



**Safran employs 62,500 people worldwide. It is a leading international high-technology group with three core businesses: Aerospace (Propulsion and Equipment), Defence and Security. It is a leading player on markets in which the technological and financial barriers to entry are high, with robust and profitable service activities and long-lasting partnerships and customer relations built on trust.**

Revenue	R&D spending	Headcount	Footprint
<b>€13.6 billion</b>	<b>€1.6 billion</b>	<b>62,558</b>	<b>58 countries</b>

The Group differentiates itself from the competition through its technological expertise. Its complementary businesses give it a genuine advantage, driving growth and enabling the Group to withstand economic cycles. From both a technological and managerial point of view, the Group's various businesses are highly integrated and complementary.

Safran has a strong positioning in Aerospace. Its installed fleet, especially the CFM56, offers significant new vistas for value creation thanks to associated maintenance and overhaul activities. Its engines and equipment are present in most current and future aircraft programs, with the successful LEAP engine set to pick up where the CFM56 leaves off. The Group is organized so as to offer comprehensive offerings to aircraft manufacturers and airlines, including propulsion and landing systems. In Defence, the Group is renowned for its avionics and optronics expertise, which contributes significantly to the competence of armed forces around the world. In the Security segment, Safran's expertise lies in multi-biometric technology, secure documents such as passports and identity cards, and the detection of dangerous and illicit substances. The Group has boosted its position on this high-growth market through targeted acquisitions.

Safran enjoys particularly sound fundamentals with front-ranking technical and commercial positions, robust and profitable service activities, innovative research and development, a healthy financial situation and strong operating cash flow, which allow it to leverage opportunities for organic growth or acquisition-led development on all of its markets.

Firm in the belief that sustainably successful businesses are those able to manage the present in complete harmony with their vision of the future, Safran is poised to meet all of the challenges it encounters both today and going forward.



The French version of this Registration Document (*document de référence*) was filed with the French financial markets authority (*Autorité des marchés financiers* – AMF) on March 28, 2013 pursuant to article 212-13 of the AMF's General Regulations. It may only be used in connection with a financial transaction if it is accompanied by a memorandum approved by the AMF. This document has been established by the issuer and is binding upon its signatories.

This Registration Document contains the annual financial report in accordance with Article 222-3 of the AMF's General Regulations. The cross-reference table referring to information required in an annual financial report is provided in section 9.4.3.

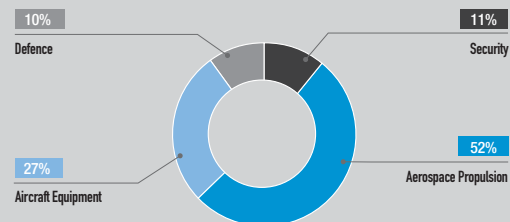
## ■ ADJUSTED KEY FIGURES (adjusted data)

### II REVENUE (ADJUSTED DATA)<sup>(1)</sup> (in € millions)



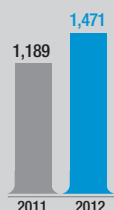
Adjusted revenue climbed 15.5%, driven primarily by the performance of the Aerospace (Propulsion and Equipment) and Security businesses which generated growth of 16.1% and 23.8%, respectively. In 2012, revenue was also boosted by the consolidation of new activities, particularly in the Security business.

### II BREAKDOWN OF REVENUE BY BUSINESS



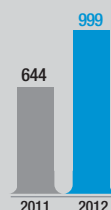
Safran is a leading international high-technology Group in Aerospace. These activities – Propulsion and Equipment – generate 79% of its revenue.

### II RECURRING OPERATING INCOME (ADJUSTED DATA)<sup>(1)</sup> (in € millions)



Adjusted recurring operating income represented 10.8% of adjusted revenue, up 23.7% year on year. This improvement was primarily driven by the Aerospace business, which benefited from solid growth in original equipment deliveries and strong momentum in the civil aftermarket.

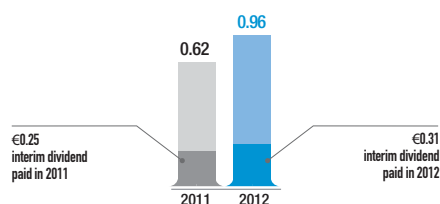
### II PROFIT ATTRIBUTABLE TO OWNERS OF THE PARENT (ADJUSTED DATA)<sup>(1)</sup> (in € millions)



Adjusted profit attributable to owners of the parent rose 55% in 2012, representing €2.41 per share, up from €1.59 in 2011.

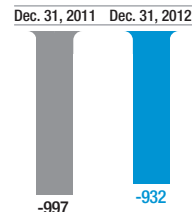
(1) The table reconciling the consolidated income statement and the adjusted consolidated income statement, including a description of the adjustments made, is presented in section 2.1.1.

### II DIVIDEND (in € per share)



At the Ordinary and Extraordinary Shareholders' Meeting of May 28, 2013, the Board of Directors will recommend a dividend of €0.96 per share, a 55% increase from the previous year. An interim dividend (€0.31 per share) was paid in December 2012 and the final dividend (€0.65 per share) will be paid in 2013.

### II NET DEBT (in € millions)

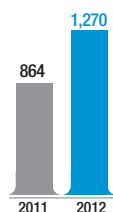


The Group was able to reduce its debt by increasing free cash flow throughout the financial year. Debt remains low despite strategic acquisitions in the Security and Defence segments for approximately €200 million, and dividend payments of €283 million (€154 million for the balance of the 2011 dividend and €129 million for the 2012 interim dividend).

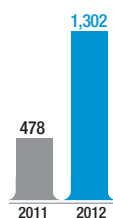
**II REVENUE (CONSOLIDATED DATA)**  
(in € millions)



**II RECURRING OPERATING INCOME (CONSOLIDATED DATA)**  
(in € millions)



**II PROFIT ATTRIBUTABLE TO OWNERS OF THE PARENT (CONSOLIDATED DATA)**  
(in € millions)

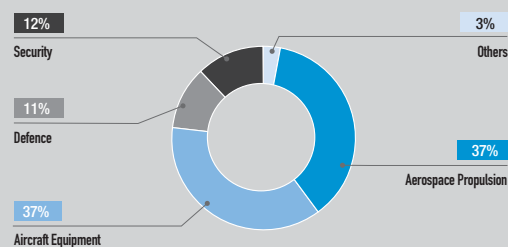


**II HEADCOUNT AS OF DECEMBER 31, 2012**

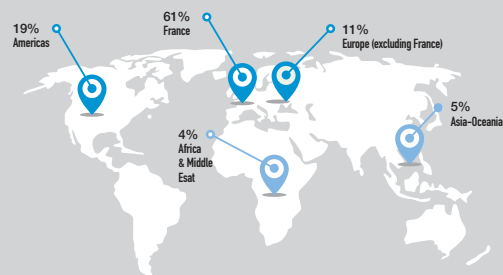


The Group's workforce grew by 2,800 (1,600 in France) compared to end-2011, in response to business growth. R&D resources are also being bolstered.

**II BREAKDOWN OF HEADCOUNT BY BUSINESS**



**II BREAKDOWN OF HEADCOUNT BY GEOGRAPHIC AREA**



The Group's expansion continued apace both in France and abroad. Outside France, the headcount comes to 24,600 across 57 countries.

## KEY FIGURES BY BUSINESS (adjusted data)

	Revenue (in € millions)	Recurring operating income (in € millions)	Headcount
Aerospace Propulsion	7,005	1,099	23,271
Aircraft Equipment	3,691	287	22,874
Defence	1,315	81	7,182
Security	1,546	145	7,727

## CORPORATE GOVERNANCE

At the Company's Annual General Meeting of April 21, 2011, a new corporate governance structure was adopted, replacing the Executive Board and Supervisory Board with a Board of Directors.

## MEMBERSHIP STRUCTURE OF THE BOARD OF DIRECTORS

Since April 21, 2011, the Board of Directors of Safran has consisted of fifteen members, including four State representatives and two employee-shareholder representatives.

Board membership is as follows:

- Jean-Paul Herteman, Chairman and Chief Executive Officer;
- Francis Mer, Vice-Chairman of the Board of Directors;
- Marc Aubry, Director representing employee shareholders;
- Giovanni Bisignani, Director (independent);
- Christophe Burg, Director representing the French State;
- Jean-Lou Chameau, Director (independent);
- Odile Desforges, Director (independent);
- Jean-Marc Forneri, Director (independent);
- Christian Halary, Director representing employee shareholders;
- Xavier Lagarde, Director;
- Michel Lucas, Director;
- Elisabeth Lulin, Director (independent);
- Astrid Milsan, Director representing the French State;
- Laure Reinhart, Director representing the French State;
- Michèle Rousseau, Director representing the French State.

## BOARD ADVISOR

- Caroline Grégoire-Sainte Marie.

## BOARD COMMITTEES

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In its meeting of April 21, 2011, the Board of Directors set up three permanent committees:

- an Audit and Risk Committee;
- an Appointments and Compensation Committee;
- a Strategy and Major Projects Committee.

Within their respective areas of expertise, each committee issues proposals, recommendations and opinions.

### THE AUDIT AND RISK COMMITTEE

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Four members – Chairman: Jean-Marc Forneri

The Audit and Risk Committee is responsible for examining the financial statements and addressing issues relating to the preparation and auditing of accounting and financial information. It also verifies the Company's external audit.

### THE APPOINTMENTS AND COMPENSATION COMMITTEE

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Five members – Chairman: Michel Lucas

The Appointments and Compensation Committee assists the Board of Directors in its choice of members and corporate officers, and makes recommendations and proposals concerning the compensation of corporate officers.

### THE STRATEGY AND MAJOR PROJECTS COMMITTEE

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Seven members – Chairman: Francis Mer

The Strategy and Major Projects Committee expresses its opinion on the Group's major strategic orientations, development policy and major industrial product development projects or programs as presented to the Board of Directors by Executive Management.

It also examines proposals for strategic agreements and partnerships, acquisitions and all other transactions that impact Group structure.

## EXECUTIVE MANAGEMENT

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On April 21, 2011, the Board of Directors opted to combine the positions of Chairman of the Board of Directors and Chief Executive Officer and appointed Jean-Paul Herteman to take on these functions and the title of Chairman and Chief Executive Officer. At the same meeting, the Board of Directors appointed Francis Mer as Vice-Chairman of the Board of Directors.

Finally, the Board of Directors appointed as non-Director Deputy Chief Executive Officers:

- Dominique-Jean Chertier;
- Ross McInnes;
- Marc Ventre.

# 01

## PRESENTATION OF THE GROUP

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# IN BRIEF

2012 revenue (adjusted data)  
**€13,560 million**

Recurring operating income,  
2012 (adjusted data)  
**€1,471 million**

2012 profit (attributable  
to owners of the parent,  
adjusted data)  
**€999 million**  
**(€2.41 per share)**

Total R&D expenditure  
(including the portion funded  
by customers)  
**€1.6 billion**

Industrial investments  
**€419 million**

Headcount as of  
December 31, 2012  
**62,558 employees**

## THE GROUP'S POSITIONING

Safran is a leading international high-technology group with three core businesses: Aerospace (Propulsion and Equipment), Defence and Security. It is a prime player on all of its markets.

### AEROSPACE

Through its rocket and aircraft propulsion systems, Safran covers the entire life cycle of systems for the propulsion of planes, helicopters, missiles and launch vehicles, in the civil, military and space markets, from design through to production, marketing, maintenance and repair.

Through its aircraft equipment systems, Safran covers the full life cycle of systems and equipment for civil and military aircraft and helicopters.

Group companies provide both original equipment and services to leading global aircraft programs.

### DEFENCE

Safran holds a front-line international position in optronics, avionics, electronics and critical software for civil and defence markets.

### SECURITY

Safran's Security business offers solutions for enhancing the safety and security of transport systems, critical infrastructures and individuals. It operates in the areas of biometric systems, secure documents (passports, ID cards), and systems for detecting explosives and illicit substances.

## RESEARCH AND DEVELOPMENT

Safran operates in a high-technology and high value-added arena. R&D is therefore essential to Group strategy. The total R&D effort, close to 70% of which is self-financed, amounted to €1.6 billion in 2012, representing almost 12% of revenue. This commitment reflects the importance given to preparing for the future and developing new products and programs.

## SAFRAN+

The Safran+ program targets continuous performance enhancements. It stimulates initiative and innovation through intra-group synergies, the ultimate aim being ever-higher customer satisfaction.

## 1.1 OVERVIEW

### 1.1.1 HISTORY

Safran is a leading international high-technology group in the Aerospace (Propulsion and Equipment), Defence and Security industries, where it enjoys prime global or European market positions, either alone or in partnership with other companies. Safran is constantly seeking to adapt and reinvent itself to meet the critical technological and economic challenges of tomorrow.

Safran's roots and its technological and industrial hub are in France and Europe. From this base, it has extended its footprint to the American continent, Africa, Asia and Oceania. This presence enables the Group to develop and nurture industrial and commercial relations with the leading prime contractors and operators at national level, and to promptly deliver first-class local service to customers around the world.

#### KEY DATES IN THE GROUP'S HISTORY

Safran Group was created on May 11, 2005 from the merger of Snecma and Sagem, and is the world's oldest aircraft engine manufacturer. Comprising a number of companies with prestigious brand names, it has been at the forefront of aeronautics and defence for more than a century and is now also a leading name in security.

- 1905** Louis and Laurent Seguin found the Société des Moteurs Gnome in the Paris suburb of Gennevilliers. In just a few short years, their Gnome rotary engines become the standard for planes around the world.
- 1912** Louis Verdet creates Le Rhône, which becomes Gnome's main competitor within two years. Gnome quickly takes over its competitor, creating the Société des Moteurs Gnome & Rhône. After the First World War, Gnome & Rhône becomes one of the world's leading manufacturers of aircraft engines.
- 1924** Marcel Môme creates Société d'Applications Générale d'Électricité et de Mécanique (Sagem), whose main business is to supply power to telephone exchanges. A few years later, Sagem diversifies its business to include the manufacture of cameras, projectors and artillery equipment. It also sets up the first ever analogue telephone network. Sagem creates Société d'Application Téléphonique, which in 1960 becomes the Société Anonyme de Télécommunications (SAT). This company goes on to design the world's first infrared guidance system for air-to-air missiles.

- 1945** After the Second World War, Gnome & Rhône is nationalized and renamed Snecma. It groups together the majority of French aircraft engine manufacturers launched since the beginning of the century (Renault, Lorraine, Régnier, etc.).
- 1968** Hispano-Suiza, specializing in power transmission for the engines of civil and military aircraft and helicopters, joins Snecma. A few years later, it teams up with Messier to create Messier-Hispano-Bugatti (MHB) and consolidate all landing system products. Messier-Bugatti-Dowty is today the world's leading player on this market<sup>(1)</sup>.
- 1974** Snecma becomes a civil aircraft engine manufacturer through a cooperation agreement with General Electric Aircraft Engines for the manufacture of the CFM56 ("CF" for General Electric's commercial engine line and "M56" for Snecma's 56<sup>th</sup> project). This engine currently represents the world's largest civil aircraft engine fleet<sup>(2)</sup>: an aircraft powered by the CFM56 takes off every 2 seconds<sup>(3)</sup>.
- 1993** Sagem purchases Morpho, a specialist in fingerprint-based biometric recognition systems. Today, the business is the world leader in this sector.
- 1997** Snecma takes full control of Société Européenne de Propulsion (SEP) and enters the space propulsion market (Ariane launcher).
- 2000** Aircraft wiring specialist Labinal joins Snecma. Labinal is currently a leading world player in this market. Helicopter engine manufacturer Turbomeca joins Snecma to continue a technology success story that started in 1938 with company founder Joseph Szydlowski. Today, Turbomeca is the world's premier manufacturer of turbine engines for helicopters<sup>(4)</sup>.
- 2002** Hurel-Dubois merges with the aircraft engine nacelle business of Hispano-Suiza to become Hurel-Hispano. Three years later the company is renamed Aircelle. It is currently one of the key players on the aircraft engine nacelle market.
- 2005** Safran is formed from the merger of Snecma and Sagem. Safran strengthens its positions in the security business with the acquisition of smartcard specialist Orga Kartensysteme GmbH.
- 2008** Safran extends its partnership with GE in the fields of aerospace propulsion and nacelles through to 2040. The Security business acquires Sdu-I in Holland, renamed Morpho BV.

(1) Source: Messier-Bugatti-Dowty.

(2) Source: Ascend, [www.ascendworldwide.com](http://www.ascendworldwide.com).

(3) Source: Safran.

(4) Source: Turbomeca.



**2009** Safran acquires 81% of GE's Homeland Protection business, as well as Motorola's biometrics business (under the Printak brand). Then in 2012, Safran acquires the remaining 19% of GE Homeland Protection, renamed Morpho Detection Inc.

**2010** Labinal completes its acquisition of Harvard Custom Manufacturing – renamed Labinal Salisbury – an American company based in Salisbury (Maryland).

**2011** Safran acquires L-1 Identity Solutions, a leading American identity management provider, to become a front-line world player in identity solutions and electronic documents. It also acquires SME (formerly SNPE Matériaux Énergétiques). The following year, Safran merges SME and Snecma Propulsion Solide to form Herakles, world number two in solid propellants for rockets<sup>(1)</sup>.

**2012** Safran enters into an agreement to acquire the electrical systems business of Goodrich (Goodrich Electrical Power Systems – GEPS), to form a leading world player in aircraft electrical systems.

In optronics, Safran and Thales form the 50-50 joint venture Optrolead. The two companies also buy out the Areva stake to obtain 50% each of Sofradir in order to transfer their infrared businesses to this company.

