# ESSENTIALS

## SAFRAN

### SAFRAN IS AN INTERNATIONAL HIGH-TECHNOLOGY GROUP

operating in the aviation (propulsion, equipment and interiors), defense and space markets. Its core purpose is to contribute to a safer, more sustainable world, where air transport is more environmentally friendly, comfortable and accessible. Safran has a global presence, with 84,000 employees and holds, alone or in partnership, world or European leadership positions in its core markets. Safran undertakes research and development programs to maintain the environmental priorities of its R&T and Innovation roadmap.



SAFRAN AERO BOOSTERS • SAFRAN AEROSYSTEMS • SAFRAN AIRCRAFT ENGINES SAFRAN CABIN • SAFRAN ELECTRICAL & POWER SAFRAN ELECTRONICS & DEFENSE • SAFRAN HELICOPTER ENGINES SAFRAN LANDING SYSTEMS • SAFRAN NACELLES • SAFRAN PASSENGER SOLUTIONS SAFRAN SEATS • SAFRAN TRANSMISSION SYSTEMS



**80+ SUCCESSFUL** Ariane 5<sup>(2)</sup> launches in a row



100+ KILOMETERS OF WIRING in each Boeing 787 Dreamliner



23,000+ NACELLE COMPONENTS in service



1 out of every 2 commercial aircraft equipped with OUR EVACUATION SLIDES



use our RAVE In-Flight Entertainment System every year





1 OUT OF EVERY 3 HELICOPTER TURBINE ENGINES sold worldwide



**3,000 COMBAT AIRCRAFT** fitted with our inertial navigation systems



45,000+ POWER TRANSMISSIONS, totaling over 1 billion flight-hours



**350+ EJECTION SEATS** for Rafale fighters<sup>(3)</sup>



 In partnership with GE through CFM International.
In partnership with Airbus through ArianeGroup.
Through Safran Martin Baker France, the 50/50 joint company between Safran and Martin-Baker.

## BOOSTING AIR TRANSPORT PERFORMANCE



Safran covers the entire lifecycle of engines, systems and equipment for civil and military fixed and rotary-wing aircraft. As a long-standing partner to the world's leading aircraft manufacturers, Safran anticipates its customers' needs, supports the development of new mobility modes and helps reduce the environmental footprint of the air transport industry.

#### **No. 1 WORLDWIDE**

- engines powering single-aisle mainline commercial jets<sup>(1)</sup>
- helicopter turbine engines
- cabin interiors for regional and business aircraft
- cabin liners, galleys, trolleys and containers
- wheels and carbon brakes<sup>(2)</sup>
- landing gear
- helicopter flight controls
- electrical wiring
- evacuation slides and oxygen systems
- onboard water and waste management systems

### **AIRCRAFT ENGINES**

Safran provides the world's leading aircraft manufacturers with innovative and reliable propulsion solutions. Through CFM International<sup>(1)</sup>, Safran developed and is producing the LEAP engine. successor to the CFM56, the world's best-selling commercial aircraft engine. LEAP engines power the Airbus A320neo. Boeing 737 MAX and COMAC C919. We also make the SaM146<sup>(2)</sup> for the Sukhoi Superiet 100 regional iet. As one of the world's leading makers of military aircraft engines, we produce the M88 for the Rafale multirole fighter and the TP400 turboprop<sup>(3)</sup>, which powers the Airbus A400M military transport aircraft. In addition, Safran and MTU Aero Engines announced their partnership jointly to lead the development, the production and the after-sales support activities of the engine that will power the next generation combat aircraft, as part of the Franco-German Future Combat Air System.

### NACELLES

Safran designs, manufactures and supports aircraft nacelle systems. Safran is the only nacelle manufacturer in the world to supply these essential parts for all market segments, from regional and business aircraft to mainline commercial jets. We are developing, alone or in partnership with Middle River Aerostructure Systems (ST Engineering), nacelles for the LEAP-powered Airbus A320neo and COMAC C919, as well as the Airbus A330neo and for the Pearl 700 and GE Passport<sup>™</sup> bizjet engines. Safran also provides the exhaust system for GE9X engines which power the Boeing 777X.

