Force's Adversary Air Services (ADAIR) training programme												
6.8 MM Rifle and 6.8 MM Automatic Rifle												

\*Merger of Raytheon and UTC \*\*Merger of L3 Technologies and Harris Corporation

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Textron revenues reached \$13.6bn (€12.7bn) in 2019, down 2.5% year-on-year in local currency. The decline was mostly driven by the Industrial (-11%) and Textron Systems (-9%) divisions.
- ▶ The group generated 24% of its revenues in the defence market in 2019, i.e. approximately \$3.3bn (€2.9bn), down 8 percentage points over the 2016-2019 period.
- ▶ Activity in the Textron Aviation and Industrial divisions will be severely impacted by the COVID-19 related health crisis in 2020, in particular due to the closure of production sites and difficulties in the business aviation market. In June 2020, Textron announced it would cut 1,950 positions.

### Home market

- ▶ Textron generated 66% of its sales in the United States in 2019.
- ▶ Textron's ATAC subsidiary (which is integrated into the Textron Systems division) is involved in the U.S. Air Force's ADAIR (Adversary Air Services) pilot training programme. ATAC is using Mirage F1 fighter jets purchased from the French Air Force to train F-16, F-22 and F-35 pilots.
- ▶ In February 2020, Textron Systems delivered the first new-generation amphibious landing craft, the Ship-to-Shore Connector (SSC) Craft 100, to the U.S. Navy. A total of 73 units are expected to be ordered by the U.S. Navy. During the first half of 2020, the U.S. Navy also took delivery of the first three CMV-22B tiltrotor aircraft (a variant of the V-22 Osprey intended for the U.S. Navy) out of the 39 units ordered in 2018 from Boeing and Bell, a Textron subsidiary. Bell-Boeing also delivered a new V-22 Osprey aircraft (in CV-22 configuration) to the U.S. Air Force Special Operations Command in June 2020. This new aircraft is the 400th to be delivered to the U.S. Department of Defense.
- ▶ Bell is one of the last two players in competition, alongside Sikorsky (Lockheed Martin group), to build the U.S. Army's future manoeuvre and assault helicopter (FLRAA programme, Future Long Range Assault Aircraft). Bell is offering the V-280 Valor while Sikorsky is offering the SB<sup>1</sup> Defiant in partnership with Boeing. The final decision is expected in 2021. Bell and Sikorsky are also the last two players in the running for the U.S. Army's Future Assault and Reconnaissance Aircraft (FARA) programme. Bell is offering the Bell 360 Invictus helicopter (based on the design of the Bell 525 Relentless) and Sikorsky the Raider X (derived from the S-97 Raider). The final decision is expected by 2023 at the latest.
- ▶ Textron Systems is offering the Aerosonde HQ UAV as part of the U.S. Army's Future Tactical Unmanned Aerial System (FTUAS) programme. Textron Systems is also in competition with Sig Sauer and General Dynamics to supply the U.S. Army's future assault rifles as part of the Next Generation Squad Weapon (NGSW) programme.

### Export markets

- ▶ The group generated 34% of its sales from exports in 2019. In the military segment, most of its contracts are awarded through FMS procedures.
- ▶ In April 2020, Textron Aviation delivered the first two Cessna Citation Latitude business jets configured for flight inspection missions to the Japan Air Self-Defense Force (JASDF). A third aircraft is scheduled for delivery in 2021. In July 2020, Bell-Boeing also delivered the first of 17 V-22 Osprey tiltrotor aircraft ordered by the Japan Ground Self-Defence Force (JGSDF) in 2015.
- ▶ In September 2020, under an FMS procedure, Bell Textron won a \$272m (€241m) contract for the delivery of eight AH-1Z attack helicopters and four UH-1Y manoeuvring and assault helicopters to the Czech Republic.

### Technology and Innovation

- ▶ The group's self-financed R&D spending amounted to \$647m (€578m) in 2019.



Diversified complex electronic systems group with civil and military activities.  
16th-largest defence contractor.

## BUSINESS AREAS

Systems integrator/equipment supplier

- ▶ Aerospace equipment and systems
- ▶ Sensors, systems and communications
- ▶ Weapon systems and ammunition
- ▶ Training and simulation
- ▶ Space (see also Thales Alenia Space)
- ▶ Cybersecurity

## GOVERNANCE

Chairman and CEO	Patrice Caine
Group Secretary & General Counsel	Isabelle Simon
Executive VP, Defence Mission Systems	Philippe Duhamel

## OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	HO
Listed on	NYSE Euronext
Market Cap (€m)	15 304

### Major shareholders (as of 10.11.2020)

French State	25,70%
Dassault Aviation SA	24,70%
T. Rowe Price International Ltd.	2,78%
Employees	1,98%
The Vanguard Group, Inc.	1,45%

## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Naval Group	35%	France
Thales Alenia Space	67%	France
Telespazio S.p.A	33%	Italy
Electronica S.p.A.	33%	Italy
Diehl Aerospace GmbH	49%	Germany
Lynred (formerly Sofradir)	50%	France
TRS AMDC2	50%	France
AirTanker Holdings Ltd	13%	United Kingdom

## KEY FIGURES (Fiscal year ended: December 31st)

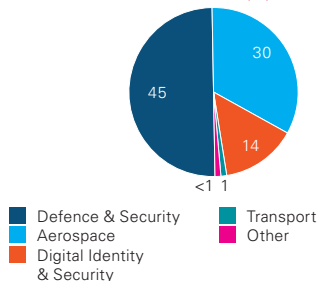
€ millions	2016	2017*	2018*	2019
Revenue	14 885	15 228	15 855	18 401
Δ (%)	5,85%	2,30%	4,12%	16,06%
Defence (%)**	50%	50%	49%	45%
Export (%)	76%	76%	75%	76%
Operating profit/loss	1 354	1 365	1 685	2 008
Operating margin	9,10%	8,96%	10,63%	10,91%
Net income***	897	840	1 178	1 405
Order book	33 530	32 064	32 329	33 839
Employees	64 071	64 860	66 332	82 718

\*Figures restated

\*\*Defence & Security division only

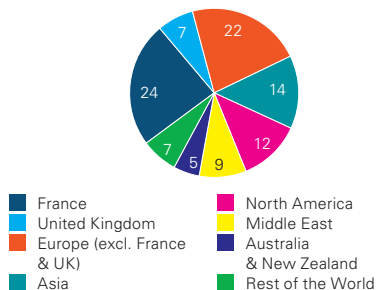
\*\*\*Net income attributable to shareholders

## REVENUE BY BUSINESS SEGMENT (%)



\*Following the integration of Gemalto in April 2019, a new division called Digital Identity and Security was created.

## REVENUE BY REGION (%)



MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Elbit Systems	MBDA	Dassault Aviation	Raytheon Technologies*	Indra Sistemas	Hensoldt	Naval Group	Nexter**	Boeing	Airbus
<b>Combat systems and embedded electronics</b>										
SPECTRA electronic warfare suite	●	●								
RBE-2 AESA radar			●							
Targeting Long-range Identification Optronic System (TALIOS)		●								
TopOwl and Scorpion helmet mounted displays										
Defence electronics of the NGF (FCAS programme)				●	●					
Man Machine Teaming advanced study programme		●								
<b>Mission and surveillance systems</b>										
CONTACT and SYNAPS software defined radios										
Watchkeeper WK450 ISTAR UAV	●									
ARCHANGE programme (payload sensor development)		●								
<b>Radar and sonar systems</b>										
Ground Master and Ground Fire radar systems			●							
Sea Fire radar							●			
<b>Missile, weapon systems, ammunition</b>										
RAPIDFire and RAPIDFire Naval air defence systems								●		
Missile guidance systems (Aster, MICA)	●									
SAMP/T surface-to-air missile defence system	●									
<b>Military vehicles</b>										
4X4 Bushmaster armoured vehicle										
4X4 Hawkei light tactical vehicle								●		
<b>Cybersecurity</b>										
Stormshield Data Security										●

\*Merger of Raytheon and UTC \*\*KNDS group

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Thales revenues reached €18.4bn in 2019, up 16.1% year-on-year. Defence and Security sales, which accounted for 45% of total sales, increased by 5.6% during the year, driven by solid performances in business areas such as air traffic control, optronics, combat aircraft systems, military radio communications, etc. In addition to its defence activities, the group also operates in the fields of avionics, transport, space (via Thales Alenia Space), as well as security and digital identity (especially following the acquisition of Gemalto).
- ▶ Thales has been directly impacted by the COVID-19 related health crisis, and as a consequence implemented an adaptation plan comprising three key measures: signing of a €2bn credit facility to strengthen its cash position, withdrawal of the final dividend proposal for 2019 (cash value of €430m), and withdrawal of the 2020 financial objectives. The Group is also expected to cut 1,000 positions in France, mainly in civil aviation-related activities.

### Home market

- ▶ Thales generated 24% of its sales in France during 2019, a share that has been relatively stable for several years. The group is a key partner of Dassault Aviation (Rafale fighter aircraft, ARCHANGE programme, etc.) and Naval Group (FDI/Beharra-class frigates, FREMM-class frigates, etc.).
- ▶ Arqus, Nexter (KNDS) and Thales are jointly involved in the Scorpion programme which will equip the French Army with 1,872 VBMR Griffon and 300 EBRC Jaguar by 2030, half of which by 2025. Due to the health crisis, the delivery target set for 2020 may not be met.
- ▶ In late 2019, France's defence procurement agency DGA awarded Dassault Aviation and Thales the contract to equip the French Army's future strategic intelligence aircraft (ARCHANGE programme) with the CUGE universal electronic warfare capability. The contract covers the first two Dassault Aviation Falcon 8X aircraft on the programme.
- ▶ In early 2020, the French and German governments awarded Dassault Aviation, Airbus, MTU Aero Engines, Safran, MBDA and Thales the contract for the initial demonstrator of the FCAS (Future Combat Air System). The contract covers an 18-month phase and marks the beginning of the development of the NGF (New Generation Fighter).