## 1.1.2 ORGANIZATION AND POSITION OF THE ISSUER IN THE GROUP

### ORGANIZATION

Safran is an industrial group within which each subsidiary directly manages the operational side of its business activity and takes responsibility for the internal control system to be implemented in accordance with Group procedures and internal rules.

The organizational structure is based on:

- a parent company, Safran, the Issuer, responsible for the Group's strategy, organization and development. Safran has adopted a governance structure with a Board of Directors;
- companies handling specific business lines, under strategies determined by the parent company's Board of Directors. The parent company's senior management ensures that the strategies defined for each business are implemented at an operational level.

First-tier entities are responsible for overseeing the second-tier entities with which they have operational ties.

### ROLE OF THE ISSUER WITHIN THE GROUP

As the Group's parent company, Safran performs the following functions for the Group companies:

- it holds and manages shares in the main Group subsidiaries;
- it steers and develops the Group, determining Group strategy, R&T, sales policy, legal and financial policy, human resources policy, communications, oversight of operations;
- it provides support for Group companies, on legal, taxation and financial matters (such as finance, cash pooling, tax consolidation, etc.), along with services, through Shared Services Centres covering payroll management and administration, recruitment, non-production purchasing, IT, and some accounting functions.

The list of consolidated companies is presented in section 3.1, Note 33.

### FINANCIAL FLOWS BETWEEN THE ISSUER AND GROUP COMPANIES

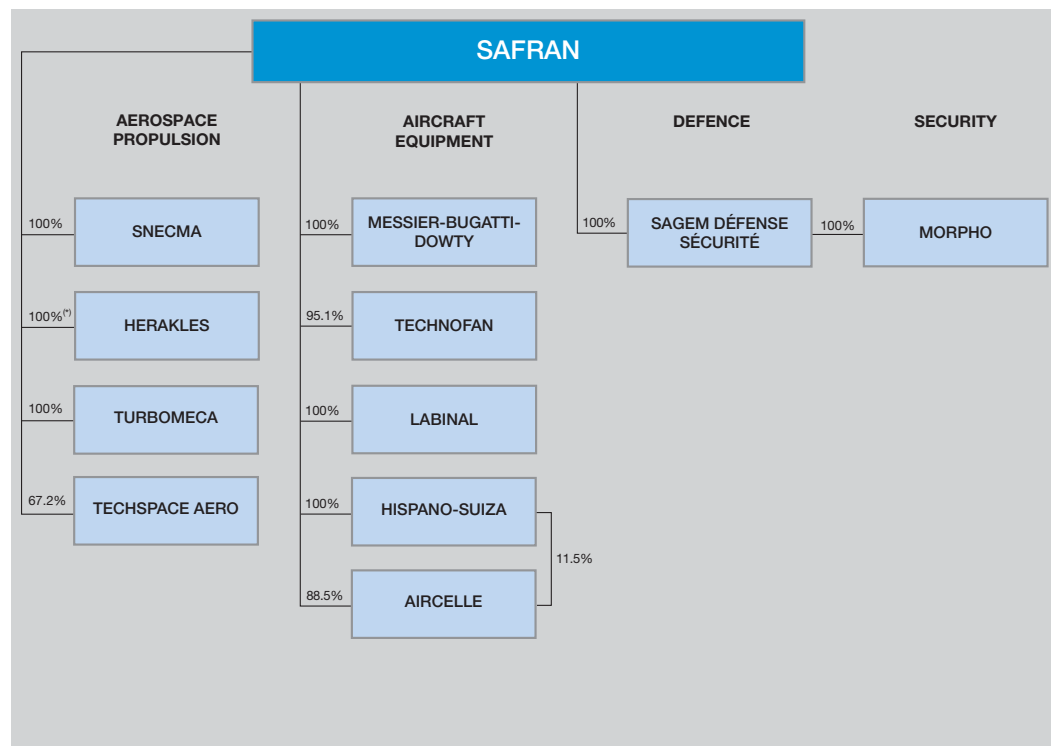
Safran receives dividends paid by its subsidiaries, compliant with applicable regulations.

It receives payment for services provided to Group companies, and invoices the price of services provided through the Shared Services Centres.

<sup>(1)</sup> Source: Herakles.

### 1.1.3 SIMPLIFIED ORGANIZATIONAL CHART

Safran, the Issuer, is the parent company of the Safran Group. The simplified organizational chart as of December 31, 2012 is as follows:



(\*) Less one share held by the French state.

The list of consolidated companies is presented in section 3.1, Note 33.

## 1.1.4 MAIN GROUP COMPANIES, BY BUSINESS SECTOR

Safran currently operates in three main markets: Aerospace, Defence and Security. Safran's Aerospace business breaks down into Aerospace Propulsion and Aircraft Equipment.

### AEROSPACE PROPULSION

Safran's Aerospace Propulsion business covers all activities (design, production, marketing, testing, maintenance and repair) relating to propulsion systems for planes, helicopters, missiles and launch vehicles, in the civil, military and space markets.

#### SNECMA

Jet engines for civil and military aircraft, support, maintenance, repair and related services. Liquid-propellant propulsion systems for launch vehicles, satellites and space vehicles.

#### TURBOMECA

Turbine engines for civil, parapublic and military helicopters. Turbojet engines for training aircraft, missiles and drones. Maintenance, repair, support and related services.

#### HERAKLES

Solid propellant rocket engines for space launch vehicles and missiles. Energy raw materials, pyrotechnic equipment, thermostructural and organic composite materials for defence, aerospace, automotive safety and industrial applications.

#### TECHSPACE AERO

Low-pressure compressors for aircraft engines. Equipment for aerospace applications. Equipment and test cells for aerospace engines.

### AIRCRAFT EQUIPMENT

Safran's Aircraft Equipment business covers equipment, systems and services for civil and military aircraft and helicopters.

#### MESSIER-BUGATTI-DOWTY

Aircraft landing gear and braking systems. Operations cover full product life cycles: from design and manufacture through to maintenance and repair.

#### AIRCELLE

Complete nacelle systems for aircraft engines, support and related services, composite materials for aerostructures.

#### HISPANO-SUIZA

Engine power transmissions for civil and military aircraft and helicopters. Electronic power controllers and electrical systems.

#### LABINAL

Electrical wiring for civil and military aircraft. Comprehensive engineering services for the aerospace, defence, automobile and rail industries.

### DEFENCE

#### SAGEM<sup>(1)</sup>

Equipment and systems in optronics, avionics, navigation, electronics and critical software for civil and defence applications. Customer support for all related land, sea, air and space applications.

### SECURITY

#### MORPHO

Multi-biometric identification solutions (fingerprint, iris and face recognition), and identity management solutions. Smartcards, identity document and secure transaction systems. Equipment for detecting explosives and illicit substances.

(1) Sagem is the trading name of Sagem Défense Sécurité.

## 1.2 GROUP STRATEGY

Safran holds leading international positions in the Aerospace, Defence and Security markets. It enjoys strong customer recognition for excellence in all its businesses.

Safran is a leading manufacturer of aircraft engines, helicopter turbine engines and space engines. It is also a front-line player in landing gear, nacelles, electrical equipment and wiring systems, for aircraft manufacturers and airline companies. Safran provides its customers and operators with an extensive services offering across its whole business spectrum.

On the security market, Safran harnesses unique experience to meet growing demand for multi-biometric identification systems, secure document systems (passports, identity cards, etc.), and tomographic systems for the detection of explosives and illicit substances.

The Defence market remains a promising, albeit smaller, area owing to Safran's strong innovative capacities in advanced technologies, which underlie its leadership in optronics, navigation and avionics.

Safran's development is guided by four key principles:

- technological innovation, driving long-term growth;
- world number-one ranking in an increasing number of businesses;
- strong positions on high-growth markets;
- consistently sound financial position.

To back its strategy, Safran continues to forge alliances and long-term partnerships, as with GE, on engines for short- to medium-haul aircraft (partnership dating back to 1974, then renewed in 2008 through to 2040), and more recently with Honeywell, on an ecology-friendly Electric Green Taxiing System (EGTS) that does not require the use of the aircraft's engines. Safran also proceeds with targeted external growth operations, chiefly to round out its coverage of key technologies and to access new markets. These levers strengthen and accelerate Safran's organic growth.

Safran is also pushing ahead with its competitive performance improvement plan, through constant improvement to its industrial facilities and the increasing dollarization of its purchasing operations, which affords protection against exchange rate fluctuations.

Safran takes up positions on long-term markets on which sustained demand ensures growth and profitability. Growth opportunities are found not only in the strong development potential of emerging countries (such as China), but also in mature US and European markets, where aircraft fleets are under renewal. Safran expects the worldwide fleet to double in size over the next 20 years. This is the multipolar and global aerospace market on which Safran asserts its sustainable growth and profitability strategy.

Safran's financial fundamentals are very sound. Robust operating cash flow underpins a strong long-term position at the technological frontline, and sustained R&D investments, thus driving short- and medium-term growth.

Safran implements its development strategy in accordance with unwavering ethical principles, on job satisfaction, environmental protection, and the absolute need for infallible safety and security conditions. These principles are outlined in a charter that sets out Safran's values and ethical standards (see section 5.2.1).

## 1.3 GROUP BUSINESSES

Safran operates in the high-tech Aerospace (Propulsion and Equipment), Defence and Security markets. In certain cases, it forges alliances and partnerships when participating in major programs in these markets, due to the technological challenges, cost, development time and risks involved.

By joining forces, each party brings the best of its know-how to the project in hand and shares risks thanks to a diversified product portfolio.

1

### 1.3.1 AEROSPACE PROPULSION

The Aerospace Propulsion business operates in three fields:

#### AIRCRAFT AND LIQUID-PROPELLANT ENGINES

<b>Civil aircraft engines</b>	Business jets
	Regional jets
	Short- to medium-haul aircraft
	Long-haul aircraft
<b>Military aircraft engines</b>	Fighters
	Training and support aircraft
	Patrol, tanker and transport aircraft
<b>Liquid- and plasma-propellant engines</b>	Launch vehicles and satellites

#### HELICOPTER ENGINES

<b>Turbine engines for helicopters</b>	Light helicopters
	Medium-weight helicopters
	Heavyweight helicopters

#### SOLID-PROPELLANT ENGINES

<b>Civil space industry</b>	Launch vehicles
<b>Military industry</b>	Ballistic missiles
	Tactical missiles and targets

#### 1.3.1.1 AIRCRAFT AND LIQUID-PROPELLANT ENGINES

##### CIVIL AIRCRAFT ENGINES

##### Key characteristics of the business sector

The civil aviation sector comprises four main segments:

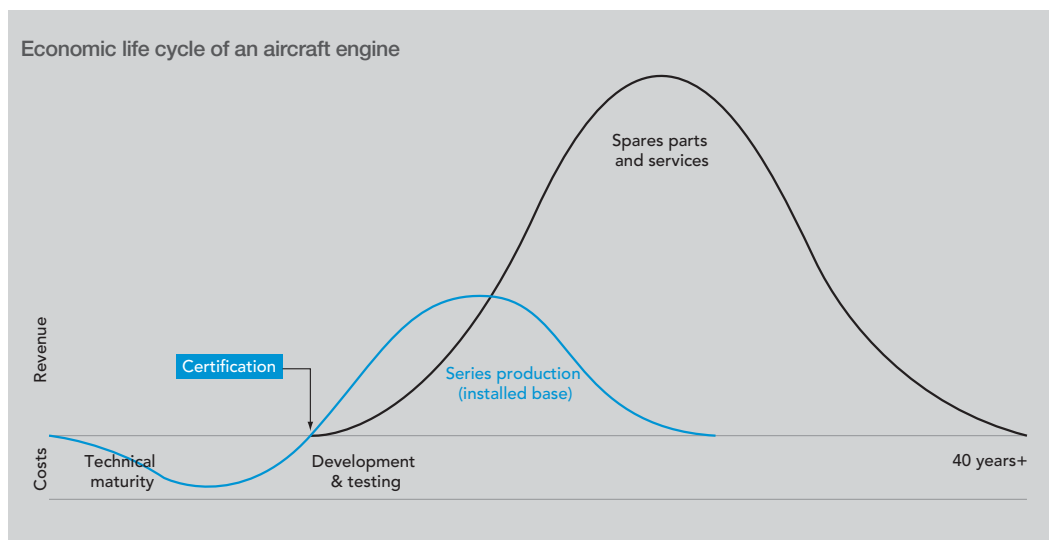
- business jets powered with engines delivering between 5,000 and 18,000 pounds of thrust;
- regional jets (30 to 100 seats) powered by engines delivering between 8,000 and 18,000 pounds of thrust;
- short- to medium-haul aircraft with 100 to 200 seats, powered by engines delivering between 18,000 and 50,000 pounds of thrust;
- high capacity long-haul aircraft with a twin-aisle fuselage, powered by engines delivering over 50,000 pounds of thrust (currently up to 115,000 pounds).

In response to aircraft manufacturer requirements for specific engines for each of these business sectors, engine manufacturers invest in civil engine programs comprising two types of activity:

- original equipment activity, involving the sale of engines installed on new aircraft;
- service activity, comprising the sale of spare parts and service contracts entered into on a case-by-case or long-term basis with operators and approved maintenance centers.

## PRESENTATION OF THE GROUP

### / GROUP BUSINESSES /



These programs may span more than 40 years and have several phases. A significant portion of revenue generated by these programs comes from support services.

There are four major engine manufacturers in the sector that can act as prime contractors: GE (US), Rolls-Royce (UK), Pratt & Whitney (US) and Safran (France). Honeywell (US) only acts as prime contractor on business jet engines.

In the industry, the US dollar is used almost exclusively as the transaction currency.

#### ■ Alliances and partnerships

Because of the very substantial investment involved in new engine programs, Safran often works in partnership with other engine manufacturers.

Partnerships may take the form of joint ventures, as with GE (on the CFM56/LEAP program), Rolls-Royce and NPO Saturn.

They can also be based on contractual risk-and-revenue-sharing agreements, under which Safran receives a share of sales revenue for the final delivered product, corresponding to its share in the program. The GE90 program is an example of this kind of arrangement.

#### Group products and programs

Safran's operations in the civil aircraft engines segment mainly involve Snecma, Turbomeca and Techspace Aero.

#### ■ Low-thrust engines for civil aircraft

This engine family powers regional transport jets and business jets. Safran is the prime contractor for the SaM146 program, in partnership with the Russian engine manufacturer, NPO Saturn. The SaM146 was selected as the sole engine for the Superjet 100, the 70- to 95-seater aircraft made by Russian manufacturer Sukhoi.

Safran also invests in engines for business jets through its Silvercrest program, in the category of engines delivering 10,000 pounds of thrust. This engine has already been selected by two aircraft manufacturers, including Cessna, in May 2012, for its new Citation Longitude business jet.

The Group also operates in this engine range through participation in the following GE programs:

- CF34 10 (Embraer 190 and COMAC ARJ 21 regional jets);
- Passport (Bombardier Global 7000/8000 business jets).

Safran also makes a piston aircraft engine, the SR305-230E, from SMA (Société de Motorisations Aéronautiques). SMA was founded in 1997 to develop a diesel engine for light aviation, and joined the Safran Group in 2005. The SMA SR305-203E engine will power the latest arrival in the Cessna 182 Skylane line: the four-seater, single-engine, high-wing Turbo Skylane NXT, scheduled for release in 2013.

#### ■ Medium-thrust engines for civil aircraft

The CFM56 engine program generates the largest share of Safran's Aerospace Propulsion revenue (approximately 40%). This engine is developed under equitable joint cooperation agreements by CFM International, a 50-50 joint venture between Safran and GE.

The majority of short- to medium-haul aircraft with more than 100 seats delivered over the last 15 years are powered by CFM56 engines. These engines power nearly 56%<sup>(1)</sup> of the Airbus A320ceo (current engine option) range. Competition to power the Airbus range comes from the IAE consortium's V2500 engine and Pratt & Whitney's PW6000, which currently powers only a small number of A318s. Following the purchase of Rolls-Royce's share by Pratt & Whitney in June 2012, the IAE consortium now comprises three engine manufacturers (Pratt & Whitney, MTU Aero Engines and Japanese Aero Engines Corp.).

<sup>(1)</sup> Source: Safran.

The new generation of the Boeing B737NG, like the previous version (Classic), is powered solely by CFM56 engines.

Overall, the CFM56 engine represents 80%<sup>(1)</sup> of the short- to medium-haul aircraft market.

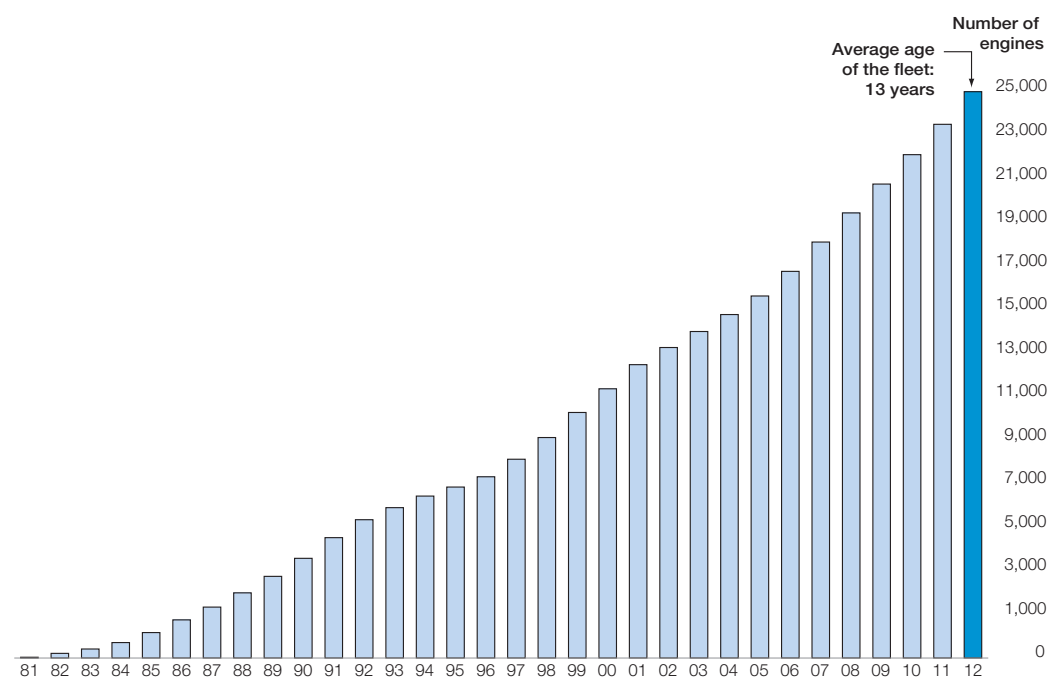
The success of this program with airlines has led to a steady rise in the fleet of CFM56 engines delivered over the past 30 years. This engine currently represents the world's largest engine fleet, totaling more than 24,000 units (only around 800 of which have been withdrawn from service).

