SAFRAN IN EUROPE
European technologies, world-class performance
2019
Safran, an international high-tech group with more than 92,000 employees, is the Number 1 supplier of aircraft systems and equipment in Europe and Number 2 worldwide. The world’s leading producer of engines for single-aisle mainline commercial jets and a European leader in defense and space, Safran owes this success to its ability to innovate. We have participated in more than 60 major European research projects, and in 2018 we invested 1.5 billion euros in R&D. Year after year, we explore ways of making aviation even friendlier to our environment, in particular by developing “more electric” aircraft. Operating in 30 countries worldwide, Safran traces its roots to Europe, like 70% of our suppliers. The people of Safran are writing a story that reaches back more than a century, to ensure the competitiveness of European industry and the strategic autonomy of Europe and its countries.

Stéphane Abrial
Senior Executive Vice President, International and Public Affairs

### Safran in Europe

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<th>Aircraft Equipment Supplier</th>
<th>No. 1</th>
<th>55,500 Employees</th>
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<td>Aerospace and Defense Are Resolutely International Markets. At Safran, We Deploy an Equally Global Industrial Organization to Ensure Local Support for All of Our Customers, To Extend Our Reach and To Ensure Our Competitiveness. We Are Deeply Anchored in Our Homeland, Europe, Which Accounts For More Than Two-Thirds of All Employees. The Strategic Core of Our R&amp;D and Production Operations Is Based In Europe, Driven By Hefty Capital Investments and an Extensive Supply Chain, Largely Located In This Region.</td>
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**Editorial**

A STRONG EUROPEAN FOOTPRINT

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In 2016, the French army signed a contract for 14 Patroller™ tactical drones from Safran. With a variant of this drone, Safran is participating in the Ocean 2020 consortium, which won the first call for proposals, worth €35 million, for the main demonstration in the European Commission’s Preparatory Action for Defense Research (PADR) program.

Nearly 20,000 Safran FELIN soldier modernisation systems have been delivered to the French army, and deployed on missions in France and abroad.

Over 6,000 Safran JIM multifunction infrared binoculars are currently deployed by European armed forces.

Safran is also a major supplier for the Airbus A400M military airlifter - including with the TP400 engine(1), landing gear, wiring, FADEC engine control units and navigation system - as well as the Tiger helicopter - including with the MTR390 engine(2), landing gear, infrared sights and mission planning system.

The Group also provides the mission recorders for a large number of European fixed and rotary-wing combat aircraft (Rafale, NH-90, etc.). MBDA tests its missiles in Europe using Safran’s telemetry systems, and leading European aircraft manufacturers use our flight test instruments to test their airplanes, helicopters and military drones.

On board the satellites, Safran is the European leader in plasma propulsion systems, and also provides optical components, sensors, electronics and inertial or GNSS-based navigation systems, as well as valve and filtration systems.

On the ground, Safran’s antennas and modems are used for operational or scientific missions (Galileo, Meteosat/EPS, Sentinel satellites in Europe’s Copernicus program, etc.), and to receive data transmitted by European Union defense satellites (Helios, CSO, Cosmo SkyMed, SAR-Lupe, TerraSAR-X, etc.). The innovative WeTrack system ensures precision stationkeeping for geostationary satellites.

The ESO (European Southern Observatory) chose Safran Reosc to polish and integrate all mirrors on Europe’s ELT (Extremely Large Telescope), the largest optical telescope in the world.

A total of 2,162 CFM56(1) and LEAP(1) engines were delivered in 2018. The new LEAP releases 15% less CO₂ than its predecessor and up to 50% less NOₓ (oxides of nitrogen) than required by ICAO(2). CAEP/6 regulations.

Airbus chose the Arrano 1A from Safran, the world’s leading producer of helicopter turbine engines, to power the H160 medium helicopter. The French army has selected the military version of this machine as its light joint services helicopter. Scheduled for certification in 2019, this turboshaft engine features a number of technical innovations proven on the Tech800 technical demonstrator developed through the European research program Clean Sky, along with new production technologies such as additive manufacturing.

In 2018, Safran announced the launch of new families of electrical generators (GENeUS) and electric motors (ENGINeUS). A pioneer in equipment for a “more electric” aircraft, Safran is applying an ambitious strategy to develop hybrid electric propulsion systems.

Since the acquisition of Zodiac Aerospace in 2018, Safran’s product range also includes aircraft seats, cabin equipment, lighting systems, fuel, oxygen and fluid supply systems and safety equipment.