### Export markets

- ▶ Thales generated 76% of its sales outside France in 2019. The group is pursuing a "multi-domestic" development strategy that favours physical presence in foreign markets and systems incorporating a high level of local content, in order to enhance the chances of the group's local entities of winning contracts.
- ▶ The Defence and Security division received several major orders in the military field: supply of mobile radars for the Royal Netherlands Army, equipment for helicopters for the Indian Armed Forces, equipment for the five future F-110 frigates of the Spanish Navy, etc.
- ▶ Thales is involved, alongside Nexter and Arqus, in the CaMo (Motorised Capability) programme for the supply of 60 Jaguar EBRCs and 382 Griffon VBMRs to the Belgian Army from 2025 onwards. This €1.6bn contract includes exercises, training and maintenance services.
- ▶ In February 2020, the British Ministry of Defence (MoD) selected Thales to develop and integrate the combat (Tactics) and communication (Partner-C, Comtics) systems for the Royal Navy's five future Type 31 frigates.
- ▶ In July 2020, Thales and the Australian government signed a Strategic Domestic Munitions Manufacturing (SDMM) contract for the local production of munitions for the Australian Defence Force. The 10-year contract is valued at more than AUD 1 bn (approximately €620m).

### Technology and Innovation

- ▶ The group's self-financed R&D expenditure amounted to €1.1bn in 2019, up 24.8% over one year.





# THALES ALENIA SPACE

Franco-Italian group majority owned by Thales. Among the world's leading manufacturers of satellites, space infrastructure and space navigation systems.

## BUSINESS AREAS

Platform manufacturer, systems integrator/  
equipment supplier

- ▶ Satellite platforms (satellite buses)
- ▶ Ground control segment
- ▶ Electronics, propulsion systems, recovery systems
- ▶ Payloads
- ▶ Manned space systems
- ▶ Space transport

## GOVERNANCE

Chief Executive Officer  
Chief Financial Officer

Hervé Derrey  
Évrard Decourcelle

## OWNERSHIP STRUCTURE

Symbol  
Listed on  
Market Cap

Unlisted group

Major shareholders (as of 10.11.2020)

Thales	66,66%
Leonardo	33,33%

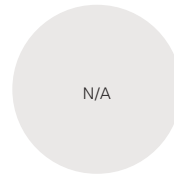
## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Pyxalis	15,53%	France
AirStar Aerospace	8,61%	France
Altec SpA	63,75%	Italy
RASCOMSTAR QAF	12,36%	Mauritius
Universum Space Technologies	40%	Russia
LeoStella LLC	50%	United States
Spaceflight	N/A	United States

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	≈ 2 400	≈ 2 600	≈ 2 500	≈ 2 150
Δ (%)	≈ 14%	≈ 8%	≈ -3,8%	≈ -14%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss	N/A	N/A	N/A	N/A
Operating margin	N/A	N/A	N/A	N/A
Net income	N/A	N/A	N/A	N/A
Order book	N/A	N/A	N/A	N/A
Employees	≈ 7 980	≈ 7 980	≈ 8 000	≈ 7 700

## REVENUE BY BUSINESS SEGMENT (%)



## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	Safran	Visiona TE	Indra Sistemas	Leonardo	Thales	OHB Group	Northrop	AirStar	Grumman*	Aerospace	Groupe CNIM	ATR**	Cenit
<b>Satellite platforms (satellite buses)</b>														
Spacebus NEO (Syracuse 4) platform	●	●				●								
Proteus (Göktürk 1) and ELiTeBus (Iridium-NEXT) low- and medium-Earth orbits platforms						●	●							
Stratobus project								●	●					
<b>Payloads</b>														
<b>Sensor electronics units (SAR-Lupe)</b>														
<b>Communications satellite</b>														
SGDC Geostationary Defense and Strategic Communications Satellite			●											●
Ital-GovsatCom future communications satellite														
Spainsat New Generation (NG) communications satellites	●													
<b>Manned space systems and space transport</b>														
Cygnus Pressurized Cargo Module (PCM)							●							
<b>Earth observation satellite systems</b>														
Cosmo-SkyMed Second Generation (2G) Earth observation satellite system				●	●									
CSO (Optical Space Component) Earth observation satellite	●													
Meteosat Third Generation (MTG) meteorological geostationary satellite system						●	●							
<b>Satellite navigation systems</b>														
GALILEO global navigation satellite system							●							
European Geostationary Navigation Overlay Service (EGNOS)			●	●	●	●								
Equipment for Dual frequency Galileo, GPS and EGNOS (EDG <sup>2</sup> E) project					●								●	
<b>Propulsion system</b>														
Xenon Propulsion System (XPS) engine module		●												