### HELICOPTER ENGINES

Safran turbine engines power helicopters from the world's leading manufacturers, including Airbus Helicopters, Bell, Leonardo, HAL, Russian Helicopters and AVIC. The Arrius and Arriel engines power machines in the light (1.5 to 3.5-ton) and medium (2 to 5-ton) classes, while the Makila and RTM322 power heavy helicopters such as the NH90 and AW101, in the 9 to 14-ton class. Safran is also developing two new helicopter turboshaft engines, the Arrano for helicopters in the 4 to 6-ton class (H160), and the Ardiden for the 5 to 8-ton class (Dhruv, Ka-62 and AC352). In addition, we have launched development of the Aneto, a new family of high-power engines for supermedium and heavy helicopters from 8 to 15 tons (AW189K).



(1) In partnership with GE.(2) Mainline commercial jets with more than 100 seats.

The 50/50 joint company between Safran Aircraft Engines and GE.
Through PowerJet, the 50/50 joint company between Safran Aircraft Engines and UEC Saturn.
Through the Europrop International GmbH consortium.



### AVIONICS AND ELECTRONICS

Safran develops a wide range of state-of-the-art products and services to improve handling ease, flight safety and aircraft performance, including cockpit solutions, critical software and hardware, as well as electromechanical actuation, navigation, visual perception and data management systems. One out of every three commercial airplanes worldwide uses our Cassiopée flight data analysis services.



### ENGINE EQUIPMENT

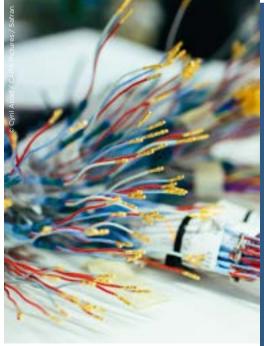
Safran makes a wide range of systems and equipment for the engines powering civil and military fixed and rotary-wing aircraft: mechanical power transmissions, engine control units<sup>(1)</sup>, lubrication, cooling and filtration components, etc. Our innovative solutions are used on a number of different engines, including the CFM56 and LEAP from CFM International<sup>(2)</sup>, and the Rolls-Royce Trent 500, 700, 800, XWB and 7000<sup>(3)</sup>.

### ELECTRICAL SYSTEMS

Safran offers proven expertise in all aircraft electrical systems, including power generation, distribution and conversion, aircraft wiring (with fasteners and protection devices) electric motors and system integration. As the world leader in electrical wiring interconnect systems (EWIS), Safran takes an active role in developing "more electric" aircraft, as well as hybrid and all-electric propulsion systems for new platforms, such as vertical takeoff and landing aircraft (VTOL). Safran is already involved in the testing phase on various programs of this type.

 Through FADEC International, the 50/50 joint company between Safran Electronics & Defense and BAE Systems.
The 50/50 joint company between Safran

6 Aircraft Engines and GE.



(3) Through Aero Gearbox International, the 50/50 joint company between Safran Transmission Systems and Rolls-Royce.

### LANDING AND BRAKING SYSTEMS

Safran designs, produces and supports landing gear, wheels, carbon brakes and complete landing systems for civil and military fixed and rotary-wing aircraft, including the Airbus A320, A320neo, A330, A350 XWB, A380 and A400M, the Boeing 737 Next-Generation, 737 MAX, 767, 777, 787 Dreamliner and F-18, the Dassault Aviation Falcon 7X/8X and Rafale, the Bombardier Global 7500/8000 and the Eurofighter Typhoon.





### CABIN INTERIORS

Safran provides everything needed for a seamlessly integrated aircraft cabin: overhead bins, separations, cupboards, lavatories, galleys and inserts. We design, produce and support the world's most innovative aircraft interiors, using advanced materials and technologies to make sure that passengers enjoy a safe and comfortable flight.