CFM International is also developing a new generation of engine called LEAP, which should achieve a 16% reduction in fuel consumption in comparison with current CFM56 versions. The

first tests on the new unit will begin in 2013, with commissioning scheduled for 2016. The engine has so far been selected:

- in an initial version, LEAP-1C, as the only Western source for the propulsion system (engine plus nacelle) on COMAC's C919 Chinese aircraft, in late 2009;
- in a second version, LEAP-1A, as one of the two new engine options for the new Airbus A320neo (new engine option), which was officially launched by the European aircraft maker in late 2010. (The other engine is the PurePower PW1000G, developed by Pratt & Whitney);
- in a third version, LEAP-1B, as the exclusive source for the propulsion system on the new Boeing 737 MAX, officially launched by the US aircraft manufacturer in summer 2011.

## II TOTAL DELIVERIES OF CFM56 ENGINES



### ■ High-thrust engines for civil aircraft

The Group operates in this engine range as a risk and revenue sharing partner of GE. Participation rates vary between 8% and 24% across several major engine programs in series production, including the CF6 powering the A330 (19.4%) and the 747 (10%), the GE90 powering the 777 (23.5%), the GP7200 powering the A380 (17.5%, including 7.5% with Pratt & Whitney), and the GenX (8%) powering the Boeing 787 Dreamliner long-haul aircraft and the Boeing 747-8.

### ■ Spare parts and services for civil aircraft engines

After-sales operations primarily involve the sale of spare parts and the provision of maintenance, servicing and repair services. They

hold very high sales and profitability potential for the Group, owing to the size and lifespan of the aircraft fleets concerned.

For the fleet of CFM56 engines, after-sales operations chiefly involve sales of new spare parts and provision of engine maintenance services. For several years the Group has been developing long-term service contracts with airlines and major maintenance workshops, to assert its position on this highly competitive market. All CFM56 engines are removed for inspection and servicing in a maintenance workshop from three to five times during an average service life. As well as offering real-time response to demand for new spare parts, CFM Materials (a business run jointly by GE and Snecma) also provides reconditioned CFM56 parts. CFM holds near-exclusive coverage of the market for CFM56 spare parts, which are critical to engine dependability. The growing number of

(1) Source: Safran.

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CFM56 engines in service will generate a growing volume of highly profitable business in the future.

For new-generation LEAP engines, scheduled to come into service from 2016, all OEM purchase intention and firm order agreements (except for sales for aircraft rental companies), have been signed almost simultaneously with spare parts provision and/or service contracts running for seven to ten years. As this type of offering becomes increasingly systematic, it ensures long-term service revenue covering the supply of spare parts from the initial OEM sale.

On all other civil aircraft engine programs, including those for high-thrust engines, in which Safran holds a minority stake alongside GE, the Group benefits from revenues from spare parts and maintenance contract sales proportional to its stake in the program.

### MILITARY AIRCRAFT ENGINES

#### Key characteristics of the business sector

The military aviation sector comprises three main segments:

- fighters;
- training and support aircraft;
- patrol, tanker and transport aircraft.

The military aircraft engine and related services market is dependent on the budgets of client air forces. The military market is also influenced by national independence and diplomatic considerations.

The nature and performance of engines varies considerably depending on the segment: jet engines with a high thrust-to-weight ratio for fighters, and jet engines or turboprops closer to those found in civil aircraft for training and patrol aircraft.

As in the civil aviation sector, military engine programs generally involve two types of activity, namely original equipment and after-sales service, the latter comprising the sale of spare parts, maintenance and repair activities, as well as other customer services.

Alliances and partnerships between engine manufacturers have been forged to bring together the best technological and commercial assets, pool risks, and meet the needs of pan-European programs (such as EuroProp International, regarding the TP400 engine fitted to the Airbus A400M).

The majority of civil engine manufacturers are active in military aircraft engines and benefit from the technical synergies that exist between the two activities.

The key Western players in the fighter jet engine sector are North American and British, namely Pratt & Whitney, GE and Rolls-Royce.

The main European players are: Safran, whose M53 engine powers the Mirage 2000 and whose M88 engine equips the Rafale; Rolls-Royce, whose RB199 engine powers the Tornado and whose Pegasus engine powers the Harrier; and the European Eurojet consortium comprising Rolls-Royce (UK), MTU Aero Engines (Germany), Avio (Italy) and ITP (Spain), which are developing the EJ200 engine for the Eurofighter Typhoon.

The choice of engines in the training aircraft sector consists mainly of those made by Safran (the Larzac, which powers the Alphajet, and the Adour in partnership with Rolls-Royce, which powers BAe Systems' Hawk aircraft), Pratt & Whitney (PW500 and PW300) and Honeywell (TFE731 and F124 engine families).

In the engine segment for military transport and patrol aircraft, the fleet is primarily made up of the T56 and AE2100 turboprops

developed by Rolls-Royce North America (formerly Allison) and the Tyne engines developed by Snecma under Rolls-Royce license.

In the future, a major role will be played by the TP400 program (10,000 horse power turboprop - the most powerful in the Western world), which powers the European military transport aircraft the Airbus A400M, which is currently under development. Snecma holds a 32.2% stake in this program as a member of the Europrop International (EPI) consortium, comprising Snecma, Rolls-Royce, MTU Aero Engines and ITP.

### Group products and programs

Safran's operations in the military aircraft engines segment mainly involve Snecma, Turbomeca and Techspace Aero.

#### ■ Fighter engines

Historically tied to Dassault Aviation, activity in this segment is based mainly around the following programs:

- the Atar engine (4.5 to 7.1 metric tons of thrust), which powers the Super-Étendard Marine jets and the Mirage III, IV, V, F1 and 50 family. Series production of this engine has now ceased and approximately 850 engines remain with 11 customers;
- the M53 engine (9.5 metric tons of thrust), which powers the Mirage 2000. There are 606 of these engines in service with nine clients;
- the M88 engine (7.5 metric tons of thrust), which powers the Rafale, with 302 engines in service.

#### ■ Training and support aircraft engines

Activity in this segment is based on the following programs:

- the Larzac engine (1.4 metric tons of thrust), which powers Dassault Aviation's Alpha Jet training aircraft and for which series production has ceased. The Larzac engine also powers the Russian MiG-AT and Indian HJT36 prototype training aircraft. Approximately 750 engines are in service with 14 customers;
- the Adour engine, which delivers thrust of 3.7 metric tons (with afterburner) or 2.9 metric tons (without afterburner), is developed and produced by RRTRM (Rolls-Royce Turbomeca Ltd.), a partnership between Turbomeca and Rolls-Royce. The Adour engine powers support and attack aircraft such as the Jaguar aircraft produced by Dassault Aviation and BAe Systems, and the following training aircraft: the Hawk produced by BAe Systems and the Goshawk T-45A produced by Boeing. More than 1,100 engines are in service in 18 countries.

#### ■ Patrol, tanker and transport aircraft engines

Activity in this segment is based on the following programs:

- the CFM56 engine powering military versions of the Boeing 707 (CFM56-2), for the KC135 tanker aircraft and Boeing 737 (CFM56-7), for the US Navy C-40 transport aircraft, the future maritime patrol aircraft, the MMA (Multimission Maritime Aircraft), the AEW&C aircraft (Airborne Early Warning & Control) and the Wedgetail detection and command aircraft;



- the Tyne turboprop engine, delivering 4,550 kW of thrust, developed by Rolls-Royce and manufactured under license by Snecma (57%) and MTU Aero Engines (20%). This engine powers C-160 Transall transport aircraft and Breguet Atlantic and Atlantique 2 maritime patrol aircraft. Series production of this program has ceased but it continues to generate revenues through spare parts and repairs;
- the TP400-D6 engine will power the Airbus A400M European transport aircraft.

#### ■ Spare parts and services for military aircraft

After-sales operations for military aircraft primarily involve the sale of spare parts and maintenance, servicing and repair services. This business directly addresses the need for aircraft availability of governments using military aircraft. Two programs account for the bulk of these military aircraft service operations today: Mirage 2000 (M53 engine); and Rafale (M88 engine). The Group also continues to provide services for older aircraft fleets, to meet the needs expressed by customers.

Because of the extreme operating conditions involved, military aircraft engines are usually serviced before they reach 1,000 hours in flight. One of Safran's constant development objectives is to lengthen the interval between servicing visits. The Group recently developed a new version of the engine that powers the Rafale; the M88 Pack CGP introduces technical improvements that help maintain the aircraft in optimal operating conditions. To reduce total cost of ownership, hot parts and rotating parts have a longer service life, which makes for a longer servicing interval. Most governments currently delegate the management of their spare parts to Safran.

#### LIQUID- AND PLASMA-PROPELLANT ENGINES

##### Key characteristics of the business sector

This business sector comprises launch vehicle propulsion systems and satellite engines.

Two types of technology are involved: liquid-propellant rocket engines and electric thrusters (known as plasma thrusters).

European civil space activities are assigned among manufacturers in each country to ensure a fair return on investment for all governments involved. The manufacturers then enter into agreements to reallocate these activities in accordance with their areas of expertise.

In Europe, the weak government market means that access to space systematically involves the operator Arianespace, the main player on the commercial market for the launch of geostationary telecommunication satellites. Safran is the main supplier of Ariane engines.

##### Group products and programs

Safran's operations in the liquid- and plasma-propellant engine segment mainly involve Snecma and Techspace Aero.

Safran's direct customers are EADS Astrium, which supplies series production units to Arianespace, and the European Space Agency (ESA) for development activities:

- **series production**, with manufacture of the Vulcain 2 cryogenic engine delivering 135 metric tons of thrust to power the main stage of the ES and ECA versions of Ariane 5, and manufacture of the HM7 cryogenic engine delivering 7 metric

tons of thrust to power the upper stage of the Ariane 5 ECA rocket;

- **development activities**, with the new Vinci restartable cryogenic engine, delivering 18 metric tons of thrust, selected for the upper stage of the improved Ariane 5, (Ariane 5 ME, Midlife Evolution), the first launch of which is scheduled for 2017/2018, followed by the new-generation Ariane 6 launch vehicle, for 2021/2022.

In the satellite sector, Safran offers an electric propulsion solution. SPT100 plasma thrusters are in service in geostationary satellites and the PPS1350 thruster powers ESA's SMART-1 lunar exploration probe.

#### 1.3.1.2 HELICOPTER TURBINE ENGINES

##### Key characteristics of the business sector

The helicopter turbine engine market is characterized by significant diversity in applications and customer-users. With the exception of armed forces and certain specific civil applications, current helicopter fleets are small in size.

Helicopter engine size is determined mainly by airframe weight and mission type. Helicopters may have one, two or sometimes three engines.

Overall, the Group serves:

- government and parapublic applications: police, border control, medical and emergency services;
- civil applications: off-shore oil industry, transport, tourism and private ownership, and airborne work;
- military applications: transport, attack and ground support, maritime patrol.

This diversity, coupled with the fact that engines are tightly integrated into the helicopter airframe, gives rise to a wide variety of engines and associated versions.

The helicopter engine market, like the civil aviation market, comprises two activities:

- sale of turbine engines to helicopter manufacturers for installation in new airframes (original equipment);
- service activities based on spare part, maintenance and repair contracts with operators, requiring a major global customer support network with local reach, given the large number of users and the helicopter's limited radius of action.

The profile of a helicopter turbine engine program is extremely similar to that of a civil aircraft engine program as presented earlier in the section.

The airframe/engine pairing is often unique and at the origin of a new model. However, the current trend is towards multiple engine sizes in line with developments in airframes. This trend can also be seen where a helicopter is adapted for a specific purpose, thereby reintroducing competition into a given program.

There are fewer partnerships between engine manufacturers than in the civil aviation engine sector.

The main partnerships are between Rolls-Royce and Turbomeca (RRTM), for the 2,500 shp<sup>(1)</sup> RTM322 engine, which powers the NH90 and EH101, and between Rolls-Royce,

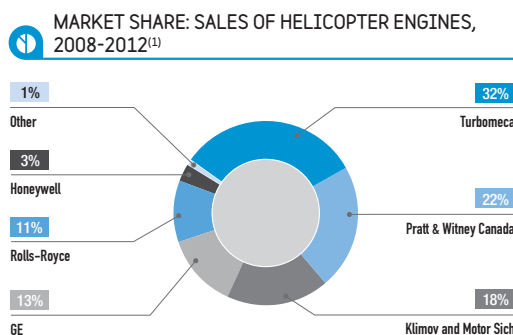
(1) shp: shaft horsepower.

## PRESENTATION OF THE GROUP

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Turbomeca, MTU and ITP (MTRI) for the 1,450 shp MTR390-E engine, which powers the Tiger. The growth of the helicopter market in emerging markets has also led Safran to develop other types of partnerships with consortiums of helicopter manufacturers looking to enter the propulsion sector. This is the case with HAL (Hindustan Aeronautics Ltd.) in India and AVIC in China, which are both becoming major customers and partners.

The majority of major Western aircraft manufacturer groups are also present in the helicopter turbine engine market: Turbomeca (market leader), GE, Pratt & Whitney Canada, Rolls-Royce and Honeywell.



#### Group products and programs

Most of Safran's helicopter engines are modular turbine units adaptable to civil and military helicopters. Modularity makes for more efficient maintenance programs. Safran engines are designed with a large additional power potential (up to 20%), which means they address a broad application spectrum.

Through Turbomeca, Safran is active in all of the helicopter engine categories described above.

#### ■ Turbine engines for light helicopters

For single- and twin-engine light helicopters, Safran offers two types of engine: Arius and Arriel.

These engines and their derivatives power many civil helicopters, from Eurocopter (EC120, EC135, Écureuil, EC145, Dauphin, etc.), Sikorsky (S76) and Kamov (Ka-226T), along with military helicopters from Eurocopter (Fennec, Panther), AgustaWestland (A109 Power) and AVIC in China (Z9 and Z11).

The Arriel 1E2 engine powers the 322 twin-engine UH-72 Lakota by Eurocopter, ordered by the US Army.

In 2012, Safran launched development of the 1,100 shp TM800 engine for powering the Eurocopter X4 twin-turbine helicopter, and other five-ton helicopters.

#### ■ Turbine engines for medium-weight helicopters

For medium helicopters (five to seven metric tons), Turbomeca is present on the military market for combat helicopters, with the MTR390 (developed jointly with Rolls-Royce and MTU) that powers the Eurocopter Tiger, and the TM333 engine that powers HAL's Dhruv. A special development contract has been signed with Spain (taking on board ITP as an additional engine partner) for a more powerful version of the MTR390 for the Tiger. For civil and military

applications with this range of helicopters, Turbomeca develops the Ardiden.

The Ardiden program addresses the new generation of medium helicopters (five to seven metric tons). The Ardiden 1 version is in series production, as is the Indian version, Shakti, developed in partnership with HAL, which powers the new version of HAL's Dhruv helicopter. The latest version, Ardiden 3, is at the development stage. It addresses six- to eight-ton helicopters under development, and has already won orders from AVIC in China and Kamov in Russia.

#### ■ Turbine engines for heavyweight helicopters

On the heavyweight helicopters market, Makila turbine engines are used on helicopters including the Eurocopter EC 225/725 and Super Puma.

The RTM322 turbine engine (50-50 cooperation with Rolls-Royce) powers NH Industries' NH90 helicopter and AgustaWestland's EH101 and Apache (UK-specific) helicopters. This engine, which is in competition with General Electric's T700 engine, has won twelve of the fourteen NH90 tenders<sup>(1)</sup>.

#### Spare part and service activities

Following the example of its civil aviation activities, Safran has developed an international structure able to provide customers with turbo engine spare parts and services locally. Local coverage is provided through a worldwide network of repair centers (performing in-depth maintenance) and Safran/Turbomeca service centers.

### 1.3.1.3 SOLID-PROPELLANT ENGINES

#### Key characteristics of the business sector

This business sector comprises two main segments:

- the civil space industry, comprising launch vehicle propulsion to place satellites in orbit as well as satellite engines;
- the military industry, comprising propulsion for all types of ballistic and tactical missiles.

In the military sector, ballistic missiles are an essential component of national nuclear deterrent forces for countries possessing this capability. With the exception of the United Kingdom, production is entrusted to national manufacturers. In Europe, France is the only country to develop its own ballistic missiles.

Orders for tactical missiles are placed by governments. Certain major markets, including the US, Russia and China, remain totally or partially closed to European suppliers or are subject to "local preference" policies.

In both the civil and military segments, engine manufacturers work closely with the launch vehicle or missile prime contractor. Development and engineering programs tend to be long and financed by government budgets, such as the European Space Agency (ESA) for civil space activities in Europe or the national defence budget for strategic military operations. Missile development is also financed by customer governments.

Series production activities generally involve limited quantities and fixed costs are high.