\*Innovation Systems division, formerly Orbital ATK \*\*Joint venture between Airbus and Leonardo

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ Thales Alenia Space is 67% owned by French company Thales and 33% by Italian company Leonardo, both of which specialise in aerospace, defence and security. In the military sector, the group supplies highly secure telecommunications systems, observation systems, optical payloads and high-resolution radars.
- ▶ Thales Alenia Space is part of the Space Alliance alongside Telespazio, another joint venture between Leonardo (67%) and Thales (33%). The group is also involved in two major joint ventures: LeoStella LLC (design and manufacture of small satellites) and Altec (engineering services associated with space infrastructure).
- ▶ In 2019, Thales Alenia Space revenues reached nearly €2.2bn (-14% year-on-year). It was the second consecutive year of declining revenues for the company, mostly due to strong competition in the aerospace sector and sluggish orders for observation and telecommunications satellites.
- ▶ As a result of the decline in business and orders, Thales Alenia Space in June 2019 announced an adjustment plan including the elimination of 452 positions in Toulouse and Cannes. The plan will be carried out without layoffs, instead promoting internal mobility within the Thales group, with the possibility of a return to the space division in the long term.
- ▶ In February 2020, Hervé Derrey, previously Senior Vice President and Chief Operating Officer of Thales' Secure Information and Communications Systems division, was appointed Chief Executive Officer of Thales Alenia Space, replacing Jean-Loïc Galle.
- ▶ In the context of the coronavirus-related health crisis, Thales Alenia Space in April 2020 announced a reorganisation of its activities, with a focus on maintaining vital activities while reducing production.

### Home market

- ▶ A key partner of France's defence procurement agency DGA, Thales Alenia Space is involved in the main space programmes of the French Ministry of the Armed Forces (Syracuse 4, CSO, etc.).
- ▶ In 2019, the DGA awarded Thales group the contract to design and build the ground segment of the Syracuse 4 programme, the French Armed Forces' future satellite communication system. Amongst others, Thales Alenia Space will participate in the design phase (delivery from 2021).
- ▶ In January 2020, the DGA awarded Thales Alenia Space a contract for a concept study on the military applications of the StratoBus platform in the fields of intelligence, surveillance and reconnaissance. A first flight demonstration is scheduled for the end of 2023.

### Export markets

- ▶ In May 2019, Madrid-based telecommunications company Hisdesat Servicios Estratégicos selected the consortium composed of Thales Alenia Space and Airbus in Spain and France for the design and production of two Spainsat satellites. The two satellites will replace the Spainsat and XTar-EU satellites, which provide Spanish government communications.
- ▶ In July 2019, the Space Alliance (Thales Alenia Space and Telespazio) signed a contract with the Italian Space Agency for the first phase of development of the Ital-GovSatCom satellite system, designed to provide Italy with communications services, particularly for defence applications.

### Technology and Innovation

- ▶ Thales Alenia Space Spain is leading a consortium dedicated to the PROMISE (PROgrammable MlXed Signal Electronics) project, which aims to secure the European space industry's technological independence and competitiveness by developing a library of blocks for microchip designs that will allow to cut production lead times and costs of Europe's future satellites.



# THYSSENKRUPP MARINE SYSTEMS (TKMS)

Shipbuilding division of the mainly civil-oriented German conglomerate ThyssenKrupp AG.  
Leading submarine exporter in the world.

## BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Surface ships
- ▶ Submarines
- ▶ Ammunition
- ▶ Unmanned Surface Vehicles (USVs),  
Unmanned Underwater Vehicles (UUVs)
- ▶ Combat systems, mine warfare systems
- ▶ Sonar and acoustic systems
- ▶ Equipment and MRO services

## GOVERNANCE

Chief Executive Officer

Chief Financial Officer

Chief Project Officer

Dr. Rolf Wirtz

Dr. S. C. Schulte

Andreas Burmester

## KEY FIGURES (Fiscal year ended: September 30th)

€ millions	2015-16	2016-17	2017-18*	2018-19*
Revenue	≈ 1 600	≈ 1 700	1 389	1 800
Δ (%)	-5,88%	6,25%	-18,29%	29,59%
Defence (%)	N/A	N/A	N/A	N/A
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss**	N/A	N/A	-128	1
Operating margin	N/A	N/A	-9,22%	0,06%
Net income	N/A	N/A	N/A	N/A
Order book	N/A	N/A	5 493	5 887
Employees	≈ 3 200	≈ 3 500	5 818	6 013

\*Including Atlas Elektronik (consolidated subsidiary since April 2017)

\*\*Operating profit/loss adjusted (EBIT)

## OWNERSHIP STRUCTURE

Symbol

Listed on

Unlisted division

Market Cap

Major shareholders (as of 10.11.2020)