### ONBOARD SYSTEMS, Flight and ground safety

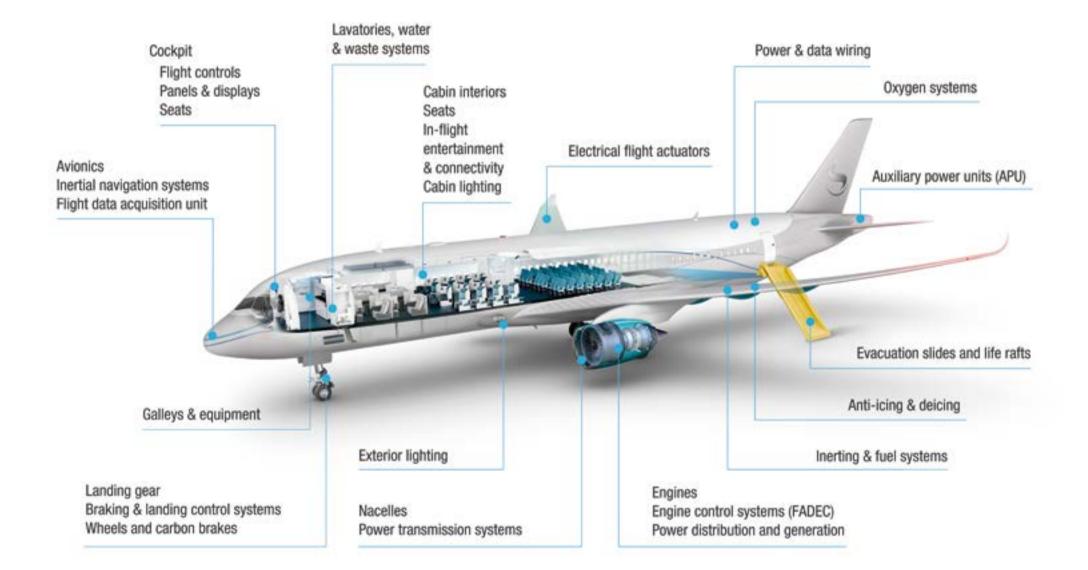
Safran designs essential hightech systems and equipment for today's aircraft. We develop and produce safety systems (evacuation slides, life rafts and vests), oxygen, control, onboard water and waste management and seat actuation systems, plus innovative in-flight entertainment systems as part of our "connected cabin" offering.



## SEATS

Safran designs and builds innovative, customized and highvalue-added seating solutions for all classes: economy, premium economy, business and first class, as well as crew seats. Our complete range of ergonomic seats ensures passenger comfort, based on state-of-the-art design and engineered components to ensure optimized use of space. Safran also provides technical and commercial support to all customers, throughout the life of its products.





### ENGINEERING

Safran conducts research & development for its entire range of products, based on a collaborative effort by its specialists in all disciplines. Today, our R&D efforts mainly focus on solid and fluid mechanics, materials, production processes, electronics and algorithms. Safran also offers complete engineering service packages.



## PROTECTING CITIZENS





### CUSTOMER SUPPORT

Safran offers customers comprehensive service packages that help drive down operating costs. Through our global maintenance, repair and overhaul (MRO) network, we keep aircraft in the air. We also analyze the huge streams of data from connected equipment to develop personalized service solutions and guarantee maximum dispatch reliability for our customers, along with more efficient maintenance planning, plus lower cost and more efficient management of spare parts inventories.

As a major player in the global market for optronics, avionics, inertial navigation, tactical drones, electronics and safety-critical software, Safran offers a complete range of systems and equipment that improve the efficiency of armed forces in many different countries. Our innovative solutions also facilitate the jobs of homeland security and police forces, customs agencies and search & rescue teams at sea or in the mountains.

### No. 3 WORLDWIDE

Inertial navigation systems

#### **No. 1 IN EUROPE**

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



### **NAVIGATION & GUIDANCE**

Safran offers high-performance navigation systems and all their component parts. We are a leader in inertial sensor technology, with solutions known for their high reliability. very high precision and extreme robustness, designed to operate even under the harshest conditions. Safran is prime contractor for the AASM/ Hammer air-to-ground guided weapon deployed by Rafale fighters. We also supply seekers for the Mistral, MICA IR, light anti-ship missiles and the mediumrange missile (MMP), along with the sighting system for the MMP's launcher station. Safran's products are at the heart of the high-precision navigation systems on France's ocean-going strategic deterrent force.



### SOLDIER MODERNIZATION SYSTEMS

Through the FELIN soldier modernization program, Safran has built up solid expertise in integrating warfighters in today's digital battlefield. Portable optronics, radios, parachutes, personal protection equipment today, exoskeletons, increasingly autonomous drones and robots tomorrow... these are just some of the products and services wielded by Safran to protect the integrity of armed forces and give them a decisive edge in the field.



### OPTRONICS

Safran offers a complete range of optronic (electro-optical) systems and equipment for military applications (submarines and surface vessels, combat vehicles, aircraft, etc.). We also design and produce portable optronic equipment, like the JIM family of multifunction infrared binoculars, in service with or on order by more than 40 countries. Furthermore, Safran is prime contractor for the FELIN soldier modernization program, an integrated equipment suite deployed by French infantry units.



