SAFRENAN IS A LEADING INTERNATIONAL HIGH-TECHNOLOGY GROUP AND TIER-1 SUPPLIER OF SYSTEMS AND EQUIPMENT FOR AEROSPACE, DEFENSE AND SECURITY (ONGOING DIVESTITURE OF SECURITY BUSINESS). THROUGH ITS GLOBAL PRESENCE, SAFRAN NOT ONLY ENHANCES COMPETITIVENESS, BUT ALSO BUILD ST INDUSTRIAL AND COMMERCIAL RELATIONS WITH THE WORLD’S LEADING PRIME CONTRACTORS AND OPERATORS, WHILE PROVIDING FAST, LOCAL SERVICE TO CUSTOMERS AROUND THE WORLD. WORKING ALONE OR IN PARTNERSHIP, SAFRAN HOLDS WORLD AND EUROPEAN LEADERSHIP POSITIONS IN ITS CORE MARKETS.

SAFRAN OVERVIEW

66,500 EMPLOYEES WORLDWIDE (security included)

$17.5 BILLION IN SALES generated in 2016 (excluding security)

#1 WORLDWIDE

- ENGINES FOR SINGLE-AISLE COMMERCIAL JETS (in partnership with GE)
- HELICOPTER TURBINE ENGINES
- LANDING GEAR
- WHEELS AND CARBON BRAKES*
- AIRCRAFT ELECTRICAL INTERCONNECTION SYSTEMS
- ENGINE CONTROL UNITS (FADEC)** (in partnership with BAE Systems)
- HELICOPTER FLIGHT CONTROLS
- POWER TRANSMISSIONS*

Nearly 11% OF SALES INVESTED IN R&D

Safran applies a strategy based on innovation and continuous improvement in competitiveness, working closely with our suppliers and partners to address today's economic, societal and environmental challenges.
WITH DECADES OF EXPERIENCE IN AVIATION, SAFRAN MASTERS THE TECHNOLOGIES THAT MAKE ROTORCRAFT OF ALL SIZES FLY, FROM HELICOPTERS TO TILT ROTORS, IN BOTH CIVIL AND MILITARY MARKETS.

SAFRAN’S COMMITMENT TO THE ROTORCRAFT MARKET

INVENTING TOMORROW’S HELICOPTER

We know that the key to performance of modern helicopters is energy generation and efficiency. This is why Safran is playing an active role in the development of next-generation helicopters by investing in hybrid propulsion systems and electrical power systems. Through additive manufacturing and the use of materials such as carbon and composites, we are providing the market with lighter and greener equipment including engines, engine cowls and brakes. Our strategy is to improve flight safety, reduce operating costs and decrease the environmental impact of helicopters.

AN UNMATCHED OFFERING FOR ROTORCRAFT

Our products meet the needs of helicopter manufacturers across the spectrum, ranging from engines, auxiliary power units (APUs), power transmissions, electrical power management systems, to landing gear, wheels, brakes, navigation systems, flight monitoring solutions and flight controls.

CUSTOMER SUPPORT GUARANTEES

Safran has a global service network that provides after-sales, customer and operator support, as well as maintenance, repair and overhaul services for its rotorcraft customers. We provide cost-effective maintenance packages that can be customized to meet the unique needs of our customers.

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SAFRAN, THE WORLD LEADER IN ROTORCRAFT TURBINES, IS THE ONLY MANUFACTURER DEDICATED EXCLUSIVELY TO THIS MARKET PARTNERING WITH MAJOR HELICOPTER MANUFACTURERS ACROSS THE GLOBE. ITS PRODUCTS EQUIP THE VERY LATEST DESIGNS, INCLUDING THE BRAND-NEW BELL 505 AND AIRBUS HELICOPTERS H160.

100% FOCUSED ON SAFETY AND CUSTOMER SATISFACTION

Safran’s priorities are to provide customers with safe, reliable and high-performance engines, to stay focused on their missions and to keep their helicopters flying every day, everywhere. With safety as our watchword, we are committed to meeting and surpassing the industry’s highest safety standards. Today, our best-selling Arriel is as reliable as the CFM56, the benchmark gold standard in commercial aviation.

Committed to providing customers with the most comprehensive and reliable support, Safran Helicopter Engines operates 16 sites globally, including five dedicated to helicopter engine repair.

NEARLY 100 FIELD REPRESENTATIVES AND FIELD TECHNICIANS dedicated to our customers

MORE THAN 12,000 HELICOPTERS are powered by Safran worldwide

TURBOSHAFT ENGINES

Our engine families, which include the Arriel, Arrus, Ardiden, Makila and RTM32 have all been recognized for their safety, reliability and operational excellence. With solutions for single and twin-engine helicopters, Safran can meet very specific needs of different helicopter missions.