ThyssenKrupp AG

100%

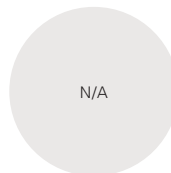
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Kta Naval Systems	50%	Norway
ThyssenKrupp Marin Sistem Gemi Sanayi ve Ticaret A.S.	60%	Turkey
MTG Marinetechnik GmbH	49%	Germany
Lisnave-Estaleiros Navais S.A.	20%	Portugal
Blohm & Voss German Naval Technology	40%	Qatar

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Roketsen	Embraer	Fincantieri	Diel Defence	Lürssen	HHL*	ST Engineering	Kongsberg	Golçuk Shipyards	SMW Gdynia**	GNVK***	Nammco	DSME
Conventionally-powered attack submarines													
■ Type 212CD submarine							●						
■ Dolphin-class AIP submarine													
■ Invincible-class AIP submarine							●						
■ Type 214 submarine					●			●					●
■ Type 212A submarine		●											
■ Type 209/1400mod submarine								●					●
Surface ships													
■ MEKO frigates, corvettes and OPVs									●	●			
■ F125 Baden-Württemberg-class frigate					●								
■ Tamandaré-class future corvette (CCT programme)	●												
■ 6 to 10 K130 Braunschweig-class corvettes					●						●		
Naval systems, equipment and ammunition													
■ IDAS missile system	●		●				●						●
■ ORCCA submarine combat system							●						
■ ANCS/ANCS-SC ship combat system													
■ Active Towed Array Sonar (ACTAS) / Active Pulse Analysis System (APAS)													
■ SeaHake Mod4 heavyweight torpedo													
Unmanned vehicles													
■ ARCIMS minesweeper USV													
■ SeaFox mine disposal UUV													

\*Hyundai Heavy Industries \*\*PGZ group \*\*\*German Naval Yards Kiel (Prinvest group)

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ ThyssenKrupp Marine Systems (TKMS) is the naval branch of German conglomerate ThyssenKrupp AG (€42.0bn in sales in 2018-19, more than 162,000 employees). Previously integrated within the Industrial Solutions division, TKMS has been operating as a separate division since 1 October 2018. TKMS accounted for 4.3% of the steel group's sales and 3.7% of its workforce in 2018-19.
- ▶ In 2017, TKMS acquired the 49% capital share in Atlas Elektronik it did not already own from Airbus. Atlas Elektronik is a German marine electronics and systems company specialising in sonar and acoustic systems, underwater weapons, surface and underwater drone systems, and combat and mine warfare systems, amongst others. Prior to its acquisition by TKMS, it was 51% owned by ThyssenKrupp and 49% by Airbus. The objective of the deal was to strengthen TKMS' expertise and control of the value chain, which are key competitive factors in calls for tenders.
- ▶ Amid negotiations for the consolidation of Germany's three main naval defence players - TKMS, Lürssen and GNYK -, the latter two in the spring of 2020 reached an agreement to create a joint company. At the same time, TKMS and Fincantieri entered into talks to form an alliance which would cover the two groups' military shipbuilding activities under the form of a 50/50 joint venture. The resulting entity would generate combined sales of approximately €3.4bn.

### Home market

- ▶ TKMS remains dependent on orders from the German Navy, in particular via the F125 frigate programme (a contract for four frigates worth €2bn). The programme's second frigate, named Nordrhein-Westfalen, was delivered in March 2020 and the last two are scheduled to enter service by 2021.
- ▶ In order to support the ramp-up of certain programmes (including the Type 212CD submarine), TKMS in November 2019 announced that it would invest €250m until 2023 in the modernisation of its Kiel shipyard located in northern Germany. The branch also plans to create around 500 jobs over the period (production staff, engineers, researchers, etc.).
- ▶ The GNYK-led consortium including TKMS and Atlas Elektronik was not selected to produce four MKS 180 multi-mission frigates for the German Navy. In January 2020, the consortium led by the Netherlands-based Damen Group, in partnership with Lürssen and Thales Nederland, was selected for this €5.3bn contract.

### Export markets

- ▶ TKMS is currently bidding for several tenders, in particular in India (P75i programme involving six submarines, in competition with Naval Group, Navantia, DSME and Rubin) and in the Netherlands (replacement of four Walrus-type submarines, in competition with Naval Group and Saab).
- ▶ In September 2019, Atlas Elektronik was awarded a contract by the Royal Navy for the supply of ARCIMS surface UAVs dedicated to mine warfare as part of the Mine and Hydrographic Capability (MHG) programme.
- ▶ In March 2020, the Águas Azuis consortium, formed by TKMS and Embraer Defence & Security, signed a contract valued at \$1.6bn (€1.4bn) for the supply of four escort corvettes for the 2025-2028 period (Tamarandá Class Corvettes (CCT) programme). Following the signing of the contract, TKMS acquired the Oceana shipyard from Aliança, the Brazilian company in charge of building the four ships.
- ▶ In April 2020, TKMS delivered S43, the third of the four new Type 209/1400 submarines ordered by Egypt in 2011 (first two) and in 2015 (last two). The last submarine should be commissioned in 2021.