### DRONES & ROBOTS

Safran has developed expertise in all technologies that go into a drone system, allowing it to meet the requirements of many different types of missions: surveillance, intelligence, protection of armed forces, threat detection, collaborative battlespace. etc. Drawing on more than 25 years of experience as a prime contractor for the construction of tactical drones. Safran has developed the latestgeneration Patroller<sup>™</sup>, a multi-sensor, long-endurance tactical drone, already selected by the French army. We are also developing eRider, an autonomous, reconfigurable all-wheel drive vehicle that can be used for a wide range of missions. Another prime area of focus at Safran is the integration of autonomous vehicles in military operations, as well as for civilian use, especially in urban environments.

## FACILITATING ACCESS TO SPACE



Safran is a major player in the space sector, including launch vehicles and missiles, propulsion and equipment for satellites and space vehicles, and high-performance optics. In short, Safran facilitates access to space, a strategic capability at several levels, including safeguarding national independence, supporting the growth of telecommunications and expanding our scientific knowledge, whether through observing the Earth or exploring the Universe.

#### **No. 1 WORLDWIDE** • High-performance space optics

High-performance space optics

No. 1 IN EUROPE • Satellite plasma propulsion systems

### LAUNCH VEHICLES

ArianeGroup (a 50/50 joint company between Airbus and Safran) is prime contractor for Europe's Ariane 5 and Ariane 6 launchers, with responsibility for design, production and marketing of launch services, via its subsidiary Arianespace, ArianeGroup also makes the missiles for France's ocean-going nuclear deterrent force. ArianeGroup and its subsidiaries are recognized worldwide for the quality of their space equipment and propulsion systems, and also apply their expertise to other sectors. Safran has been selected to develop and produce the new SpaceNaute inertial reference unit for the upcoming Ariane 6 launch vehicle.

### HIGH-PERFORMANCE Space optics

Safran designs, develops, manufactures and integrates a complete range of highperformance optics and highprecision opto-mechanical equipment for satellites, large telescopes and high-energy lasers. In particular, we make advanced mirrors for leading astronomy programs such as the Extremely Large Telescope (ELT) and the Apollon giant laser.

### SATELLITES

Safran designs and produces thrusters and propulsion subassemblies used by satellites throughout their operating life. In particular, we are a pioneer in electric propulsion systems, which significantly decrease the amount of fuel that satellites need to carry, thus reducing launch costs and environmental impact. Safran's PPS<sup>\*</sup>5000 thruster has been chosen to handle propulsion duties on all-electric satellite platforms for Thales Alenia Space and Airbus Defense & Space. Safran also supplies command and control solutions for satellite around stations.





## MEETING THE CLIMATE CHALLENGE, A TOP PRIORITY

Safran is conducting an ambitious policy to tackle the challenge of climate change and support the transition to a carbon-neutral aviation industry by 2050. We are already working on a number of solutions to help reinvent the aviation industry, including new engine architectures, sustainable fuels and "more electric" aircraft.

#### 75% OF OUR RESEARCH & TECHNOLOGY INVESTMENTS go to reducing the environmental footprint of our products.

### TOWARDS LOW-CARBON AIRCRAFT

At Safran, we are already contributing to the development of new. ultra-energy-efficient aircraft, in line with the European aviation industry's target of going carbon-neutral by 2050. Low-carbon aircraft, planned to hit the market towards 2030-2035, will have to feature an innovative aerodynamic design, considerable weight savings and an optimized onboard energy system. For the last few years, we have already been working on disruptive new concepts, such as the Open Rotor, an unshrouded gas turbine engine with two counter-rotating fans, designed to reduce CO<sub>2</sub> emissions by 15% versus current engines. Safran also supports research on additive manufacturing and composite materials, which are lighter and stronger. By reducing weight, these solutions decrease the aircraft's fuel consumption.

### SUPPORTING THE DEPLOYMENT OF SUSTAINABLE FUELS

Safran aims to blaze a path towards the use of alternative fuels, such as biofuels and synthetic fuels. Liquid hydrogen is also being considered as a fuel, because it eliminates CO<sub>2</sub> emissions in flight. However, all of these options would require significant changes from current aircraft design, and therefore a stronger partnership between Safran and aircraft manufacturers. Safran already offers data analysis solutions to enhance the energy efficiency of aircraft engines.