<sup>(1)</sup> Source: Safran.

### Group products and programs

Safran addresses the civil and military space segments through Herakles and its subsidiaries and holdings.

#### ■ Civil space propulsion

This segment features the following activities:

- **series production**, with the manufacture of powder boosters, solid propellant engines delivering 650 metric tons of thrust for Ariane 5 boosters produced by Europropulsion, a 50-50 joint venture between Safran and Avio;
- **development activities**, with Safran participating in the European VEGA program, in which it is notably responsible for the nozzle on the P80 solid-propellant engine. Safran also designs and manufactures nozzles in advanced composite materials for US space engines.

#### ■ Ballistic missile propulsion

Safran provides rocket engines for the missiles of France's ocean-going strategic nuclear force, in particular for the third-generation program (M51).

#### ■ Tactical missile and target propulsion

Safran provides engines for MBDA very-short-range ground-to-air Mistral missiles, and Apache and Scalp long-range air-to-ground missiles, as well as their Storm Shadow derivatives. The Group provides engines for MBDA C22 targets, for US Air Force MQM 107 targets and for targets produced by the Italian company Galileo (formerly Meteor) for NATO forces in Europe. It also supplies components for the production of SM-3 interceptor missiles, developed by Raytheon for US missile defence programs.

#### A consolidated business

Following Safran's April 2011 purchase of SME and its subsidiaries (mainly 85% of Pyroalliance, 50% of Roxel [owner of Roxel France], and 40% of Regulus), the activities of SME and SPS were merged to form Herakles.

In order to effectively merge research teams with testing teams from a functional standpoint, industrial efficiencies were rolled out at the end of 2012. MBDA France acquired Roxel France's ramjet integration and testing activities<sup>(1)</sup>. This transaction did not include ramjet solid propulsion boosters or thermo-structural materials activities, businesses which continue to be operated by Roxel.

Herakles, number one in Europe and number two worldwide<sup>(2)</sup> in solid propulsion technologies and industrial operations, employs more than 3,000 people, including a research and development unit boasting over 600 engineers and researchers.

## 1.3.2 AIRCRAFT EQUIPMENT

Safran is one of the world's leading aircraft systems and equipment suppliers, specializing in mechanical, hydromechanical and electromechanical equipment.

Safran's Aircraft Equipment business operates in four sectors:

### LANDING AND BRAKING SYSTEMS

#### Landing gear

#### Wheels and brakes

#### Landing and braking systems

#### Ventilation systems and filters

#### Support services for landing gear, wheels and brakes and related systems

### ENGINE SYSTEMS AND EQUIPMENT

#### Nacelles and thrust reversers

#### Power transmission systems

### ELECTRICAL SYSTEMS AND ENGINEERING

#### Wiring and electrical connection systems

#### Power electronics and electrical systems Engineering

### OTHER EQUIPMENT

#### Small electric motors

This business covers design, manufacture and sale of various products, plus maintenance, repair, related services and sale of spare parts.

The growth potential of Safran's Aircraft Equipment business is significant, with the Group enjoying leading positions in each of its sectors in recent and prospective major short-, medium- and long-haul commercial aircraft programs by Boeing (787, 737NG), Airbus (A380, A350, and A320 neo and XLR) and COMAC (C919).

Thanks to its technological expertise in a large number of aircraft equipment sectors, the Group is a preferred partner of aircraft manufacturers and is able to offer a comprehensive range of products and services. Safran is notably the sole comprehensive "ATA 32" supplier (landing gear + brakes + systems).

Safran's substantial capacity for innovation has enabled it to carve out either leading or major positions in its markets. Competitors such as UTC Aerospace Systems (formerly Hamilton Sundstrand and Goodrich in the US) and Honeywell (US) are present in several sectors of the aircraft equipment market, whereas Liebherr (Germany), Spirit (US), Moog (US), Zodiac, Thales, Meggitt (UK), Avio (Italy), LATElec and Fokker (Holland) specialize in only one or two specific sectors.

Adopting a less systematic approach than in the Aerospace Propulsion business, Safran has formed a number of alliances and partnerships in the Aircraft Equipment sector, on an individual product and program basis.

Market characteristics are outlined individually below, for each business area.

(1) Aerobic engines particularly suited to power supersonic aircraft over long distances.  
(2) Source: Safran.

### **1.3.2.1 LANDING AND BRAKING SYSTEMS**

This business comprises three main product lines: landing gear, wheels and brakes, and landing/braking control systems.

In May 2011, Safran merged its wheels & brakes, landing & braking systems, landing gear, and maintenance & repair businesses to form Messier-Bugatti-Dowty. The new organization is in response to market shifts toward more tightly integrated offerings addressing both aircraft manufacturers and airlines.

One important trend here concerns the development of systems for increasing the proportion of electric aircraft systems.

A good illustration of this comes with the joint venture formed by Safran and Honeywell, which will be developing and offering airline companies an Electric Green Taxiing System, which enables the aircraft to taxi without airport towing services and without using the aircraft engines. As well as saving fuel, this new system will also reduce noise and pollution during taxiing phases.

#### **LANDING GEAR**

##### **Key characteristics of the business sector**

The market for commercial aircraft landing gear is shared by Safran, UTC Aerospace Systems, Liebherr, plus a handful of niche players positioned in specific market segments (business jets, helicopters, drones, etc.). Technology requirements are high, as landing gear must bear extreme loads during maneuvers on the ground: it must be light, compact and robust, while being fully adapted to and optimized for the aircraft's profile. The business model includes a long development period – which starts with the initial aircraft development phase – limited production volume and regular service flows. Technological challenges include the use of new materials to improve the resistance of parts, new, more eco-friendly production processes (elimination of chrome) and enhanced acoustics.

##### **Group products and programs**

Safran's operations in the landing gear segment mainly involve Messier-Bugatti-Dowty, which holds a 50% market share<sup>(1)</sup>.

Safran designs, manufactures and provides after-sales services for landing gear for civil and military planes and helicopters of all sizes. If requested by the customer, it also handles integrated systems. Safran also provides the technical assistance and spare parts needed for its equipment.

Safran is number one worldwide for these structural units, having equipped a fleet of some 21,000 aircraft. The Group's customer base comprises around thirty aircraft manufacturers, including Airbus, Boeing, Bombardier and Dassault, plus 650 major military and civil operators. Among the main commercial aircraft programs is the entire Airbus range, including the A350, as well as Boeing's 787 Dreamliner, the first contract with this US manufacturer. The Group also has a strong presence in military applications, where

it equips the A400M, Rafale, Eurofighter Typhoon, F18, V22 and Eurocopter helicopters, as well as in the business jet and regional jet markets (ATR, SuperJet 100, Bombardier, Dassault-Falcon, Fokker, Piaggio, etc.).

#### **WHEELS AND BRAKES**

##### **Key characteristics of the business sector**

The present-day wheels and brakes market extends to some 21,000 commercial jets, and splits evenly into two segments: aircraft with steel brakes (first-generation brakes), and aircraft with carbon brakes, invented by Safran. The market for carbon brakes has developed rapidly since the 1980s, with the increase in air traffic and the gradual phase-out of steel brakes, replaced by carbon units. The wheels and brakes market is currently shared among four major global players: Safran, UTC Aerospace Systems, Honeywell and Meggitt.

##### **Group products and programs**

Safran's operations in the wheels and brakes segment mainly involve Messier-Bugatti-Dowty.

Safran designs, manufactures and provides after-sales services for wheels and carbon brakes for aircraft. It also provides electronic and electrohydraulic systems for aircraft braking, tire/brake/landing gear monitoring and landing gear steering systems.

The Group's main customers for wheels and brakes are Airbus and Boeing, chiefly in civil applications, for the A320, A330/A340, 767 and 777. In the military sector, Safran equips the A400M, the Rafale, the KC135 refueler and the C17 transport aircraft. Recent contract wins for the A350, the A320neo range, the 737NG and the 787 have bolstered its position as leader in this sector.

With more than 5,500 aircraft fitted, Safran holds close to 50%<sup>(1)</sup> of the global market for wheels and carbon brakes for aircraft with over 100 seats. In 42% of cases, these fleets are less than five years old, which, given the activity's business model, offers the Group a strong and highly profitable future revenue outlook on a constant-fleet basis.

#### **LANDING AND BRAKING SYSTEMS**

##### **Key characteristics of the business sector**

This market includes braking systems, orientation systems, landing gear and door extension/retraction systems, and monitoring systems. The main players are Safran, UTC Aerospace Systems, GE Aviation Systems and Crane Aerospace & Electronics.

##### **Group products and programs**

Safran's operations in the landing and braking system segment mainly involve Messier-Bugatti-Dowty, selected by Airbus for most of its programs, including the A350 and the A320 family, by Bombardier for its LearJet 85 business jet program, and by Embraer for its KC390 military program. Safran's market share

<sup>(1)</sup> Source: Safran.

on commercial aircraft of more than 100 seats is around 35%<sup>(1)</sup>, across all systems.

In the landing/braking electronic control systems segment, Safran's position is buoyed by its technological advance in electric braking and its ability to propose a comprehensive offering to customers, which encompasses landing gear, wheels and brakes, and associated control systems.

#### VENTILATION SYSTEMS AND FILTERS

Through Technofan, which is listed on Euronext Paris (Segment C), Safran designs, manufactures and markets ventilation systems for aircraft cabins, and avionics and brake cooling systems for commercial and military aircraft and helicopters.

Through its subsidiary Sofrance, Safran manufactures and markets a wide range of filtration systems for fuel, lubrication, air and hydraulic applications.

#### SUPPORT SERVICES FOR LANDING GEAR, WHEELS AND BRAKES, AND RELATED SYSTEMS

Safran provides maintenance services for all Group products, as well as for competitor products, for all aircraft of 10 metric tons and above. Through its partnerships in Asia, the US and France, the Group offers solutions tailored to regional and business jets.

### 1.3.2.2 ENGINE SYSTEMS AND EQUIPMENT

#### NACELLES AND THRUST REVERSERS

##### Key characteristics of the business sector

The nacelle comprises the engine fairing, the air inlet, the nozzle and the thrust reverser, which, as its name indicates, reverses the engine's thrust to help brake the aircraft. The thrust reverser represents approximately half the value of the nacelle. The market is organized around these sub-units, which require both specific and varied technical expertise according to the size and complexity of the nacelles. Safran's main competitors are UTC Aerospace Systems and Spirit.

##### Group products and programs

Safran is present in the nacelle and thrust reversers sector through the activities of Aircelle.

Safran designs, manufactures and provides after-sales services for nacelles for business jets, regional jets and commercial aircraft with over 100 seats. The Group also provides aerostructures, particularly those manufactured with composite materials. It is a recognized expert in the manufacture of complete nacelle systems (A340-500/600 and A380), large-scale reversers (A330 and A320) and acoustic technologies, and has a strong presence in the market for regional and business jets (Embraer 135/145 and 170, Gulfstream V, Bombardier Global Express, Challenger 300 and Sukhoi Superjet 100). Safran is one of three global leaders in this

sector, with a market share of 25%<sup>(1)</sup>. Safran has an alliance with GE, via its subsidiary Middle River Aircraft System (MRAS), along the same lines as the CFM engine program partnership. The purpose of this alliance, called Nexcelle, is to jointly develop nacelles for future medium-haul aircraft. This is likely to strengthen Safran's long-term position. COMAC has selected the Nexcelle joint venture's "integrated nacelle" for the CFM LEAP-1C integrated propulsion system. The contract comes with an industrial cooperation agreement between Nexcelle and the Chinese state-owned group AVIC. Nexcelle has also been selected by GE to supply the nacelle for its Passport engine, which powers the Bombardier Global 7000/8000 business jets. Aircelle also develops the A320neo nacelle for Airbus, in partnership with MRAS, in a version powered by the CFM LEAP-1A, and the Silvercrest engine nacelle.

#### POWER TRANSMISSION SYSTEMS

##### Key characteristics of the business sector

The power transmission market covers a range of applications, the main ones being accessory gearboxes (which deliver mechanical energy to engine accessories or aircraft systems), reduction drives (which transfer power to the propeller blades on turboprop aircraft), and main transmission gearboxes (which transfer power to the blades on helicopters). The main players on this market are the engine and helicopter manufacturers themselves, along with equipment suppliers such as the UTC group, Avio, KHI, Triumph and Northstar.

##### Group products and programs

Safran's operations in the power transmission sector involve Hispano-Suiza.

Safran designs, manufactures, markets and maintains a wide range of mechanical power transmission systems for civil and military aircraft engines. Its customers are mainly Safran Group companies. Its reputation for technical expertise in power transmission systems has enabled it to enter into agreements with Rolls-Royce and more recently Eurocopter, and has bolstered Safran's position among sector leaders.

### 1.3.2.3 ELECTRICAL SYSTEMS AND ENGINEERING

#### WIRING AND ELECTRICAL CONNECTION SYSTEMS

##### Key characteristics of the business sector

Wiring and electrical connection systems are mainly comprised of electrical harnesses as well as main and secondary transformer stations and other electrical cabinets.

Much of the aircraft wiring market is still in the hands of aircraft manufacturers' internal departments. The Group is the worldwide leading supplier on the open market for aircraft wiring. Its main rivals are Fokker/ELMO, LATElec and, in the US, Ducommun LaBarge.

(1) Source: Safran.

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#### Group products and programs

Safran's operations in the wiring and electrical connection system segment mainly involve Labinal.

Safran provides electrical and layout design work in addition to wire production and installation support services at the aircraft manufacturer's site, for customers including Airbus and Boeing. If requested by the aircraft manufacturer, as is often the case on upgrade programs, Safran can take on the planning and onboard installation stages. This can – as with recent major programs such as the A380 – extend to an "end-to-end" service covering engineering, manufacture and installation support.

The Safran-COMAC aircraft wiring joint venture became operational in June 2012. This new company, Shanghai SAIFEI Aviation EWIS Manufacturing Co, Ltd., is 51%-owned by COMAC and 49% by Labinal. It specializes in EWIS (electrical wiring interconnection systems) design, development, manufacture and customer support for the aviation market in the Asia-Pacific region. One of its projects involves implementation of the EWIS program for the COMAC C919.

#### POWER ELECTRONICS AND ELECTRICAL SYSTEMS

##### Key characteristics of the business sector

The power electronics market is recent, arising directly from developments in electrically powered aircraft functions (electric thrust reversers, electric brakes, electric load control, etc.). UTC Aerospace Systems (US) holds skills in this field.

The electrical systems market is longer-established, and mostly covers electricity generation and distribution functions. This market is currently commanded by major players such as UTC Aerospace Systems, Zodiac and GE, which cover all or some system components.

#### Group products and programs

Safran's operations in these segments involve Hispano-Suiza and (for electrical distribution systems) Labinal.

Examples of Safran's capacity for innovation in power electronics include ETRAS (Electrical Thrust Reverser Actuation Systems), the world's only electric control system for nacelles, developed on the A380, and EBAC (Electrical Braking Actuation Controller), on the Boeing 787. These major technological advances, along with Safran's engine and electrical wiring expertise, enable the Group to offer aircraft manufacturers innovative electric aircraft systems for their forthcoming programs.

In November 2011, Embraer selected Safran to provide all emergency backup power and primary and secondary distribution systems on its KC390 military transport aircraft program.

In October 2012, Safran announced that it had entered into a definitive agreement to purchase Goodrich Electrical Power Systems (GEPS). Adding new capabilities in electrical technologies, this transaction will lead to the creation of a world leader in aerospace electrical power systems and mark a decisive breakthrough in Safran's "more electric aircraft" strategy. The acquisition will also allow Safran to continue to develop new leading-edge solutions for the electrification of aircraft equipment (including landing gear, nacelles and power transmission systems) and closer integration of electrical systems with aircraft engines.

#### ENGINEERING

##### Key characteristics of the business sector

Demand continues to run high on Safran's engineering market. With the many programs currently under development, aircraft manufacturers and equipment vendors are experiencing a shortage of specialist engineering skills.

At the same time, Safran's major aerospace customers are trimming back their supplier panels, and this gives rise to consolidations and new opportunities for those suppliers that are selected.

Selection depends on the ability of suppliers to provide consistent support on their customers' international markets, and to sustain and develop their skills bases.

Safran's main competitors are leading full-service engineering groups such as Alten and Altran as well as niche aviation suppliers, e.g., Assystem and Aeroconseil.

#### Group products and programs

Safran is present in the engineering market through Safran Engineering Services, a subsidiary of Group company Labinal. In Europe, North America and Asia, Safran Engineering Services is primarily active in the aviation market but also provides services to related markets such as automobile and rail. Its expertise, focused on four broad areas (electricity, aerostructures, mechanical systems and embedded systems), is used by various Group companies, chief among which ranks Labinal. However, it also provides services to major aviation customers (EADS, Boeing, Dassault and Embraer) as well as land transport companies (Bombardier Transport, Renault and Peugeot).

### 1.3.2.4 OTHER EQUIPMENT

#### SMALL ELECTRIC MOTORS

Through its subsidiary Globe Motors, Safran designs, manufactures and markets a wide range of precision electric motors and actuators for the automobile, aviation and defence industries.



## 1.3.3 DEFENCE

Safran holds a distinctive position in advanced avionics, optronics, electronics and critical software for the civil and defence markets. The Defence business can be broken down into three key sectors:

### OPTRONICS

**Soldier modernization**  
**Optronics and sights**  
**Drones**  
**High-performance optics**

### AVIONICS

**Navigation and sensors**  
**Seekers and guidance systems**  
**Flight control systems**  
**Upgrading of military aircraft/civil avionics**  
**Onboard information systems**

### ELECTRONICS AND CRITICAL SOFTWARE

**Onboard electronic equipment**  
**Onboard critical software**

Safran is active in France and internationally in navigation assistance equipment, electronic, optical and optronic equipment. It develops, produces or purchases, and maintains computers and printed circuit boards used in all types of platforms for the civil and military aviation and defence sectors. Safran develops onboard electronics and critical software for the systems it manufactures.