### Technology and Innovation

- ▶ At the SubCon2019 international submarine conference, Kta Naval Systems, a joint venture between TKMS and Kongsberg, unveiled ORCCA, a new combat management system for conventional submarines. The system will be installed on the Type 212CD submarines ordered by Norway from TKMS.



# TURKISH AEROSPACE

Aerospace company with civil and military activities. Major supplier to the Turkish Armed Forces in the aeronautics and space fields, and 53rd-largest defence contractor.

## BUSINESS AREAS

Platform manufacturer and systems integrator/  
equipment supplier

- ▶ Military aircraft (fighter aircraft, trainer aircraft, helicopters)
- ▶ Unmanned systems (MALE UAVs, target drone systems)
- ▶ Aerostructures
- ▶ Earth observation and communications satellites
- ▶ Modernisation and maintenance services

## GOVERNANCE

Chairman	Rafet Bozdogan
Chief Executive Officer	Temel Kotil
Chief Financial Officer	Saadet Korkem

## KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	1 138	1 258	1 411	2 024
Δ (%)/[\$]*	21,74%	12,86%	17,16%	36,07%
Defence (%)	86%	77%	63%	82%
Export (%)	N/A	N/A	N/A	N/A
Operating profit/loss	N/A	N/A	N/A	N/A
Operating margin	N/A	N/A	N/A	N/A
Net income	N/A	N/A	N/A	N/A
Order book	N/A	N/A	N/A	N/A
Employees	5 254	≈ 6 000	N/A	≈ 9 000

\* Variation based on revenue in U.S. dollars  
See €/\$, p.7

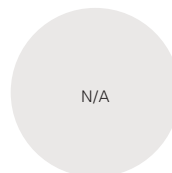
## OWNERSHIP STRUCTURE

Symbol	
Listed on	Unlisted group
Market Cap	

Major shareholders (as of 10.11.2020)

Turkish Armed Forces Foundation (TSKGV)	54,49%
Undersecretariat for Defence Industries	45,45%
Turkish Aeronautical Association (THK)	0,06%

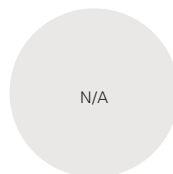
## REVENUE BY BUSINESS SEGMENT (%)



## MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
TEI	50,5%	Turkey
Airbus Military	5,6%	Turkey
TR-Motor	35%	Turkey
CTech	49%	Turkey
TAAC	50%	Turkey
GSATCOM	50%	Turkey

## REVENUE BY REGION (%)



## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	Airbus	TEI	Lockheed Martin	Northrop Grumman	BAE Systems	Aselsan	Havelsan	Roketsan	Leonardo	Thales Alenia Space	Telespazio	KAI
<b>Fighter and trainer aircraft</b>												
Hürkus-A/B trainer aircraft and Hürkus-C light attack aircraft					●		●					
TF-X future fighter aircraft				●	●	●						
F-16 future fighter aircraft*		●										
<b>Helicopters</b>												
T-70 utility helicopter		●	●		●							
T129 ATAK attack helicopter					●		●	●				
T625 Gökbey future utility helicopter		●			●							
<b>Unmanned systems</b>												
ANKA surveillance and reconnaissance MALE UAV					●		●					
AKSUNGUR future combat MALE UAV		●			●		●					
SIMSEK target drone system												
<b>Aerostructures</b>												
A400M programme (forward center fuselage, paratrooper doors, tailcone, fins, spoilers)	●											
F-35A fighter aircraft (center fuselage)**			●									
MK1 Cougar programme (fuselage, tail, canopy)	●											
KUH-Surion helicopter (forward fuselage)												●
<b>Satellites</b>												
GÖKTÜRK-1 earth observation satellite					●		●		●	●		
TÜRKSAT 6A future communications satellite					●							

\*Sub-licensed production

\*\*Ongoing production of components for F-35 fighter aircraft despite Turkey being suspended from the program



## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ In 2018, as part of an initiative to adopt a new corporate identity, Turkish Aerospace Industries (TAI) was renamed Turkish Aerospace. In 2019, the group generated revenues of around \$2.3bn (approximately €2bn), 82% of which in the defence sector.
- ▶ Some of Turkish Aerospace's competencies were acquired through programmes carried out under American and European licences. The company now offers two nationally developed aircraft systems: the Hürkus light attack and training aircraft as well as the T625 Gökbey light transport and utility helicopter. The group is also the prime contractor for the TF-X, Turkey's future fighter aircraft programme, developed in collaboration with BAE Systems.
- ▶ In 2020, Turkish Aerospace inaugurated a second maintenance centre for the A400M military transport aircraft, as well as a new site dedicated to the development of the TF-X.