### DEVELOPING ELECTRIC AND Hybrid Propulsion Systems For Aircraft

All-electric propulsion is not in the cards for mainline aircraft for the moment because of the excessive weight of batteries. However, electric power is already being used or under study for a number of other aircraft systems. At Safran, we already invest heavily in research, most notably via partnerships with specialized startups, to make maximum use of the electric power available on current aircraft. One likely solution to meet energy efficiency targets for upcoming generations of commercial aircraft is a hybrid system, entailing an electric propulsion system used in conjunction with conventional thermal propulsion, along with increased electrification of secondary functions. We have carved out a leadership role in hybrid and all-electric architectures. thanks to our proven expertise in all aspects of aircraft electrical systems. We are already working with various manufacturers on different projects, including the EcoPulse distributed hybrid propulsion demonstrator with Daher and Airbus, and vertical takeoff and landing (VTOL) concepts.





## DELIVERING EXCELLENCE TO SUPPORT OUR CUSTOMERS



Safran has always delivered excellence to consolidate our positions and drive growth, based on a strategy of standing out through innovation. We focus on R&D, backed by the continuous improvement of all functions and the development of new ways of working together.



#### NEARLY **1** OUT OF EVERY 6 Group employees works on R&D.

### INNOVATIVE SOLUTIONS TO ANTICIPATE MARKET NEEDS

At Safran, research and innovation are fundamental. By focusing on these essential areas we can develop tomorrow's technologies, products and services. We invested some 1.7 billion euros in R&D in 2019. Our efforts in this area are applied through major research programs, our own centers of expertise and partnerships, as well as targeted acquisitions enabling us to add basic technology building blocks. Around 16% of our employees support our technological excellence, whether working in Group companies, or Safran Tech, our corporate R&T center.

### FOSTERING CROSS-Disciplinary expertise

Safran has always teamed up with top-tier partners from around the world, reflecting our commitment to open innovation. We work with leading government and academic research centers, including the CEA<sup>(1)</sup>, ONERA<sup>(2)</sup>, engineering schools and universities. We also form partnerships with our suppliers and with companies from other sectors, such as the auto parts giant Valeo. Through our corporate venture capital fund, Safran Corporate Ventures, we invest in innovative startups. In-house, we encourage the cross-fertilization of expertise, especially through an employee-driven innovation initiative.

### QUALITY AND FLIGHT SAFETY

By deploying a quality management system based on the identification and handling of risks associated with our products, Safran is raising its standards to guarantee passenger safety and retain the trust of both our customers and aviation authorities.

### TARGETED INVESTMENTS TO MEET CUSTOMER EXPECTATIONS

Safran is developing a global production organization and commercial presence to foster its own growth and that of its customers. Our research & technology programs, developed in conjunction with aircraft manufacturers, address the most stringent requirements for competitiveness and environmental protection. While we are of course solidly anchored in France, which accounts for 52% of our workforce and the strategic core of our R&D and production activities, we have also made international development a top priority.

### BOOSTING Our Performance

Safran focuses on cost-effective technological and industrial excellence across the entire product lifecycle. For example, we have implemented an approach called QRQC (Quick Response Quality Control) and a Lean-Sigma methodology across the Group and at our suppliers, to boost our performance. Most of our support functions are now organized into shared services centers. We are currently deploying the global One Safran initiative, a Group-wide process-based management system, backed by standards of operational excellence. Safran is also integrating innovative new technologies in our new production units, such as digital continuity and additive manufacturing, to drive sustained growth.

 French Atomic Energy and Alternative Energies Commission.
French aerospace research agency.



## A RESPONSIBLE Corporate Citizen

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Safran's corporate social responsibility (CSR) policy is based on sustained commitments and values that are supported by top management and shared by all employees. To better meet the expectations of all stakeholders, we have organized our CSR strategy around three areas social concerns, labor relations and the environment - and also set up a dedicated governance structure.

#### UNITED NATIONS GLOBAL COMPACT SIGNATORY

Safran contributes to 12 out of 17 United Nations' 2030 Sustainable Development Goals.

#### GLOBAL CSR AGREEMENT

signed in 2017 with the global union federation, IndustriALL Global Union, and representatives of French metallurgical union federations.