Safran's main partners and customers in the Defence sector are governments (ministries or armed forces) and European groups such as Thales, EADS, Nexter, BAe Systems, MBDA, Finmeccanica, Saab AB, Alenia, Dassault, DCNS and CMI.

Other well-known integrators and equipment and system suppliers in the international aviation and defence sectors may also become partners or customers of the Group, primarily those located in the US, Israel, Brazil, Russia, India, China, South Korea, South Africa, Canada and Australia.

### 1.3.3.1 OPTRONICS

#### Key characteristics of the business sector

Safran's ability to innovate and its expertise have enabled it to become a reference in the high-tech industry of optronics. The optronics sector covers a wide range of equipment and systems, such as the soldier modernization system, night vision goggles, combat vehicle digitization (vectronics) and air-land battle space digitization, optronic pods for aircraft and weapon systems, drone

systems, periscopes for nuclear submarines, and REOSC high-performance optics. Safran also offers a full range of infrared and thermal equipment. Optronic applications cover the air-ground defence, naval-air defence, aviation and space sectors.

Following an agreement signed in December 2011, Thales and Safran formed a 50-50 optronics joint venture named Optrolead in July 2012. This company brings the two partners together to cooperate on technical, commercial and program issues, with each company keeping full control of its industrial assets. Programs address future defence optronics systems, which represent substantial modernization and upgrade potential. The combination of Safran and Thales' skills will offer greater benefits for customers and the two partner companies. The new systems under examination include the image chain on the forthcoming French-British MALE drone, various modular optronic systems on army vehicles, and optronics for future helicopters and aircraft upgrades.

This partnership also enables Thales and Safran to bolster the French infrared detector industry, through their joint subsidiary Sofradir. Price and performance are key factors in the competitive performance of optronic systems. Both partners had previously developed their own infrared detector technologies, which were transferred to Sofradir in December 2012.

Also in 2012, Safran acquired Optovac Mecânica e Optoeletrônica Ltda, a Brazilian company specializing in optronics and night vision. Two subsidiaries were formed, in India (Sagem Services India Private Limited) and Australia (Sagem Australasia), to provide industrial support for equipment such as inertial navigation systems, and technical assistance to local users. A local liaison office was opened in Algeria.

#### Group products and programs

Safran is active in the optronics industry through Sagem (the trade name of Sagem Défense Sécurité), the subsidiaries Vectronix in Switzerland and the US (portable optronics products), Optics 1 Inc. in the US (integrated optical systems and subsystems), and Optovac in Brazil, and through its stake in Optrolead and Sofradir (world number-one in infrared detection).

#### ■ Soldier modernization

With FELIN (the French acronym for "infantryman with integrated equipment and links"), designed specifically for soldier modernization in the French armed forces, Safran is offering innovative solutions to meet the needs of various armed and security forces (army as well as police, civil security and firefighters) both in France and further afield. Providing the dismounted soldier with optimal ease of movement, this modular approach developed and marketed by Safran meets the objectives of soldier modernization programs (SMP). The soldier has enhanced protection against ballistic risks (shrapnel-proof vest, plates to protect against assault weapons, etc.), NBC risks (integrated ventilation system featuring two filtration systems) and climate risks (technical underwear adapted to a variety of climatic conditions).

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#### ■ Optronics and sights

##### Portable optronics

Safran is a trailblazer in, and the leading European producer of, portable optronics. It offers a full range of observation hardware and systems that can be used day and night in all conditions. Its thermal cameras and multi-purpose night-vision imagers, such as the JIM LR long-range multifunction imager ordered by the French army as well as other armed forces, have become a global market reference. These high-tech systems are widely used in the overseas operations conducted by French and other Allied armies.

##### Onboard systems

Safran provides protection for all types of land combat vehicles (tanks and lighter vehicles), in the form of observation and fire direction systems, under day or night conditions, including ambulant firing capability, sighting stabilization, self-protection, human-machine interfaces and navigation capabilities. Safran also offers similar solutions for ships, surface vessels and submarines.

In the field of gyrostabilized sights, Safran has participated in major combat helicopter programs: Tiger, NH90, Cougar and Panther. Infrared STRIX and OSIRIS sighting systems fitted to Tiger helicopters are able to meet the most demanding conditions of any combat platform in operation, providing for target observation, detection, reconnaissance, identification and localization, as well as pursuit and fire direction for onboard weapons. Safran is also involved in major French and export (Emirates, Saudi Arabia, etc.) land vehicle programs (Leclerc, BCI, BMP3).

Safran's experience in (conventional and nuclear) submarine masts and periscopes has been applied to several programs such as Scorpène, Agosta and Daphné. The new generation of combat nuclear submarines, the Barracuda class, which have pump-jet propulsion, will also be equipped with these technologies – notably incorporating the DAS surface detection system using non-penetrative optronic masts.

Safran's artillery systems boast state-of-the-art capabilities and are used by armed forces in more than 20 countries. The SIGMA 30 family of units for land navigation and artillery pointing make it possible to fire accurately at very short notice.

#### ■ Drones

Safran has pushed back the barriers on drone systems through its expertise in critical function chains: navigation and flight control, image chain, and data transmission. Night and day, Safran's tactical-drone systems are used in daily operations, in close contact with threats.

#### ■ High-performance optics

With its REOSC optic range, Sagem is a specialist in advanced opto-mechanic equipment for civilian and military applications. As a worldwide leader in high-performance spatial optics, Sagem is the sole company in Europe to master polishing and large-scale ceramic substrate treatment (SiC) to a degree of precision within

several nanometers. Its space optics are used onboard Helios I and II, Meteosat and the Spot satellites, plus numerous scientific satellites.

#### Customer support

Sagem's customer support includes high value-added services, including repairs, equipment delivery and technical support. All strive towards the same goal: ensuring that equipment is in full working order at all times.

## 1.3.3.2 AVIONICS

### Key characteristics of the business sector

Safran's innovation and expertise make it a top-tier global player in the high-tech avionics industry. The avionics segment covers onboard electronics technologies in the following product lines: inertial navigation, flight control systems, guidance systems (seekers, Modular Air-to-Ground Weapons, munitions) and onboard information systems. The applications corresponding to this product offering are extensive and encompass all types of platform, such as combat vehicles and ships, guided weapon systems, plus commercial planes and helicopters. In addressing several different markets with common-core technology platforms, Safran enhances competitive performance and optimizes its customer portfolio. This approach reduces both costs and volatility.

Safran's main competitors in these businesses (France and international) include: Thales, BAe, Finmeccanica, Rockwell Collins, Northrop Grumman (formerly Litton), Eaton, Liebherr.

### Group products and programs

Safran is present in the avionics sector through Sagem (the trade name of Sagem Défense Sécurité) and its US subsidiary Sagem Avionics Inc. (automatic pilot systems for aircraft, activators and onboard data acquisition and processing modules), and its holding in Astrac (fighter upgrades).

#### ■ Navigation and sensors

As the European market leader in inertial navigation systems, Safran offers a wide range of inertial and hybrid systems for submarines, surface ships, land vehicles, airplanes, helicopters and aircraft. Recognized know-how in these technologies lies behind Safran's involvement in programs such as Rafale and A400M, and, more recently, in a Russian joint venture developing and supplying inertial systems for fighter planes and combat helicopters.

#### ■ Seekers and guidance systems

Building on the Magic II program, Safran has combined expertise in optronics and inertial systems to provide seekers for Mistral and MICA IR missiles. At the heart of the missile's system, the seeker fitted to the MICA uses the most advanced technologies such as bispectral imaging and real-time processors. MICA IR missiles are carried by Rafale fighters and Mirage 2000-5 interceptor aircraft.



The AASM (French acronym meaning Modular Air-to-Ground Weapon) is a family of high-precision weapons for modern air forces. It is a conventional-use weapon that can be used in all conditions, day or night, and has substantial standoff capacity. The missile is in service on Rafale fighters belonging to the French air force and navy, and has proved highly successful in operation. It features several Safran specialties, such as inertial components comprising hemispheric resonating gyro, infrared technology and image processing.

#### ■ Flight control systems

As a worldwide leader in helicopter flight control, Safran offers automatic systems designed to aid the pilot while maintaining a maximum level of security. Safran's expertise extends to components of navigation systems coupled with autopilots: position sensors, flight control actuators and onboard computers. Safran was selected along with partners Eurocopter and Thales on the development project for the X4 next-generation helicopter. Embraer commissioned Safran with development and supply of the horizontal stabilizer trim actuator (HSTA) on the KC390. AgustaWestland selected Sagem to handle the development of the secondary onboard computer for the AW169 flight control system.

#### ■ Upgrading of military aircraft and civil avionics

Safran offers turnkey solutions that include training and maintenance. They are based on inertial navigation and fire direction systems, visible and infrared optronics, and high-performance digital processing both onboard (weapons systems) and on the ground (mission preparation). Safran is upgrading the Ukrainian Mi24 helicopters and working with Thales under the Astrac joint venture to retrofit Morocco's Mirage F1 fighters (new attack and navigation system, new weapons, etc.).

Safran is also a major player in upgrading avionics for civilian and parapublic helicopters and airplanes. Its offering runs from cockpit displays to complete aircraft modernization. For example, Safran was selected by the Brazilian army and Helibras to take charge of upgrading the EC725 helicopters.

#### ■ Onboard information systems

Safran has also developed flight-data recording systems (Aircraft Condition Monitoring System – ACMS), which equip ATR, Embraer, Boeing and Airbus aircraft. It provided the information system of the A380 and of the A350, under Airbus prime contractorship. More than simply a data network, the system comprises a fully fledged intranet combining the properties of a router, server and communication interface.

#### Customer support

After-sales services account for a quarter of Safran's avionics revenue. The substantial installed base provides a solid footing for developing customer support, especially in repair work.

### 1.3.3.3 ELECTRONICS AND CRITICAL SOFTWARE

Safran is active in onboard electronics and critical software through Sagem's Safran Electronics division and its subsidiaries Safran Electronics Asia Pte Ltd (electronics maintenance center for the Asia Pacific region), Safran Electronics Canada Inc. (onboard electronics for business jets and regional aircraft), FADEC International LLC, a 50-50 US joint venture with BAE Systems, and more recently a German joint venture with MTU AeroEngine GmbH, Aerospace Embedded Solutions GmbH.

The Safran Electronics division provides Group companies with the electronic equipment and critical software required for their world-leading programs. It develops, produces or purchases, and provides maintenance for computers and printed circuit boards for numerous systems (FADEC engines, thrust reversers, nacelles, landing gear, braking systems, flight control systems, inertial navigation systems and sights) for aircraft and naval and terrestrial landing platforms. Safran Electronics also develops and certifies the critical onboard software for these systems.

#### ELECTRONIC EQUIPMENT

Safran Electronics specializes in electronic systems for harsh environments (temperature, vibration, etc.) and single and multiple onboard computers, either standalone or integrated in an IMA (Integrated Modular Avionics) system, for critical applications such as engine control, flight control, braking control and landing gear control. Its teams develop, produce or purchase, and provide maintenance for, computers and printed circuit boards. They also design and install electronic controls for Safran Power<sup>(1)</sup> power converters and electro-mechanical actuators. Safran Electronics also manufactures complex hybrid micro-electronic modules for aerospace applications. As such, it is conducting work on the electronic propellant flow-rate regulation demonstrator for the Vulcain X engine, and on control systems for plasma thrusters. Safran Electronics covers the whole of the supplier chain. It develops know-how and technological expertise in the production of electronic circuit boards, through a strong industrial excellence center based at its Fougères plant, plus a sound network of suppliers, partially located in both low-cost and dollar zones.

#### CRITICAL SOFTWARE

Safran Electronics develops the complex critical software used in Safran Group onboard systems. The software is critical in terms of dependability requirements in harsh environments, and it complies with extremely demanding certification standards. Safran Electronics teams handle software architecture, specifications, coding, verification, quality assurance, configuration management and certification.

(1) Safran Power: division of Hispano-Suiza.

Computer maintenance and repair

At its Massy and Singapore repair centers, Safran Electronics performs maintenance of its own onboard computers along with systems from other Safran Group and third-party manufacturers. It maintains and repairs computers and electronic boards for a significant number of airlines and airforces worldwide.

## 1.3.4 SECURITY

Security activities can be split into three key sectors:

IDENTIFICATION	
Identification solutions	Large-scale identity systems
	Border control
	Criminal identification
	Biometric enrollment services
	Biometric equipment
Other activities	Lottery terminals
	Transport security
E-DOCUMENTS	
SIM cards	
Bank cards	
Secure identity documents	
DETECTION	
Detection by X-ray tomography of explosives and dangerous and illicit substances.	
Spectrometry-based detection and analysis of traces of explosives and dangerous and illicit substances.	

Safran is a world front-runner in biometric identity and authentication solutions, and a leading player in border control for passengers and goods. Organic growth in Safran's security businesses is driven by the changing sources of threats, the emergence of new security and authentication needs in an increasingly connected world, and government modernization, especially in emerging countries. Growth also stems from constant progress in technologies, backed by a policy of industrial and academic partnerships, plus new acquisitions as relevant opportunities arise.

With the acquisition in 2012 of Cassis International, a Trusted Service Management (TSM) pioneer, Safran will be able to offer a comprehensive architecture for authentication and identification solutions in digital applications and e-services. These solutions and services address mobile network operators and banks pursuing rapid development of no-contact payment applications for phones and smartphones, and governments seeking to roll out administrative e-services for the public.

Through these companies, Safran has perfected cutting-edge technology in areas such as biometrics, onboard software (in particular smart card operating systems), secure terminals (biometric identification terminals, gaming terminals, speed control radars, etc.), secure printing techniques and cryptography, and detection (explosives and illegal substances). Such technology is necessary to access key target markets.

In the air and airport sectors the trend towards increased security continues and requires a considerable joint effort by numerous players, including airport and civil aviation authorities, airline companies, border police and customs authorities. Safran cooperates with all national and international organizations influencing the development of new technologies in the aviation sector. Safran is a world partner of professional organizations including Airport Council International (ACI), the International Air Transport Association (IATA), and the International Civil Aviation Organization (ICAO). It is actively involved in their working groups on issues regarding transport safety and passenger convenience. Safran R&D investments target the emergence of new-generation check-points implementing several of the technologies developed across all its businesses.

Safran is present in the security sector through Morpho, the world leader in biometric solutions. Morpho's main subsidiaries are:

- Morpho Detection, specializing in the detection of explosives and illicit substances;
- Morpho Cards, specializing in smart cards and related trusted service management;
- Morpho BV, one of Europe's leading players in the printing of secure documents such as passports;
- MorphoTrak, which supports Morpho's biometrics business development in the US, addressing local police services and government contracts in particular;
- MorphoTrust USA, founded to take in, under a proxy agreement with the US government, the US businesses of L-1 Identity Solutions regarding the issuance of identity documents in the US, biometric enrollment services for authorization control, and sensitive projects run by the US government.

### 1.3.4.1 IDENTIFICATION

#### Key characteristics of the business sector

Identification solutions comprise the Group's identity programs and products (including identification solutions, automatic systems for processing biometric data, etc.) and security equipment (biometric terminals, biometric enrollment kiosks, gaming terminals, transport safety equipment, etc.), which, by identifying and authenticating persons or objects, contribute to the protection of persons, goods or sites against all types of threats and danger.

By "identify" we mean being able to find reference to a particular individual from among a group of individuals who are, a priori, known. By "authenticate" we mean confirming, based on information provided by individuals (e.g. by pin code, biometric data, etc.) that individuals are who they say they are. Generally speaking, system security calls for combined use of both functions: identification is used when an entitlement is granted, to verify that the individual requesting the entitlement is not persona non grata and that he or she is not referenced in the system under another name; the authentication process then checks biometric information stored for the individual, to confirm his or her entitlement.

The market for automated fingerprint identification systems (AFIS) and multi-biometric platforms (fingerprint, face and iris recognition) addressing forensic applications is concentrated in the hands of a few players, primarily Safran, NEC (Japan) and 3M (US). Demand for biometric technologies is growing, with international development of applications for the delivery and verification (mainly at border controls) of passports and other biometric identification documents (ID card, health card, etc.), and with the development of applications for delivering unique identification to each individual, as with the Aadhaar (unique number) project run by the Indian government's Unique Identification Authority of India (UIDAI), which uses it for fingerprint and iris biometric identification.

Markets for varied applications in identification management and flow control are highly competitive, addressed by numerous industrial players (such as 3M, NEC and Crossmatch) and major integrators (including Accenture, Lockheed Martin, Siemens and IBM).

Contributing to these solutions are the identification division of Dutch subsidiary Morpho BV (specializing in the printing and personalization of secure documents), US subsidiaries MorphoTrak and MorphoTrust USA (identification products and solutions), and Morpho Cards (smart card specialists providing cards for identification applications).

With market share of 25% in 2010<sup>(1)</sup>, Safran currently leads the world civil and military biometrics market (worth USD 4.5 billion in 2010), which covers biometric solutions for civil, criminal and military identification (including production of identity documents, biometric terminals and automatic biometric identification systems).

#### Group products and programs

##### ■ Identification solutions

Safran already offers numerous biometric techniques to identify physical persons, including fingerprint recognition (and potentially vein pattern recognition), face, iris and tattoo recognition, and various combinations of these techniques.