### Home market

- ▶ Turkish Aerospace is a major supplier to the Turkish Armed Forces in the aerospace sector.
- ▶ The group continues to work on the development of the TF-X fighter aircraft, the first prototype of which is expected in 2023. The first test flight should be carried out in 2025, with the prototype equipped with General Electric F110 engines. However, Turkey plans to equip the TF-X with locally-designed engines by 2029. In May 2020, Havelsan, a Turkish defence software and systems company, became a partner in the TF-X programme, alongside BAE Systems and Aselsan. Havelsan will supply the training and simulation systems.
- ▶ Under a contract signed in 2016, Turkish Aerospace is in charge of assembling 109 T-70 utility helicopters, a derived version of Sikorsky's (Lockheed Martin group) S-70i helicopter that was designed for the Turkish market. The group is also continuing to develop the first utility helicopter entirely designed and built in Turkey, the T625 Gökbey, which completed a second test flight in July 2019. Serial production is expected to begin in 2021.
- ▶ TUSAS Engine Industries (TEI, a joint venture between Turkish Aerospace and GE Aviation) is developing the TS1400 engine that will power the T625 Gökbey helicopter and replace the CTS800 engine (designed by LHTEC, a joint venture between Rolls-Royce and Honeywell) that was initially used. The T625 Gökbey will thereby become the first Turkish helicopter equipped with a locally-designed engine.
- ▶ In the UAV segment, Turkish Aerospace is developing the Aksungur medium-altitude long-endurance UAV, whose test flight at full-capacity, i.e. equipped with 12 MAM-L laser-guided smart munition systems supplied by Roketsan, was successfully completed in September 2020.

### Export markets

- ▶ Turkish Aerospace's main export markets are located in Asia. The group also supplies aerostructures to U.S. and European aircraft manufacturers.
- ▶ The T129 ATAK helicopter, based on the A129 Mangusta from Leonardo Helicopters (formerly AgustaWestland) and produced by Turkish Aerospace through a technology transfer, is being exported to Azerbaijan (60 aircraft ordered in 2013), Pakistan (30 aircraft ordered in November 2018) and the Philippines (8 to 10 aircraft ordered in December 2018).
- ▶ Discussions are under way with Malaysia, Indonesia, Pakistan, Kazakhstan and Bangladesh for the inclusion of these countries, as partners and/or customers, in the TF-X programme.

### Technology and Innovation

- ▶ In addition to the TF-X programme, Turkish Aerospace aims to develop three other military programmes: an advanced trainer and light combat aircraft called Hürjet, a 10t utility helicopter designed for search and rescue missions, as well as a heavy combat helicopter (>10t) based on both the T625 Gökbey and T129 ATAK helicopters.



## UNITED AIRCRAFT CORPORATION (UAC)

Conglomerate that includes the main Russian aircraft manufacturers. Currently being merged into its domestic peer Rostec. Operates in military aviation (Su-35, Su-57, etc.).

### BUSINESS AREAS

Platform manufacturer and systems integrator

- ▶ Fighter aircraft (MiG, Sukhoi)
- ▶ Trainer aircraft (Yakovlev)
- ▶ Strategic bombers (Tupolev)
- ▶ Transport and special purpose aircraft (Beriev, Ilyushin)
- ▶ Unmanned combat aerial vehicles (Sukhoi)

### GOVERNANCE

Chairman	Anatoly Serdyukov
Chief Executive Officer	Yury Slyusar
Chief Financial Officer	Alexey Demidov

### KEY FIGURES (Fiscal year ended: December 31st)

€ millions	2016	2017	2018	2019
Revenue	5 623	6 852	5 559	4 849
Δ (%)/[RUB]*	20,46%	8,36%	-8,90%	-14,64%
Defence (%)**	73%	71%	N/A	N/A
Export (%)**	30%	30%	N/A	N/A
Operating profit/loss	155	401	355	104
Operating margin	2,75%	5,85%	6,38%	2,14%
Net income	-34	-21	-388	-796
Order book	N/A	N/A	N/A	N/A
Employees	96 787	≈ 102 000	N/A	N/A

\* Variation based on revenue in local currency  
See €/RUB, p.7

\*\* Based on the number of delivered units

### OWNERSHIP STRUCTURE (as of 10.11.2020)

Symbol	UNAC
Listed on	MOEX
Market Cap (RUB bn)	198

#### Major shareholders (as of 10.11.2020)

Russian State	83,9%
Federal Agency for State Property Management	8,99%

### REVENUE BY BUSINESS SEGMENT (%)



### MAIN JOINT VENTURES AND ASSOCIATES

Name	%	Country
Indo-Russian Aviation Ltd	31%	India
Aerospace Technology Systems Corporation (ATSC)	25%	Malaysia