### SOCIAL CONCERNS

Safran pledges to uphold all laws governing our international operations. Our commitment to the fight against corruption and a "zero tolerance" policy are formally expressed in our ethics charter, a responsible lobbying charter, an anti-corruption code of conduct and a fair trade program. In addition, we have set up a powerful organization to ensure compliance with export controls and customs regulations. We establish long-term relationships with our suppliers, reflected in a responsible procurement charter.



#### \*HEALTH, SAFETY AND ENVIRONMENT (HSE)

Safran is committed to developing a prevention-based culture to manage health and safety risks for the benefit of all stakeholders (employees, partners, suppliers, customers, etc.). This commitment was renewed in 2019 when the Group's Executive Committee signed a Health, Safety and Environment policy, effective at all sites. Our facilities are audited yearly according to Safran's own certification process, which is validated by a third party. In 2019, 121 facilities worldwide earned a bronze, silver or gold label.

### LABOR RELATIONS

One of the major challenges for Safran's Human Resources policy is to develop our human capital, allowing us to plan ahead to meet changing skills requirements. Safran's social model is based on the firm conviction that employees are our primary asset. We give them a stake in determining our strategy and sharing the fruits of success through a constructive labor-management dialog, an active employee shareholding policy, including matching funds, profit-sharing and incentive payments, and much more. As a responsible employer, Safran values diversity, a key factor in performance and innovation, and makes a proactive commitment to equal opportunity. In addition, through our HSE\* policy, we strive to protect the health and safety of employees, notably by reducing the risks in these areas.

### ENVIRONMENT

Given today's pressing environmental challenges, Safran is fully committed to the sustainable development of the aerospace and defense sectors, as well as reducing the environmental footprint of production facilities through our low-carbon project. Safran's HSE policy underpins our efforts to develop a culture based on anticipation and prevention to efficiently manage our environmental impact.



## TALENT, THE KEY TO OUR CURRENT AND FUTURE SUCCESS

In our high-tech business sectors, today's innovations, and the talent behind them, will ensure tomorrow's successes. Unleashing our human potential is naturally a top priority for Safran. Working at Safran means being part of a deep culture of innovation, and undergoing a unique and enriching experience day after day.

2.3+ MILLION HOURS OF TRAINING provided in 2019

### WORKING AT SAFRAN: A UNIQUE EXPERIENCE IN A HOTBED OF EXCELLENCE

Working at Safran means being part of an enterprise that is shaping our future, and being part of a community of people who are passionate about their professions and who share the same values and goal: to meet tomorrow's technological, environmental and social challenges. From operators on the shop floor to senior management, everybody at Safran is passionately committed to developing today's and tomorrow's high-tech, international and multicultural environment. Our facilities deploy state-of-the-art techniques, including additive manufacturing, augmented reality, advanced machine tools, cobots (collaborative robots) and much more. Reflecting this initiative, two production lines at Safran have earned the French government's "Showcase for Tomorrow's Industry" label. Not to mention that teamwork and knowledge-sharing are both integral parts of Safran's DNA, allowing our employees to fulfill themselves in their jobs.

### ALLOWING EMPLOYEES TO SHAPE THEIR OWN CAREER PATH

When you work at Safran you're choosing a diversified career, starting with onboarding support and continuing with mobility and skills development. Safran University gives our employees a wide range of courses to support their development within the Group. Safran also offers possibilities for geographic and professional mobility, allowing our employees to develop their multidisciplinary expertise, acquire new skills and shape their own careers. Last, but not least, we organize initiatives to support the integration of young people in the workforce, by welcoming a number of students in work-study programs, plus interns and student researchers.



SEE OUR JOB OFFERS AT www.safran-talents.com





## PHILANTHROPY & FOUNDATIONS

Whether in France or in other countries where we operate, Safran's philanthropic actions reflect our values and commitment to responsible corporate citizenship. We support actions by associations and also carry out projects in conjunction with our employees, spanning key areas such as education, social and professional inclusion, equal opportunity, support for creativity and talent, etc.

#### SAFRAN'S PHILANTHROPY POLICY

is based on a three-pronged approach encompassing educational, social and cultural initiatives. We provide financial support to public and private partners, independently of our commercial interests. Ethics and integrity are the two watchwords in our philanthropy endeavors. Safran has supported 710+ PROJECTS since 2005

#### THROUGH OUR TWO CORPORATE FOUNDATIONS, FOR INTEGRATION AND MUSIC,

Safran is committed to the fight against the exclusion of young people with disabilities, and we support the training and early career development of talented young classical musicians.



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