The implementation of these techniques enables the following systems and solutions to function:

- major identification systems (censuses, listings, and issue of ID cards, voter cards, passports, e-health cards, driver's licenses, etc.);
- border control solutions, including e-passport data checks by fingerprint recognition (at Paris and Marseille Provence airports), iris recognition (UK), and facial recognition (Australia/New Zealand), and a common European system for Schengen visas and visas for asylum seekers;
- solutions to help solve crime, such as automatic fingerprint or face identification systems for police or legal authorities;
- enrollment services for control of authorizations to work at sensitive sites and on critical applications (e.g., US businesses under proxy).

The identification division also designs and deploys the biometric sensors and equipment used for protecting access to physical premises or information systems, along with biometric enrollment terminals and identity control terminals using one or more of the three major biometric detection technologies (fingerprint, facial and iris recognition).

##### ■ Other businesses

Image-analysis expertise developed for biometrics is also applied to secure terminals for lotteries or bookmaking, or products, systems and services for transport safety. In road safety, for example, Safran products cover all safety rule control requirements (speed, signs, etc.), and include manual solutions and fully automated digital systems.

### 1.3.4.2 E-DOCUMENTS

#### Key characteristics of the business sector

Through Morpho and its subsidiaries, Safran is a major player in smartcard systems for identifying beneficiaries in a whole range of applications. Safran is present in all market segments, including mobile phones, bank cards, identity documents (such as ID cards, health cards, passports and driver's licenses), and secure access to business networks and the internet. Safran is the fourth-largest smartcard company worldwide<sup>(2)</sup>, after Gemalto, Oberthur Card Systems and Giesecke & Devrient.

(1) Source: Global Civil & Military Biometrics Market, Frost & Sullivan, December 2011.  
(2) Source: ABIResearch 2012 survey, "Smart card and secure IC market data".

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#### Group products and programs

##### ■ SIM cards

On the SIM card market, Morpho supplies the world's biggest mobile phone operators via a logistics chain that delivered 650 million SIM cards worldwide in 2011.

Mobile telecommunications is a fast-moving field, addressed by four Safran R&D centers actively involved in high-potential projects including: Near-Field Communication (NFC), which enables users to identify themselves via their mobile phone, using it to pay for purchases, for example; machine-to-machine technology capable of tracking a fleet of GSM-equipped vehicles; digital identification, where a smart card becomes a means of internet user authentication, with reliability as high as for the mobile phone network.

##### ■ Bank cards

Morpho supplies major banks in regions including Europe, Latin America and Asia. This sector is currently benefiting from two major trends: magnetic stripe cards are giving way worldwide to smart cards meeting the EMV (Europay MasterCard Visa) standard; and no-contact technologies are gaining ground. Both technologies heighten the security of transactions, reduce the incidence of fraud and improve customer convenience.

In 2012, with the acquisition of the European subsidiaries of the American Banknote group, specializing in the production and personalization of bank cards, Safran extended its European network of personalization centers.

##### ■ Secure identity documents

Morpho's e-documents division contributes to Safran's leadership on the identity solutions market (in which it is global leader), for which it produces the following:

- ID cards, driver's licenses, health cards and voter cards;
- paper and electronic passports, visas, and corporate cards integrated in major systems.

##### ■ Trusted service management

Trusted service management (TSM) solutions afford high-security remote personalization of smart cards for mobile phones and smartphones, enabling users to download bank applications that turn the phone into a recognized payment card.

#### 1.3.4.3 DETECTION

##### Key characteristics of the business sector

This sector covers all solutions for detecting CBRNE (chemical, biological, radiological, nuclear, explosive) threats and illicit products such as weapons and drugs. These systems improve security at airports, in air transport (passenger and freight), at borders (land and maritime), and at sensitive sites and major events.

Safran's operations in the detection market primarily concern air transport security; it supplies Explosive Detection Systems (EDS) for automated hold-luggage inspection, and explosive trace (vapor or particle) analysis systems for vetting luggage, passengers and air freight. Safran holds prime expertise in several key technologies, such as 3D X-ray tomography, X-ray diffraction spectroscopy, ion mobility spectroscopy, Raman spectroscopy and quadrupole magnetic resonance. Safran has also extended its portfolio of technologies to include mass spectrometry, addressing applications that require very high sensitivity and precision.

Safran is an approved supplier to the US Transportation Security Administration (TSA) and many airports worldwide. It covers the detection market primarily through the US company Morpho Detection, in which Safran acquired a 81% stake from GE in 2009. In late 2012, Safran took up its option to acquire the remaining 19% of Morpho Detection held by GE, and now owns 100% of this company.

Safran's main competitors in tomography detection are the US companies L3 Communication and SAIC/Reveal, and the Chinese company Nuctec. In trace analysis, Safran has one of the market's most comprehensive and efficient offerings, its main competitor being the UK company Smiths.

#### Group products and programs

##### ■ Detection by X-ray tomography and X-ray diffraction of explosives and dangerous and illicit substances

This technology is used in automatic detection systems such as large-diameter luggage tunnels at airports, that check up to 1,000 items per hour. The latest additions to the range, the CTX 5800 and 9800, meet the new European Standard 3. Safran also provides unique automatic detection solutions combining tomography and X-ray diffraction, allowing better detection capacity and considerably reducing the number of false alarms. Safran held a 23% share<sup>(1)</sup> of the market for hold-luggage control systems in 2011. Safran is currently developing new solutions for the detection and identification of liquid and gel explosives in cabin luggage. Initial field tests are scheduled for 2013.

(1) Source: IHS, *The World Market for Explosives, Weapons and Contraband Detection Equipment* — 2012 Edition.

■ **Spectrometry-based detection and analysis of traces of explosives and dangerous and illicit substances**

This kind of equipment (fixed, mobile or even portable) uses ion mobility spectrometry, mass spectrometry or Raman spectrometry to detect and identify vapor traces of explosive or illicit substances. Safran's wide product range addresses a broad spectrum of users' needs and operational environments. The systems are used by all

types of security services worldwide (airport passenger control, civil security, prisons, police, customs, etc.), in border control applications (air freight, hold luggage, passengers, cabin luggage), and for protection of sensitive sites (ministries, nuclear power stations, etc.) and major events (sports tournaments, international conferences, etc.).

## 1.4 COMPETITIVE POSITION

Safran covers international high-technology markets in aviation, defence and security.

In all these fields, Safran faces fierce competition both from major international rivals and niche players on some markets.

The Group makes every effort to ensure compliance with applicable rules on competitive business practice in all the countries in which it operates.

To mobilize sufficient resources and share the industrial risks involved in innovative and costly programs, players in the aviation industry can form partnerships capable of developing new technologies, products and services. Accordingly, it is not unusual to find otherwise rival companies joining forces on certain aviation programs.

## 1.5 RESEARCH AND DEVELOPMENT

Safran operates in a high-technology and high value-added arena. From aircraft engines and equipment to defence and security systems, the required technological expertise and reliability must be second to none, given the highly critical nature of the applications. In order to achieve this objective, Safran calls on the best knowledge available in mechanical engineering, aerodynamics, reactive flow technology, thermodynamics, metal and composite materials, fuel materials, electronic and electrical engineering, spectrometry, X-ray imaging, image processing and information processing. Research and technology (R&T) comprises all studies, research and technological demonstrations needed to develop expertise for a given product at the lowest possible risk and cost and within the shortest possible timeframe.

Further downstream, research and development (R&D) corresponds to product design, prototype manufacture, development tests and certification tests showing that the product meets customer specifications and applicable regulations. To bridge the gap between R&T and R&D, and accelerate the emergence of new operations involving innovative concepts, Safran set up an Innovation Department in 2011. This department covers everything from technological demonstrations through to market launch.

Research, Technology, Innovation and Development are fundamental to the implementation of the Group's strategy. The

expenditure involved, close to 70% of which is self-financed, totaled €1.6 billion in 2012, representing almost 12% of revenue. This commitment reflects the importance given to preparing for the future and developing new products and programs.

Each Safran Group company is responsible for its own R&T, and this enables it to concentrate on its own objectives. In tandem, the Group is constantly working to develop technology synergies. The bulk of Safran R&T breaks down into seven broad fields, each covering a range of technological capacities consistent with Group endeavors. There are around fifty of these technological capacities, forming the elementary cells for cross-functional skills management, benchmarking, partnerships and mutualized projects operating across Safran Group companies. Each technological capacity is managed by a leader chosen from among the best experts in the Group.

Safran Group R&T is guided by major challenges, which account for the bulk of the budget. These challenges are directly related to the current positions of Safran in its markets and those targeted in the long-term.

In taking up these challenges, Safran harnesses substantial resources, to attract the best talent and open rewarding career opportunities. Over 70% of engineers and managers are recruited in scientific and technical branches.

## 1.5.1 MAJOR TECHNOLOGICAL FOCUSES

### 1.5.1.1 PROPULSION PERFORMANCE

Propulsion performance objectives and acceptability requirements for future aircraft engines derive from work carried out by ACARE<sup>(1)</sup>. Objectives are set for two dates: 2020 and 2050. For 2020, aircraft propulsion systems are to cut fuel consumption by 20%, pollutant emissions by 60% and noise levels by 50%. The Flightpath 2050 publication specifies reductions of 75% in greenhouse-gas emissions, 90% in NOx and 65% in noise levels by 2050.

Snecma's roadmap for the aircraft propulsion systems of the future incorporates two technology stages:

- the LEAP turbofan engine, with a very high bypass ratio. For those modules under Snecma's responsibility in CFM, this integrates advanced technologies such as a highly innovative lightweight fan made from composite materials and a high-efficiency low-pressure turbine. This engine will be available in 2016 and will bring about major improvements in current performance levels, particularly in terms of fuel consumption. It has already been selected for the A320neo as the sole western propulsion system source for the C919, and the sole source for the Boeing 737 MAX. R&T work is in progress on long-term continuous improvement in engine performance;
- the second phase is more ambitiously innovative, in line with Flightpath 2050, whose objectives require breakthroughs in engine architecture through developments such as the open rotor concept and faired architectures with very high bypass ratios, currently addressed by advanced research under national and European programs such as the seventh FPRTD<sup>(2)</sup>. Demonstrations will follow under the "Clean Sky" Joint Technology Initiative.

Helicopter turbine engines are subject to similar imperatives requiring reductions in fuel consumption and environmental impacts. Turbomeca has undertaken technology programs along similar lines to address future market needs. The first concrete example of this work came with a new 800 kW engine for Eurocopter's next-generation 4-ton helicopter program, launched in 2011. Turbomeca also works with customers to produce innovative new engine integration products, such as hybrid power architecture concepts in drive systems.

The need to lighten aircraft and helicopters and their equipment has led to increased use of composite materials. Safran engines and equipment (whether engines, nacelles, landing gear or brakes) are characterized by heavy mechanical loads and a more difficult environment than for other aircraft sections such as airframes. To develop its composite materials solutions, Safran set up the

Safran Composites Center, with resources and skills in organic matrix composites. Herakles, the Group's center of competence for these technologies, provides core expertise in thermostructural composites for aircraft engines, a major technological challenge addressed by substantial research efforts. This research, along with work on new metal alloys, and on high-performance coatings compliant with European regulations (REACH<sup>(3)</sup>), is coordinated by the Safran materials and processes department.

### LAUNCH VEHICLES AND MISSILES

Research efforts into rocket propulsion, a cutting-edge industry where technological demands are extremely high, remains a Safran priority. Following the decisions of the November 2012 conference of ministers from European Space Agency (ESA) member states, technological work in this sector is focused on enhanced performance for the Ariane 5 launch vehicle (with an Ariane 5 ME version for 2017/2018) and preparation for a forthcoming Ariane 6 launch vehicle, under the space section of the French government's "Investment for the Future" project, with first flight planned for 2021/2022. The technological scope of these programs extends to Snecma liquid propulsion and to solid propulsion, now fully consolidated under Herakles.

Herakles develops new missile propulsion technologies, including thruster and nozzle body technologies, solid propellant technologies and innovative thruster architectures. Research focuses include thrust modulation for tactical missiles, gas valving for interceptors, and higher-thrust solid propellants with more eco-friendly compositions.

### 1.5.1.2 ELECTRIC AIRCRAFT SYSTEMS

The move continues towards increased use of electrical energy for aircraft systems and actuators. The movement, which started with the A380 and Boeing 787 programs, will be a defining characteristic of the next generation of short-to medium-haul aircraft. Safran must position its new equipment solutions firmly in this niche and prepare the technologies that will ensure its products are competitive in terms of performance, functions and cost.

Safran is involved in several technology programs alongside aircraft manufacturers in a European or French context. Within the Group, electric aircraft projects have been launched by the Innovation Department and by the SPEC<sup>(4)</sup> Center of Excellence, focusing on power electronics. This work is carried out in close liaison with aircraft manufacturers: in 2012, for example, Airbus tested a Sagem-developed electromechanical flight control prototype on an

(1) ACARE: Advisory Council for Aeronautics Research in Europe.

(2) FPRTD: Framework Program for Research & Technical Development.

(3) REACH: Registration, Evaluation and Authorization of Chemicals.

(4) SPEC: Safran Power Electronics Center.

A320. Work benefits from numerous academic alliances with around 15 CNRS laboratories, and from technology projects undertaken with partners at the cutting-edge of electrical engineering in their sector, such as Alstom, Schlumberger, Schneider and Valeo. Under a partnership with Honeywell, the Innovation Department is running the Electric Green Taxiing System project, for developing a new system that will reduce aircraft fuel consumption during taxiing. Instead of using the aircraft engines for ground maneuvers, electrical energy generated by an auxiliary power unit (APU) drives electric motors in the landing gear wheels.

From 2013, the acquisition of GEPS will further enhance Safran's capabilities in aircraft electrical systems.

### 1.5.1.3 AVIONICS

#### NAVIGATION

Air, land, sea, satellite and weapons navigation markets are constantly evolving and expanding: the integration of mobile units into cooperative groups, increasing autonomy requirements, and the required land-onboard continuum via secure links are only a few drivers of renewed demand and associated technologies. Safran's approach relies strongly on breakthrough HRG<sup>(1)</sup> technology, whose characteristics make it possible to design and produce world-leading navigation equipment and weapons at competitive costs.

#### ELECTRONIC SOLUTIONS AND CRITICAL SOFTWARE

Because onboard electronic systems for severe environments are key components of many Safran Group products, the Safran Electronics division runs ambitious projects on controller architectures featuring more efficient processors, and on component packaging capable of withstanding the hotter environments of future aircraft systems. On systems engineering, Safran is working on process harmonization: a modern software development workshop has been set up for group-wide rollout. Safran is one of Europe's foremost instigators of technological progress in these fields. For example, it was technical coordinator of the ARTEMIS joint undertaking's CESAR project, which came to a successful conclusion in 2012.

### 1.5.1.4 SERVICES

Innovation efforts are called for, consistent with the growing importance of services in the Group's business. Techniques used to diagnose and forecast the condition of airplane and helicopter equipment and systems bring value for Safran product

users, as regards both operational considerations (optimization of maintenance), and fleet management support (evaluation of residual value). To address this need, Safran is developing its Monitoring Services system for managing fleet equipment operating data. The new system will initially be rolled out for helicopters. Information extraction from massive amounts of data (big data) is a research focus that holds high potential for the development of new customer services.

### 1.5.1.5 DEFENCE

#### OPTRONICS

Optronics needs range from imagers operating in one or more wavelength bands through to full image processing systems handling monitoring, detection, identification, fire control and self-protection. Integrated digital battlefield solutions are developed using equipment and systems that couple infrared sensor and light intensification technologies with other functions such as geolocalization. In infrared sensors the Safran Group offers the technologies held by Sofradir, its joint venture with Thales. Both partners transferred their IR detector technologies to Sofradir in 2012, giving it one of the world's most extensive product ranges in this field.

### 1.5.1.6 SECURITY

Morpho's leadership position in biometric systems, associated terminals and identity document systems is maintained through significant R&T investment in improving biometric data identification and capture algorithms and in enhancing the performance of anti-fraud and information protection systems. This yields a capability to rapidly build, and then operate, large-scale biometric databases such as that covering the population of India, which has an enrollment rate topping a million individuals per day. The acquisition of GE's Homeland Protection division in 2009 provides Safran with new development openings in the detection of explosives and other illicit substances. The new acquisition, renamed Morpho Detection, has yielded several technological advances, an example being the detection of liquid explosives by X-ray diffraction. The combination of high-performance detection systems with biometrics and secure electronic identity documents gives rise to a new strategic focus covering identification and flow control for people and goods, a key growth segment in the coming years, especially in the field of air transport security.

(1) HRG: Hemispherical Resonator Gyros.



## 1.5.2 SCIENTIFIC AND TECHNICAL PARTNERSHIPS

In implementing its R&T strategy, Safran enjoys the support of its partners, which provide it with scientific and technological expertise. Safran thus meets the two prerequisites for success: it identifies known and latent market needs through customer contact, and it adopts an open approach to what is an increasingly complex and multidisciplinary scientific and technological environment.

In 2009, Safran created a scientific council, currently chaired by Professor Mathias Fink, which comprises seven leading international scientists bringing proven expertise in all the scientific disciplines underlying Group businesses. One of the council's main functions is to issue recommendations on the structure and quality of the Group's scientific partnerships.

For the first R&T levels, Safran has developed a network of scientific partners in France in the university and applied research sectors. ONERA<sup>(1)</sup> is a key partner in many fields, such as aerodynamics, energy and materials. In addition, Safran has long-term partnership agreements with 15 laboratories and institutes, and these act as powerful external research facilities covering several sectors. Most partnerships with these laboratories are covered by framework agreements between Safran and the French Center for Scientific Research (CNRS). In all, Safran supports the work of around 150 PhD students and brings its scientific partners considerable amounts of annual financial support. Safran is also stepping up its

cooperation with CEA, the French Atomic Energy Commission. In addition, Safran is a founder member of the French Foundation for Aerospace Research (FNRAE), a front-line contributor in three PIA<sup>(2)</sup> technological research institute projects, and a major player in several competitiveness hubs, including System@tic, Aerospace Valley and ASTech.