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Safran has been a major contributor to the Europe’s Ariane and Vega launchers for more than 40 years. We are now gearing up for the new Ariane 6 (first flight in 2020) alongside ArianeGroup(1), to ensure Europe’s strategic autonomy. In July 2018, the current Ariane 5 ES orbited four additional satellites for Galileo, Europe’s own global navigation satellite system. Telemetry for all of these launches calls on sensors supplied by Safran.

TECHNOLOGIES THAT ENHANCE LIFE IN EUROPE

(1) Through the European consortium, Europrop International.
(2) The MTR390 was jointly developed by MTU Aero Engines, Rolls-Royce, ITP and Safran Helicopter Engines.
A SOLID COMMITMENT TO EUROPE

EMPLOYMENT
- The Group hired more than 13,000 new employees in 2018, and welcomed some 6,000 interns and apprentices from all horizons in its European entities, primarily in the field of R&D, production and customer relations.
- Safran is a member of the European Alliance for Apprenticeships. Working alongside the European Commission, we pledge to bolster the quality and attractiveness of apprenticeships in our European companies, and to facilitate the mobility of our apprentices.
- In 2017, Safran and IndustiAll renewed for five years their agreement which promotes the professional inclusion of young people in Europe.
- In June 2018, Safran joined the “European Defense Skills Partnership”, created by the European Commission to establish a mapping of the skills required in this field.

ENVIRONMENT
- Safran is developing technologies to meet the ambitious long-term objectives set by the ACARE(1) and targets defined by the air transport sector itself. We are also taking part in efforts to draw up even more stringent international environmental standards.
- Safran invests in all its production facilities worldwide, implementing state-of-the-art processes to reduce its environmental footprint.
- We are also heavily involved in the search for the replacement of substances to comply with the European regulation REACH(2).

RESEARCH & DEVELOPMENT
- Innovation, advanced technologies and technical partnerships are all an integral part of Safran’s strategy, involving some 16% of our workforce. In 2018 Safran invested 1.5 billion euros in Research & Development, which amounts to 7% of total revenues.
- In the aeronautics field, Safran is a founding member of Clean Sky(1), Europe’s largest aviation research program. We direct a dozen Integrated Technology Demonstrators (ITD), including the Open Rotor (a new engine that offers potential fuel savings of 30% over the CFM56), the Tech800 helicopter turbine engine, the TechTP turboprop engine and innovative design studies for “more electric” aircraft.
- Safran filed for nearly 1,050 patents worldwide in 2018, bringing the total number in our portfolio of patents applied or filed for to 40,000. This places the Group in the Top 3 ranking for the number of patents filed with the French National Institute for Industrial Property, and for the last eight years in a row, as one of the world’s 100 most innovative companies in the Clarivate Analytics ranking.

SAFRAN, AT THE HEAD OF CLEAN SKY
“Clean Sky is now entering a key phase, in which members will deliver the innovative green technologies that Europe needs to remain a world leader in aerospace. I am delighted to be leading our Board of Directors towards the next major European aviation partnership, via the Horizon Europe program.”

Stéphane Cueille
Safran Senior Executive Vice President, R&T and Innovation Chairman of the Board of Directors of Clean Sky (2019-2020)

(1) Advisory Council for Aviation Research and Innovation in Europe
(2) Registration, Evaluation, Authorization and restriction of Chemicals.

(1) www.cleansky.eu: a public-private partnership with the European Commission.
Safran is an international high-technology group, operating in the aircraft propulsion and equipment, space and defense markets. Safran has a global presence, with more than 92,000 employees and sales of 21 billion euros in 2018. Working alone or in partnership, Safran holds world or European leadership positions in its core markets. Safran undertakes Research & Development programs to meet fast-changing market requirements, with total R&D expenditures of around 1.5 billion euros in 2018.

Safran Worldwide

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N° Registre de transparence : 71 60 73 51 368-57
www.safran-group.com

No. 1 Worldwide Aerospace

- Single-aisle commercial jet engines (in partnership with GE)
- Helicopter engines
- Landing gear
- Wheels and carbon brakes
- Aircraft wiring systems
- Seats for commercial airplanes
- Cabin interiors for regional and business aircraft
- Cabin liners, galleys, trolleys and container
- Mechanical power transmissions
- Engine control units
- Nacelle systems for business jets
- Evacuation slides
- Commercial launches into geostationary orbit, via ArianeGroup (a 50/50 joint company between Airbus and Safran)

No. 1 IN EUROPE DEFENSE

- Tactical drones
- Optronic (electro-optical) systems
- Inertial navigation systems

(1) Mainline commercial jets with more than 100 seats.
(2) Economy class seats for twin-aisle jets.
(3) Through FADEC International, the 50/50 joint company between Safran Electronics & Defense and BAE Systems.

For further information go to our website www.safran-group.com