### REVENUE BY REGION (%)



# UNITED AIRCRAFT CORPORATION (UAC)

## MAIN PROGRAMMES, COOPERATIONS AND EXPORT PARTNERSHIPS

	HAL	UEC Saturn*	NADI**	Kimov*	Kuznetsov*	Salyut*
<b>Transport and special purpose aircraft</b>						
Il-76MD-90A and Il-78M-90A transport/tanker aircraft						
Il-112V light transport aircraft				●		
<b>Strategic bombers</b>						
Tu-160					●	
Tu-95MSM					●	
Tu-22M3M					●	
PAK DA future long-range strategic bomber					●	
<b>Trainer aircraft</b>						
Yak-130						●
Yak-152						
<b>Fighter aircraft</b>						
MiG-29K and MiG-29KUB fighter aircraft			●	●		
MiG-35 and MiG-35D fighter aircraft				●		
Su-33 (Su-27K) fighter aircraft		●				
Su-30MK multi-role fighter aircraft	●	●	●			
Su-30SM multi-role fighter aircraft		●				
Su-34 fighter aircraft		●				
Su-35 fighter aircraft (modernised version of Su-27)		●				
Su-57 (PAK-FA) 5th generation fighter aircraft		●				
<b>Unmanned combat aerial vehicle (UCAV)</b>						
S-70 Okhotnik future UCAV		●				

\*United Engine Corporation (UEC) group \*\*National Aerospace and Defence Industries

## STRATEGIC HIGHLIGHTS

### Business trends

- ▶ The Russian conglomerate UAC, which includes the aircraft manufacturers Sukhoi, MiG, Tupolev, Ilyushin, Yakovlev, Beriev and Irkut, saw revenues fall (-14.6%) for the second consecutive year in 2019, to RUB 351 bn (€4.8bn). In a sign of the financial difficulties it is facing, UAC also recorded a net loss of RUB 58 bn (€796m) for the year.
- ▶ In February 2020, UAC created a division dedicated to commercial aviation by integrating Sukhoi Civil Aircraft (the aircraft manufacturer behind the SuperJet) and UAC-Integration Center as subsidiaries into Irkut Corporation. As part of this reorganisation, Sukhoi Civil Aircraft became Regional Aircraft.
- ▶ The merger of UAC into Russian conglomerate Rostec (Kalashnikov group, Helicopters of Russia, etc.), which was announced in 2018, should be completed in 2020.

### Home market

- ▶ UAC remains very reliant on its domestic market. In 2020, the group delivered various Su-34 and Su-35S fighter aircraft, Yak-130 training aircraft as well as the first 5th-generation Su-57 fighter aircraft ordered in July 2019 (out of 76 units to be delivered by 2028) to the Russian Aerospace Forces. Deliveries of the aircraft, initially scheduled for late 2019, were delayed by a few months due to a mid-air accident in December 2019.
- ▶ After an initial test flight in March 2019, a second test was carried out in April 2020 for the Il-112V light transport aircraft. The aircraft, which went into series production in early 2020, will replace the Russian Armed Forces' ageing fleet of An-26 transport aircraft.
- ▶ Russia is also reportedly planning to order a new batch of Su-35 fighter aircraft by the end of 2020, worth RUB 70 bn (€881m).

### Export markets

- ▶ In the export market, UAC is mainly present in Asia and the Middle East.
- ▶ In July 2020, UAC delivered the first five of 20 Su-35 fighter aircraft ordered by Egypt in March 2019 (a contract worth around \$2bn, or approximately €1.8bn). The remaining aircraft should be delivered by 2023.
- ▶ In the same month, the Indian Air Force ordered 21 MiG-29 fighter aircraft from UAC. The contract, worth an estimated \$992m (€883m), also includes the upgrade of 59 previously acquired MiG-29s to a multi-role variant. In July 2020, India also acquired 12 Su-30MKI fighter aircraft that will be assembled locally by HAL (a contract estimated to be worth \$1.44bn, or €1.28bn).
- ▶ After acquiring four Su-30SM fighter aircraft in 2019, the Armenian Air Force in August 2020 selected UAC to ensure the modernisation of its fleet of Su-25 attack aircraft. Armenia also plans to acquire 12 additional Su-30SMs in the coming years.
- ▶ China is reportedly considering acquiring new Su-35 fighter aircraft. Indonesia might also be a potential market for Su-35s, as might Turkey which, if unable to acquire F-35s from the U.S., could order Russian fighter aircraft such as the Su-35 or Su-57.

### Technology and Innovation

- ▶ In August 2020, UAC successfully completed the first flight of the modernised TU-95MSM bomber, capable of carrying eight cruise missiles compared to four previously. During the year, Tupolev also began production of UAC's future strategic bomber, the PAK DA, whose assembly should be finalised in 2021.
- ▶ In September 2020, UAC announced that it is working on an unmanned version of the 5th-generation Su-57 fighter aircraft. The conglomerate is also pursuing the development of the S-70 Okhotnik UAV, which is scheduled for 2024 and will operate alongside the Su-57 fighter aircraft.

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DGA institutional website [www.defense.gouv.fr/dga](http://www.defense.gouv.fr/dga)

State public procurement portal [www.achats.defense.gouv.fr](http://www.achats.defense.gouv.fr)

The armaments portal [www.ixarm.com](http://www.ixarm.com)

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