Safran plays an active role in European Union bodies and programs. Since 2008, Safran has been closely involved in establishing the Clean Sky Joint Technology Initiative, bringing together the leading players in aviation R&D along with the European Commission in a demonstration program on airframes, engines and systems. Safran helped draw up the ACARE SRIA<sup>(3)</sup> roadmap and the aviation section of the EU H2020 framework program.

Safran takes part in many international cooperative research initiatives, with university laboratories in Europe, the US, Russia and Singapore.

The intellectual property related to this work is defined contractually at the beginning of projects between partners. The general principle is that the intellectual property belongs to the partners who performed or co-financed the work, and, at the very least, Safran receives rights of use in its own field.

## 1.5.3 INNOVATION AND INTELLECTUAL PROPERTY

Innovation is at the heart of Safran's strategy. The competitiveness of its products is largely based on the successful integration of technological innovation or adjustments, providing the customer with industry-leading performances. Only a few examples are necessary to demonstrate Safran's ability to produce innovations which mark a break with existing technology, in sectors as varied as electric brakes, composite fan blades, hemispheric resonator gyros and detection of liquid explosives by X-ray diffraction. The creation of cross-disciplinary teams, capitalizing on the wide range of expertise available in the Group, offers both an efficient and high-performance organizational structure. This approach is typified by the high-potential projects run by the Innovation Department.

The development of technical expertise is also key to preparing for the technological challenges of tomorrow. A process has been set up to determine expertise needs within the Group's companies and thereby plan ahead for renewals and training of new experts.

Intellectual property is of increasing importance amid globalized markets and ever-fiercer competition. It responds to operational imperatives, while strengthening and securing Safran's commercial positions. The creative and innovative ability of teams is demonstrated by the increasing number of patents filed: over 750 in 2012, which places the Safran Group among the front-runners in French patents<sup>(4)</sup>. Overall, the Group's portfolio comprises close to 24,000 rights around the world, bolstering its position as international leader in its areas of business.

In addition to patent protection, because of Safran's international reach and extensive partnership involvement, the Group gives great importance to ensuring close control over technology transfers and defining precise policy on the matter.

Some transfers are essential for market access reasons. Technologies for transfer, which do not belong to Safran's core technology portfolio, must be clearly identified, accurately valued, and covered by carefully structured long-term partnership arrangements. Under no circumstances may such partnerships restrict the Group's capacity for technological differentiation in the future.

### DEPENDENCE

Safran has not identified any dependence on patents, licenses, industrial, commercial or financial contracts, or new manufacturing processes likely to have a material impact on the Group.

There are risks of production delays and cost penalties for Safran in the event of supplier or partner shortcomings, as set out in section 4.1.3 of this Registration Document (partner and supplier risks).

(1) ONERA: French National Aerospace Research Office.

(2) PIA: "Investment Program for the Future".

(3) SRIA: Strategic Research & Innovation Agenda.

(4) Ranked second by the French Industrial Property Institute (INPI) at March 27, 2012 (patents filed in 2011).



## 1.5.4 RESEARCH AND DEVELOPMENT EXPENDITURE

Including the portion funded by customers, the total expenditure on Research, Technology and Development (RTD) was approximately €1.6 billion in 2012, representing almost 12% of revenue. RTD operations in France totaled around €1.4 billion, more than 89% of overall RTD expenditure. Some 69% of RTD expenditure is self-funded, and can be broken down as follows:

- Aircraft programs (including Silvercrest, LEAP, Airbus A350, A400M and Boeing 787): 46%;
- Helicopter engines: 5%;
- Security and defence: 14%;
- R&T: 26%;
- Other: 9%.

<i>(in € millions)</i>		
<b>Not including non-current items<sup>(1)</sup></b>		
	2011	2012
<b>Total R&amp;D</b>	<b>(1,277)</b>	<b>(1,594)</b>
External financing	469	491
<b>Self-funded RTD</b>	<b>(808)</b>	<b>(1,103)</b>
% of revenue	6.9%	8.1%
Research tax credit	121	124
<b>Self-funded RTD after research tax credit</b>	<b>(687)</b>	<b>(979)</b>
Capitalized expenditure	282	504
R&D amortization/impairment	(90)	(68)
<b>Impact on operating income</b>	<b>(495)</b>	<b>(543)</b>
% of revenue	4.2%	4.0%

(1) A provision of €23 million for loss of value on the GP7200 program was reversed in 2011, this being booked under "Other non-recurring operating income and expenses".

The significant increase in overall self-funded expenditure (€295 million, up by 37%) is chiefly explained by closer milestone intervals on the LEAP engine program, a second Silvercrest application, work on A350 equipment, and increasing R&T effort, partially offset by a reduction in expenditure on the A400M and the Boeing 787.

Amortization and impairment of R&D expenditure stood at €68 million in 2012, compared with €90 million in 2011. Depreciation was nil in 2012, compared with €32 million in 2011.

## 1.6 INDUSTRIAL INVESTMENTS

### 1.6.1 INDUSTRIAL POLICY

To offer its many customers tens of thousands of products of the highest technical caliber every year, Safran pursues a proactive industrial policy targeting industrial excellence and continuous innovation.

This policy is rolled out across all the Group's companies. The Group's Industrial Department oversees effective implementation of the policy through Group industrial committees and various working groups on industrial matters, and provides assistance to Group companies on running their international projects.

As a driving force behind competitive performance, innovation is central to Safran's industrial development endeavor, which explains the steady and tightly controlled input of new technologies and new methods for making new products that meet customers' expectations.

To shorten new product development cycles, Safran's industrial development teams work closely with design offices and apply Group methods and tools for project management and continuous improvement.

## PRESENTATION OF THE GROUP

### / INDUSTRIAL INVESTMENTS /

To keep in the closest possible touch with end customers, Safran has developed an international production system based on industrial hubs covering strategic regions. These centers bring together the resources of regional suppliers and local Safran teams responsible for the most delicate operations carried out in the Group's production facilities.

International development also provides opportunities for Safran's historic suppliers, who are eager to work with Safran in these growth markets. Safran has always given great importance to

its suppliers, as a source of innovation, flexibility and economic competitiveness. The SME Pact to which it is signatory covers support and development assistance to innovative SMEs.

Safran also gives special attention to the personal development of its employees. This takes the form of extensive training opportunities and ready transfer across sites and functions, enabling each individual to acquire new skills and develop their talent (see section 5.3).

## 1.6.2 MAIN INDUSTRIAL INVESTMENTS

Safran's industrial investments totaled €419 million in 2012, up by 19% on 2011. This increase is consistent with expected growth in the Group's business.

Geographical zone (in € millions)	2011	2012
France	235	255
Europe (excluding France)	18	62
North America	74	69
Asia	11	18
Rest of the world	14	15
<b>TOTAL</b>	<b>352</b>	<b>419</b>

France accounted for the bulk of Safran's industrial investments in 2012 (61%), as in previous years.

Two new production facilities were launched in France in 2012: Snecma's Commercy plant in the Meuse region, which will make composite parts (blower blades and casings) for the future LEAP, and Itteville in the Essonne region, Safran's development center for new composite materials. In 2012, work also began on the Safran Corporate University in Vilgénis.

Safran's other investments in France continue the policy of previous years, involving full renovation or modernization of industrial sites to accommodate production ramp up, and the introduction of new programs (Labinal at Villemur-sur-Tarn for wiring, Messier-Bugatti-Dowty at Bidos for titanium landing gear rods), and plant renewal and modernization at existing sites (machining systems at Messier-Bugatti-Dowty Molsheim, renovation of presses at Snecma Gennevilliers, test-cell modernization at Snecma Villaroche, etc.).

There was little change in the level of Safran's investments in North America in 2012. The main investments here were:

- the modernization and adaptation of the Messier-Bugatti-Dowty plant, which makes steel enclosures for landing gear in Canada;

- capacity increases to meet market demand, with new wiring production buildings for Labinal in the US and Mexico, and new carbon brake stoves for Messier-Bugatti-Dowty's Walton facility in the US.

The bulk of Safran's increased industrial investment in Europe (outside France) was for spare CFM56 engines at SES (Shannon Engine Support, a joint venture with GE). SES renewed part of its pool of spare engines on lease, to offer latest-generation units capable of supporting growth in fleet size among CFM customers.

Safran's investments in Asia include new industrial facilities in China (Aircelle in Xi'an, Labinal in Shanghai) to meet the needs of the C919 program. Safran also made investments in Malaysia, where construction work started on a new plant making carbon brakes.

## 1.7 REAL ESTATE AND PRODUCTION PLANTS

Safran's registered office is located in Paris, France.

The Group carries out its activities at research, production and maintenance centers based at 250 major industrial sites worldwide. The table below lists the Group's main sites in terms of either scale or geographic location.

Headcount was selected as a consistent common indicator of scale, given the production, research, development and technical support activities of the Group. Production capacity for the latter two activities is also based on the number of employees, since the concept of utilization rates is not deemed relevant.

Company	Site	Activity	Headcount as of Dec. 31, 2012	Occupancy
<b>FRANCE</b>				
Safran	Paris 15	Registered office and combined activities	940	O
Snecma	Évry/Corbeil	Machining and assembly of aviation parts, sales and marketing of military engines	2,874	O
Snecma	Gennevilliers	Forging, casting and machining of aircraft parts	1,446	O
Snecma	Vernon	Design and production of rocket engines	1,045	O
Snecma	Villaroche	Design, assembly and testing of jet engines, sales and marketing of commercial engines	3,954	O
Snecma	Montereau/Melun	Customer services	561	T
Snecma	Châtellerault	Maintenance of military engines, parts, devices and commercial engines	685	O
Snecma	Saint-Quentin-en-Yvelines	Commercial engine MRO (maintenance, repair and operations)	687	O
Snecma	Le Creusot	Machining of turbine disks	199	O
Société de Motorisation Aéronautique (SMA)	Bourges	Registered office, design, production and sale of light aviation aircraft engines	63	T
Herakles <sup>(1)</sup>	Le Haillan	Registered office, propellant-based propulsion for Ariane and missiles, thermostructural composites	1,299	O
Herakles <sup>(1)</sup>	Saint-Médard-en-Jalles	Production of solid propellants	734	O
Herakles <sup>(1)</sup>	Vert-le-Petit	Design, development and production of energetic materials	208	O
Herakles <sup>(1)</sup>	Toulouse	Production of raw materials for space chemistry	81	O
Turbomeca	Bordes	Registered office, design, manufacture and testing of gas turbines	2,565	O and FL
Turbomeca	Tarnos	Production of mechanical components and maintenance of helicopter engines	1,500	O
Turbomeca	Buchelay	Production of hydromechanical parts and subsystems for the aviation industry	330	O
Microturbo	Toulouse	Manufacture of low-power turbines	485	O
Aircelle	Le Havre/Gonfreville	Design and production of nacelles and thrust reversers	1,510	O
Hispano-Suiza	Colombes	Registered office and research and production center for power transmission systems	741	O
Labinal	Blagnac	Registered office, engineering	189	O
Labinal	Blagnac	Assembly, installation, maintenance	350	T

(O: Owner – T: Tenant – FL: Finance lease)

(1) On May 1, 2012, Safran finalized the merger of its two SME subsidiaries (SNPE Matériaux Énergétiques) and SPS (Snecma Propulsion Solide) to form Herakles, world number two in solid propulsion.

**PRESENTATION OF THE GROUP**  
/ REAL ESTATE AND PRODUCTION PLANTS /

Company	Site	Activity	Headcount	Occupancy	
			as of Dec. 31, 2012		
Labinal	Villemur-sur-Tarn	Production of aircraft wiring	539	O	
Messier-Bugatti-Dowty	Molsheim	Production of wheels, brakes and hydraulic systems. Landing gear repair and maintenance	885	O	
Messier-Bugatti-Dowty	Vélizy-Villacoublay	Registered office, design and testing of brake systems and landing gear	1,113	O	
Messier-Bugatti-Dowty	Villeurbanne	Production, research and development of carbon brakes	192	O	
Messier-Bugatti-Dowty	Bidos/Oloron-Sainte-Marie	Production of landing gear	840	O	
Safran Engineering Services	Montigny-le-Bretonneux	Engineering	594	T	
Safran Engineering Services	Toulouse	Registered office, services	398	T	
Sagem	Paris 15	Registered office	386	O	
Sagem	Fougères	Electronic subcontracting	657	O	
Sagem	Argenteuil	R&D	590	O	
Sagem	Éragny	R&D	573	O	
Sagem	Massy	Manufacturing of optoelectronic and aviation systems. Electronic regulation and control systems	1,749	FL and T	
Sagem	Montluçon Domerat	Mechanical, optics and electronics manufacture and systems integration	1,180	O	
Sagem	Poitiers	Manufacture of optoelectronic equipment	480	O	
Sagem	Dijon	Manufacture of optical and optoelectronic equipment	270	O	
Sagem	Mantes-la-Jolie	Manufacture of aircraft equipment	272	O	
Morpho	Issy-les-Moulineaux	Registered office, administrative and commercial center	392	T	
Morpho	Osny	R&D	634	O	
EUROPE (EXCLUDING FRANCE)					
Aleat	Tirana	Albania	Manufacture and distribution of ID documents	271	T
Labinal GmbH	Hamburg	Germany	Engineering, assembly, installation and maintenance	308	T
Morpho Cards GmbH	Flintbek and Paderborn	Germany	Research, manufacture and sale of smart cards	553	T
Sagem Navigation GmbH	Murr	Germany	R&D, production	85	T
Techspace Aero	Herstal (Milmort)	Belgium	Registered office, aviation and aerospace production, test cell design and jet engine testing	1,250	O
Aircelle Ltd	Burnley	United Kingdom	Production of nacelles and thrust reversers	739	O
Messier-Dowty Ltd	Gloucester	United Kingdom	Research, testing, engineering and production of landing gear	886	O
Morpho B.V.	Haarlem	Netherlands	Production, customization and sale of cards, ID and security documents and related products	327	T
Hispano-Suiza Polska sp. zoo	Sedziszow Malopolski	Poland	Production of mechanical parts for Safran Group companies	478	O
Orga Zelenograd Smart Cards and Systems, z.a.o.	Moscow	Russia	Research, manufacture and sale of smart cards	103	O

**PRESENTATION OF THE GROUP**  
/ REAL ESTATE AND PRODUCTION PLANTS /

Company	Site		Activity	Headcount as of Dec. 31, 2012	Occupancy
<i>(O: Owner – T: Tenant – FL: Finance lease)</i>					
Smartinvest o.o.o. and Smartec z.a.o.	Moscow	Russia	Holding company, research	117	T
Vectronix	Heerbrugg	Switzerland	Research and manufacture of optronics defence products	252	T
<b>NORTH AMERICA</b>					
Messier-Dowty, Inc.	Montreal	Canada	Production of landing gear	255	O
Messier-Dowty, Inc.	Toronto	Canada	Production and maintenance of landing gear	574	O
Safran Electronics Canada, Inc.	Peterborough	Canada	R&D, customer support and production of aircraft equipment	111	T
Turbomeca Canada, Inc.	Mirabel	Canada	Gas turbine and aircraft equipment MRO, and work on helicopters	55	O
Advanced Components International	Fort Myers	United States	Design and production of reservoirs for aerospace applications	30	O
Aerosource	Sommerset	United States	Repair and maintenance of aircraft parts	45	T
Cenco Inc.	Minneapolis	United States	Test cell engineering	60	T
Globe Motors, Inc.	Dothan	United States	Electric engines	188	O
Labinal Inc.	Denton	United States	Production of aircraft wiring	700	T
Labinal Inc.	Everett	United States	Engineering	172	T
Labinal Salisbury Inc.	Salisbury	United States	Production of aircraft wiring	882	O
Messier-Bugatti USA	Walton	United States	Production of carbon brakes, R&D	222	FL
Morpho Detection, Inc.	Newark/ Wilmington	United States	Research, manufacture and sale of systems and products for detecting dangerous and illicit substances	304	T
MorphoTrak	Anaheim/Tacoma	United States	Research, sale and technical support of identity products and services	271	T
MorphoTrust	BillERICA	United States	Research, sale and technical support of identity products and services	1,236	T
Optics 1, Inc.	Manchester	United States	R&D and production of opto-mechanical and electro-optical systems	51	T
Sagem Avionics, Inc.	Grand Prairie	United States	Marketing and customer support for aircraft product lines	90	T
Turbomeca Manufacturing Inc.	Monroe	United States	Production of helicopter engine parts	125	O
Turbomeca USA Inc.	Grand Prairie	United States	Maintenance of delivered engines and delivery of spare parts	370	O
Vectronix, Inc.	Leesburg	United States	Marketing of observation and localization systems and equipment	65	T
Labinal de Mexico	Chihuahua	Mexico	Production of aircraft wiring, engineering	3,208	T
Messier-Dowty Mexico	Querétaro	Mexico	Production of landing gear	204	T
Messier Services Americas	Querétaro	Mexico	Landing gear MRO	189	T
Morpho	Mexico	Mexico	Sale of biometric devices	36	T
Snecma America Engine Services (SAMES)	Querétaro	Mexico	Commercial engine MRO (maintenance, repair and operations)	149	T
Snecma Mexico	Querétaro	Mexico	Production of commercial engine parts	239	T

*(O: Owner – T: Tenant – FL: Finance lease)*

**PRESENTATION OF THE GROUP**  
/ REAL ESTATE AND PRODUCTION PLANTS /

Company	Site		Activity	Headcount as of Dec. 31, 2012	Occupancy
<b>SOUTH AMERICA</b>					
Morpho Cards do Brasil SA	Taubate/São Paulo	Brazil	Research, manufacture and sale of smart cards	635	T
Turbomeca do Brasil Industria e Comercio Ltda	Rio de Janeiro	Brazil	Design, manufacture, purchase-sale and maintenance of turbo engines	215	O
Morpho	Bogotá	Colombia	Local adaptation of government solution software and hardware	119	T
Morpho Valores Plasticar	Bogotá	Colombia	Manufacture and sale of smart cards	61	T
<b>AFRICA AND THE MIDDLE EAST</b>					
Morpho South Africa Pty Ltd	Rivonia (Johannesburg)	South Africa	Sale of biometric devices	38	T
Turbomeca Africa	Stanton	South Africa	Production and repair of helicopter engines	239	T
Morpho	Abu Dhabi	UAE	Sale of biometric devices	79	T
Aircelle Maroc	Casablanca	Morocco	Construction of composite parts for engines	512	T
Labinal Maroc	Temara/Ain Atiq	Morocco	Production of aircraft wiring	1,102	FL
Safran Engineering Services Morocco	Casablanca	Morocco	Automobile and aeronautical engineering	124	FL
Sagem Sécurité Maroc	Casablanca	Morocco	Software development	150	T
Snecma Morocco Engine Services	Casablanca	Morocco	Commercial engine MRO	179	T
<b>ASIA AND OCEANIA</b>					
Morpho Australasia Pty Ltd	Sydney	Australia	Sale and maintenance of Morpho products	54	T
Turbomeca Australasia	Sydney	Australia	Support and production of turbine engines	123	T
Messier-Dowty Suzhou Co, Ltd	Suzhou	China	Production of landing gear	368	O
Snecma Suzhou Co, Ltd	Suzhou	China	Manufacture and assembly of engine modules	300	O
Snecma Xinyi Airfoil Castings Co Ltd	Guiyang	China	Aircraft parts foundry	129	O
Smart Chip Ltd Syscom Corporation Ltd	Noida/New Delhi	India	Research, manufacture and sale of smart cards	901	O
Safran Engineering Services India	Bangalore	India	Automobile and aeronautical engineering	547	T
Messier Services Asia Pte Ltd	Singapore	Singapore	Landing gear repair	318	O
Cassis International Pte Ltd	Singapore	Singapore	Trusted service management <sup>(1)</sup>	26	T
Morpho Cards (Singapore) Pte, Ltd	Singapore	Singapore	Sale of smart cards	45	T

(O: Owner – T: Tenant – FL: Finance lease)

(1) Trusted services management enables mobile network operators and service providers to manage and implement authentication solutions on mobile devices, for secure applications such as banking services, transport and physical access to secure sites.