#1 WORLDWIDE

in helicopter turbine engines

A SAFRAN-POWERED HELICOPTER TAKES OFF EVERY 9 SECONDS somewhere in the world

MORE THAN 100 MILLION HOURS FLOWN by Safran Helicopter Engines

TURBOSHAFT ENGINE

CUSTOMERS:

Airbus Helicopter
Avicopter
Bell Helicopter
Hindustan Aeronautics Limited
Korea Aerospace Industries
Leonardo
NH Industries
Russian Helicopters
Sikorsky

TURBOSHAFT ENGINE  CUSTOMERS:

• Airbus Helicopters
• Avicopter
• Bell Helicopter
• Hindustan Aeronautics Limited
• Korea Aerospace Industries
• Leonardo
• NH Industries
• Russian Helicopters
• Sikorsky

30% TO 100% COMPARED WITH SMALL TURBINE ENGINES.

ADDRESSING THE HEAVY ROTORCRAFT MARKET

Safran is positioning itself as a major player in the ten ton-plus heavy helicopter market, with a new family of HPE (High-Power Engine) turbines in the 2,500 to 3,000 shp category. As a leading innovator, Safran is exploring new groundbreaking technologies to address the need for greater performance and reduced environmental footprint of new-generation heavy rotorcraft.

PISTON ENGINES: MINI SIZE, MAXI EFFICIENCY

For light helicopters or for long range unmanned aerial vehicle (UAV) operations, Safran is developing several aero-diesel engines operating on jet fuels. These offerings range from the certified SR305 series engine (230 to 265 shp) to the next-generation High-Power Density Engine (400 to 800 shp). Their low fuel consumption increases the endurance by 30% to 100% compared with small turbine engines.

ARRANO: The most innovative turboshaft in its class

Safran’s latest helicopter engine, the 1,200 shp Arrano, incorporates cutting-edge technology and numerous innovations. It offers a 15% improvement in fuel consumption over competing engines - one reason why Airbus Helicopters chose it to power the H160. Its first flight took place in January 2016.

ARRIUS 2R: The only 500 shp helicopter engine to feature dual channel FADEC

The Arrius 2R (500 shp) was selected to power the new Bell 505, successor to the hugely popular Bell 206 Jet Ranger - of which 7,000 examples were sold. The partnership is on track to deliver unprecedented levels of reliability and low maintenance costs. The engine was certified in December 2015.

POWER TRANSMISSION

Leveraging more than 40 years of experience in power transmission technologies, we provide helicopter manufacturers with new applications including engine reduction gearboxes, accessory gearboxes and transfer gearboxes to help boost performance and reliability.

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ELECTRICAL POWER SYSTEMS
INNOVATING FOR TOMORROW’S “MORE ELECTRIC” ROTORCRAFT

CUSTOMERS:
• Airbus Helicopters
• Avicopter
• Bell Helicopter
• Boeing
• Hindustan Aeronautics Limited
• Leonardo
• NH Industries
• Sikorsky

WORLDWIDE IN ELECTRICAL POWER & DATA GENERATION

A WORLD LEADER IN AIRCRAFT ELECTRICAL POWER & DATA GENERATION

HYBRID ROTORCRAFT PROPULSION
Safran is committed to meeting the needs of tomorrow’s more electric helicopters. By combining expertise in engines, electrical and power management systems and eAPUs, we are developing hybrid propulsion systems to remain at the cutting edge of helicopter innovation.

ENHANCED RELIABILITY POWER SYSTEMS
Safran has engineered a range of auxiliary power units including the eAPU and Saphir Power System families, providing a wide range of solutions for new-generation rotorcraft. Capable of supporting either pneumatic or electric main engine start and delivering electrical power on ground or in flight, their proven reliability allows operations in the most severe conditions.

ELECTRIC BRAKES
Combining new-generation composite carbon friction material and electric actuation, our electric brakes represent a major improvement in helicopter braking. We were the first company to equip a helicopter with this new-generation braking system.

ALL ONBOARD ELECTRICAL FUNCTIONS
As the world leader in electrical wiring interconnection systems, Safran is a recognized supplier to helicopter manufacturers around the world. From design and development to production and support, we cover other onboard electrical functions including generation, distribution, conversion, load management, systems integration, filtration and ventilation.

#1 WORLDWIDE IN AIRCRAFT ELECTRICAL WIRING INTERCONNECTION SYSTEMS

#2 WORLDWIDE IN ELECTRICAL POWER & DATA GENERATION

#1 WORLDWIDE IN POWER TRANSMISSIONS (mainline commercial jets with more than 100 seats)

#1 WORLDWIDE IN AIRCRAFT ELECTRICAL POWER & DATA GENERATION

CUSTOMERS:
• Airbus Helicopters
• Agusta
• Bell Helicopter
• Boeing
• Hindustan Aeronautics Limited
• Leonardo
• NH Industries
• Sikorsky

Power Electronics, GCU & Conversion
Primary & Secondary Distribution Systems & Components
Engineering, Services Integration, Certification, On-site installation
Main and Auxiliary AC/DC Generation (Air & oil cooled)
BTP Cooling
Wire Harnesses
Cabin & Avionics Fan
Full 3D structure layout

Cabin & Avionics Fan
Combining advanced engineering, integrated systems technology and in-depth service experience, we offer cost-efficient solutions to helicopter and tiltrotor manufacturers around the world. Our capabilities include landing gear, landing gear extension and retraction systems, steering systems, braking systems, as well as wheels and brakes integration.

**BREAKTHROUGH IN HELICOPTER BRAKING**

We have applied decades of experience in carbon technology to develop innovative braking systems for the helicopter market. Our brakes are designed to be lighter, more reliable and highly efficient.

Our program of continuous development is geared at providing helicopter platforms with next generation landing and braking systems that are not only reliable and easy to maintain, but lighter, quieter, more cost-efficient and robust.

**CUSTOMERS:**
- Airbus Helicopters
- Bell Helicopter
- Boeing
- Leonardo
- Sikorsky

_SAFRAN HAS LEVERAGED ITS LEADERSHIP IN THE DESIGN, DEVELOPMENT, MANUFACTURE AND SUPPORT OF AIRCRAFT LANDING AND BRAKING SYSTEMS TO SERVE THE ROTORCRAFT MARKET._
SAFRAN’S FULL RANGE OF HELICOPTER AVIONICS SYSTEMS COVERS FLIGHT CONTROL, INERTIAL NAVIGATION, DATA ANALYSIS, OBSERVATION AND MISSION MANAGEMENT.

FLIGHT CONTROL SYSTEMS (COMPUTATION)
Safran has 50 years of experience in manufacturing and supporting analog, digital and Flight-By-Wire flight control computers that meet the specific needs of each customer.

SENSORS AND NAVIGATION
Using the most modern technologies (FOG, MEMS), Safran designs, produces and supports sensors, attitude heading reference systems and GPS/GLONASS/Inertial navigation systems.

ACTUATION
Based on a fail passive architecture, Safran’s smart electromechanical actuators are installed in series with trim actuators and managed by the flight control computer.

ENGINE CONTROL
Safran’s Engine Control Units are designed to withstand adverse conditions offering the highest level of safety and reliability.

MISSION SYSTEM
The Euroflir family delivers the highest level of performance for demanding missions worldwide: maritime patrol, homeland security, border and coastal surveillance, SAR, CSAR and special operations.

FLIGHT DATA RECORDING AND SERVICES
Safran’s maintenance monitoring systems record a large quantity of mandatory flight data. Real-time analysis of flight parameters using Safran’s ground-based CASSIOPEE services enables preventive maintenance.

AIRBORNE ELECTRONICS MISSION SYSTEM
The Euroflir family delivers the highest level of performance for demanding missions worldwide: maritime patrol, homeland security, border and coastal surveillance, SAR, CSAR and special operations.

CUSTOMERS:
• AVIC
• Bell Helicopter
• Denel
• Hindustan Aeronautics Limited
• IAR
• Korea Aerospace Industries
• Leonardo
• Marenco Swiss Helicopter
• NH Industries
• Sikorsky

#1 WORLDWIDE IN HELICOPTER FLIGHT CONTROLS
#3 WORLDWIDE INERTIAL NAVIGATION SYSTEMS
PIONEER IN FLIGHT DATA MANAGEMENT SYSTEMS \& AERONAUTICAL MAINTENANCE SUPPORT
12 MILLION FLIGHT HOURS LOGGED BY HELICOPTERS Equipped with SAFRAN AVIONICS SYSTEMS
CUSTOMER SUPPORT
PROVIDING COMPREHENSIVE WORLDWIDE CUSTOMER SUPPORT

FLEXIBLE, TAILORED SUPPORT

Rotorcraft manufacturers and operators require reliability, flexibility, cost-efficiency and optimized planning. Safran is well-positioned to offer extensive, custom-tailored support across the full lifecycle of rotorcraft programs.

Our global aftermarket offering includes spares provisioning and supply, maintenance, repair and overhaul (MRO), Aircraft On-Ground (AOG) support, engineering services, real-time data monitoring, logistics management, as well as on-site and technical support and training.

IMPROVING SERVICES THROUGH INNOVATION

As an innovator, our strategy is to constantly anticipate and introduce new technologies, new production techniques and new materials in order to better maintain and repair our products.

We believe in preventive maintenance, which is why we leverage our expertise in data analytics to diagnose and forecast maintenance needs.

GLOBAL REACH, LOCAL SUPPORT

With facilities strategically located in major aviation hubs, we meet the demands of fleet operators, while strengthening ties with our customers. This strategy enables us to provide immediate, efficient and reliable support, ultimately improving dispatch reliability.

- CERTIFIED SERVICE CENTERS WORLDWIDE
- SUPPORT BY THE HOUR
- TRAINING AND CONSULTING SERVICES
- 24/7 CUSTOMER SUPPORT AND SERVICES
- DISTRIBUTION CENTERS
- INTERNATIONAL REPAIR NETWORK ON-SITE SUPPORT
- MORE THAN 200 TECHNICAL REPRESENTATIVES WORLDWIDE

BOOSt® (BANK OF ONLINE SERVICES & TECHNOLOGIES) is Safran’s new online rotorcraft engine maintenance management service. Developed in partnership with IBM, this tool provides operators of Safran-powered helicopters with real-time, personalized engine data to enrich their own fleet maintenance management, with the direct support of Safran teams.

GLOBAL REACH, LOCAL SUPPORT