Environmental factors likely to influence the Group's use of its property, plant and equipment are presented in section 5.4.3. The Group has drafted Health, Safety and Environment (HSE) guidelines which enable it to assess the compliance of its property, plant and equipment and operations with HSE regulations. It also regularly conducts self-assessments and audits.

1.8

## SAFRAN GROUP PURCHASING STRATEGY

1

Safran constantly strives to pursue a purchasing policy consistent with its objectives of excellence and competitive performance, and with its sustainable development policy. Supplier input accounts for the majority of its development and production costs. Suppliers' strategy, performance (cost, quality, delivery times), know-how, technological innovation and capacity to tackle sustainable development issues must match Safran's current and future needs. This is a determining factor in the Group's capacity to reach its goals.

Safran's purchasing policy seeks to concentrate business with suppliers that meet these demands, that comply with the specific rules applicable to the Aerospace, Defence and Security markets, and that are prepared to commit to long-term undertakings with Safran on a mutually profitable basis.

The policy has four main objectives:

- to build a supplier panel that:
  - enables Safran to meet its current needs and plan ahead as regards the international development of each Group company in targeted geographic areas, and to ensure secure sourcing for strategic purchases,
  - enables Safran to roll out its sustainable development policy upstream through the supply chain;
- to involve suppliers early on in the Group's development programs so that they can meet all customer demands, allowing them to propose innovations and harness the full

extent of their know-how on obtaining the best possible cost and performance for Safran Group products, and full compliance with health, safety and environmental requirements;

- to promote common procedures, management tools and metrics across all Safran Group companies to improve operating modes and performance with suppliers;
- to support key suppliers on measures to adapt their organizations and industrial configurations to Safran Group expectations and shifts in market demand.

The application of Safran's purchasing policy is fully consistent with its sustainable development policy.

Logistics chain players involved in the application of the purchasing policy comply with the Safran Group's ethics charter.

The rollout of the policy requires close cooperation among Group companies, a Safran purchasing network and culture, tight coordination among all Group players in contact with suppliers, and involvement of the purchasing team in all product life-cycle phases.

To help suppliers plan and finance their operations more efficiently, Safran Group companies have taken up GIFAS recommendations, which give suppliers more flexibility on delivery scheduling. Specifically, the firm order period has been extended to six months on a sliding basis. Safran has also improved its demand visibility by extending the flexibility period.

1.9

## SAFRAN QUALITY PERFORMANCE AND POLICY

Safran pursues an ambitious quality policy backed by a strong continuous progress ethic, seeking to satisfy all its customers by offering them the best products and services available anywhere in the world.

Safran's quality policy operates synergetically across all Group companies; performance targets are identified and priority actions determined to achieve an optimally efficient response as regards quality and customer satisfaction. Group-wide methods and tools are used, derived from pooled experience and best practices across all Group companies.

The quality policy is rooted in Safran Group values and is rolled out consistent with the Safran+ plan.

Safran seeks to be recognized by all its customers as an exemplary supplier and partner. To achieve this goal, it implements a series of progress-oriented measures:

- continuous improvement in product and service quality, based on objective measurement and a shared vision of customer satisfaction;

- close attention to program management and design quality, as evidenced by group-wide rollout of a single program management standard targeting performance and risk control;
- structured, coordinated action with internal and supply-chain players, to ensure supplier delivery performance and support supplier development under conditions of strong growth in volumes;
- improved process robustness and optimized production flows, backed by tougher error-avoidance systems.

These measures yielded a rise in delivered product quality in 2012, meeting the target of a 20% increase in quality performance. Several major customers expressed their appreciation for the result obtained.

## PRESENTATION OF THE GROUP

### / SAFRAN+ PROGRESS INITIATIVE /

The aim for 2013 is to pursue the program and further improve results, with three key priorities:

- further improvements in customer satisfaction, in line with Safran's ambition to be its customers' top-ranking supplier and partner;
- improvements in supplier performance, a prerequisite for raising Safran's own performance level;

- tighter control over development quality (especially important given the extent and importance of developments under way) by taking account of lessons learned to ensure projects are fully mature on operational release.

1.10

## SAFRAN+ PROGRESS INITIATIVE

The Safran+ continuous progress and modernization initiative was launched in 2009 with the aim of driving continuous performance improvements throughout the Group. In order to achieve this, Safran+ has defined key areas for progress, set targets and developed a specific approach.

Safran+ is a centralized initiative, featuring its own network, and deployed within all of the Group's entities. This structure allows for an array of improvement initiatives, either created by the Group and applicable to all of its companies, or created by the companies themselves for their own internal use.

Most of these initiatives involve ongoing improvement, but five ground-breaking projects have also been put forward by the Group. These involve:

- the upgrade of management processes (geared towards support functions);
- decreased working capital requirement;
- control over production purchases;
- the optimization of the upstream supply chain;
- increased effectiveness of development, research and engineering programs.

They are joined by two permanent, cross-Group initiatives:

- interactive innovation initiatives offering employees the possibility to improve the Company through their sector;
- the use of the Lean Sigma<sup>(1)</sup> approach to train Green and Black Belts, professional drivers of Group change, acting in a structured and standardized manner.

Most projects can be measured and target at least one of the following three objectives:

- higher operating profit;
- lower working capital requirements;
- lower EUR/USD exchange rate risk.

For each of these initiatives, the Group's strategy helps define an annual objective per company.

Work toward these objectives is monitored by means of two complementary approaches:

- upstream, managers assess the direct progress of actions using project-relevant operational indicators, from identification through to fulfillment;

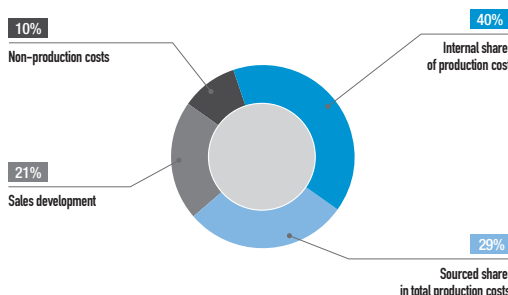
- downstream, key management indicators are applied to compare expected against actual performance achieved by the company during the year (e.g., production cost indexes, lead part cycles, etc.).

The managers concerned report on progress to Safran executive management at two reviews carried out at two different sites per company.



### 2012 PROGRESS PLANS

The savings achieved in 2012 break down as follows:



We note the following progress plan highlights in 2012:

- a group-wide Purchasing Specification project was launched to pull on the purchasing performance lever and gear up power of the Safran Purchasing Shared Services Centres;
- Safran pushed ahead with its project on modernizing management, begun in 2009. All support functions are now pooled group-wide: non-production purchasing, payroll, recruitment, training, finance, communications, information systems, health-safety-environment. From 2013 they will gradually be transferred to a single building accommodating Safran's Shared Services Centres;
- Safran's Interactive Innovation scheme generated more than 34,000 applicable ideas from personnel;

(1) Lean Sigma: Continuous performance improvement and waste elimination process.



## PRESENTATION OF THE GROUP

/ SAFRAN+ PROGRESS INITIATIVE /

- an operational coordination program was begun to steer supplier performance. Rollout of cooperative actions with suppliers using the Lean Sigma method was stepped up;
- a global supply chain initiative gave rise to a joint approach on processes, with definition of supply chain functions to improve scheduling of operations both internally and at supplier sites;
- the purchasing function matured, promoting group-wide convergence of multiple processes and coordination of joint purchasing operations;
- a group-wide standard was drawn up under the R&D progress initiative, setting out basic principles for R&D performance as regards development excellence in leadtimes, quality and cost;
- lean Sigma practices were stepped up, with group-wide personnel education campaigns. In addition, more than 1,000 Green Belts<sup>(1)</sup> and Black Belts<sup>(1)</sup> were trained, and eleven new Master Black Belts<sup>(1)</sup> certified.

1

*(1) Responsible for setting up Lean Sigma methods.*



# 02

## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

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## BUSINESS HIGHLIGHTS IN 2012

### AEROSPACE PROPULSION

- CFM56 engine deliveries increased 7.5% to 1,406 units in 2012 versus 1,308 in 2011;
- New orders and purchase commitments for 1,096 LEAP engines and 898 CFM56 engines in 2012;
- Almost 10,000 CFM56 and LEAP engines in the backlog (firm orders and commitments), representing around seven years of production;
- Silvercrest engine chosen by Cessna to power its new Citation Longitude business jet;
- 924 helicopter engines delivered, up from 922 in 2011;
- Creation of Herakles by the merger of Snecma Propulsion Solide (SPS) and SNPE Matériaux Énergétiques (SME), integrating the development and production of solid propulsion engines with the development and production of solid propellants.

### AIRCRAFT EQUIPMENT

- Continued ramp-up of production under new programs, notably for the Boeing 787 and the Airbus A380 and A330;
- Final agreement signed for the acquisition of Goodrich Electrical Power Systems (GEPS), which will lead to the creation of a world leader in aerospace electrical power.

### DEFENCE

- Ongoing deliveries to the French Armed Forces of Felin infantry combat protection systems, with ten regiments now fitted out;
- Creation of Optrolead, a 50-50 joint venture with Thales in the optronics field. Optrolead will market and sell future-generation optronics systems, chiefly for armed forces;
- Additional shares acquired in Sofradir, a leading player in infrared detection, within the scope of the partnership with Thales.

### SECURITY

- Safran selected by the Chilean government to produce and manage ID documentation in the country;
- Acquisition of General Electric's residual 19% stake in Morpho Detection Inc. (MDI);
- Completion of several other selective acquisitions, including Cassis International, a leading trusted service management (TSM) specialist, and the European subsidiaries of the American Banknote group, specializing in the production and customization of bank cards.

## 2012 ADJUSTED KEY FIGURES

	Aerospace Propulsion		Aircraft Equipment		Defence		Security		Holding co. and other		Total	
(in € millions)	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Revenue	6,110	7,005	3,097	3,691	1,264	1,315	1,249	1,546	16	3	11,736	13,560
Recurring operating income (loss)	909	1,099	202	287	58	81	139	145	(119)	(141)	1,189	1,471
Profit (loss) from operations	931	1,100	202	271	51	81	116	120	(140)	(151)	1,160	1,421
Free cash flow <sup>(1)</sup>	692	464	(19)	38	(80)	13	(61)	11	0	38	532	564
Acquisitions of property, plant and equipment	132	168	112	140	58	47	42	46	8	18	352	419
Self-funded R&D	420	649	159	213	118	117	111	124	N/A	N/A	808	1,103
Headcount <sup>(2)</sup>	22,065	23,271	21,543	22,874	6,587	7,182	7,530	7,727	2,080	1,504	59,805	62,558

(1) Free cash flow is equal to cash flow from operating activities less changes in working capital and acquisitions of property, plant and equipment and intangible assets.

(2) Headcount at December 31.

## 2.1

# COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA

## 2.1.1 RECONCILIATION OF CONSOLIDATED DATA WITH ADJUSTED DATA

### FOREWORD

To reflect the Group's actual economic performance and enable it to be monitored and benchmarked against competitors, Safran prepares an adjusted income statement alongside its consolidated financial statements.

Readers are reminded that Safran:

- is the result of the May 11, 2005 merger of the Sagem and Snecma groups, accounted for in accordance with IFRS 3, Business Combinations, in its consolidated financial statements;
- recognizes, as of July 1, 2005, all changes in the fair value of its foreign currency derivatives in "Financial income (loss)", in accordance with the provisions of IAS 39 applicable to transactions not qualifying for hedge accounting (see section 3.1, "Accounting policies", Note 1.F).

Accordingly, Safran's consolidated income statement has been adjusted for the impact of:

- purchase price allocations with respect to business combinations. Since 2005, this restatement concerns the

amortization charged against intangible assets relating to aircraft programs revalued at the time of the Sagem-Snecma merger. With effect from the 2010 interim consolidated financial statements, the Group decided to restate the impact of purchase price allocations for all business combinations. In particular, this concerns the amortization of intangible assets recognized at the time of the acquisition and amortized over extended periods due to the length of the Group's business cycles;

- the mark-to-market of foreign currency derivatives, in order to better reflect the economic substance of the Group's overall foreign currency risk hedging strategy:
  - revenue net of purchases denominated in foreign currencies is measured using the effective hedging rate, i.e., including the costs of the hedging strategy, and
  - all mark-to-market changes on outstanding hedging instruments at the closing date are neutralized.

## RECONCILIATION OF THE CONSOLIDATED INCOME STATEMENT WITH THE ADJUSTED INCOME STATEMENT

The impact of these adjustments on income statement items is as follows:

(in € millions)	2012 consolidated data	Currency hedging		Business combinations		2012 adjusted data
		Remeasurement of revenue <sup>(1)</sup>	Deferred hedging gain (loss) <sup>(2)</sup>	Amortization of intangible assets from Sagem-Snecma merger <sup>(3)</sup>	PPA impacts – other business combinations <sup>(4)</sup>	
<b>Revenue</b>	<b>13,615</b>	<b>(55)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>13,560</b>
Other recurring operating income and expenses	(12,345)	-	3	156	97	(12,089)
<b>Recurring operating income</b>	<b>1,270</b>	<b>(55)</b>	<b>3</b>	<b>156</b>	<b>97</b>	<b>1,471</b>
Other non-recurring operating income and expenses	(56)	-	-	-	6	(50)
<b>Profit from operations</b>	<b>1,214</b>	<b>(55)</b>	<b>3</b>	<b>156</b>	<b>103</b>	<b>1,421</b>
Cost of debt	(54)	-	-	-	-	(54)
Foreign exchange gains	709	55	(742)	-	-	22
Other financial income and expense	(120)	-	-	-	-	(120)
<b>Financial income (loss)</b>	<b>535</b>	<b>55</b>	<b>(742)</b>	<b>-</b>	<b>-</b>	<b>(152)</b>
Share in profit from associates	19	-	-	-	-	19
Income tax expense	(442)	-	270	(54)	(37)	(263)
<b>Profit from continuing operations</b>	<b>1,326</b>	<b>-</b>	<b>(469)</b>	<b>102</b>	<b>66</b>	<b>1,025</b>
Profit from discontinued operations	-	-	-	-	-	-
<b>Profit (loss) for the period attributable to non-controlling interests</b>	<b>(24)</b>		<b>1</b>	<b>(3)</b>	<b>-</b>	<b>(26)</b>
<b>PROFIT FOR THE PERIOD ATTRIBUTABLE TO OWNERS OF THE PARENT</b>	<b>1,302</b>	<b>-</b>	<b>(468)</b>	<b>99</b>	<b>66</b>	<b>999</b>

(1) Remeasurement of foreign-currency denominated revenue net of purchases (by currency) at the hedged rate (including premiums on unwound options) through the reclassification of changes in the fair value of instruments hedging cash flows for the period.

(2) Changes in the fair value of instruments hedging future cash flows deferred until the instruments are unwound, representing a negative amount of €742 million excluding tax, and the impact of including hedges in the measurement of provisions for losses to completion (€3 million).

(3) Cancellation of amortization/impairment of intangible assets relating to the remeasurement of aircraft programs resulting from the application of IFRS 3 to the Sagem-Snecma merger.

(4) Cancellation of depreciation/amortization/impairment of assets identified at the time of recent acquisitions.

Readers are reminded that only the consolidated financial statements set out in section 3.1 of this document are audited by the Group's Statutory Auditors. The consolidated financial statements include the revenue and operating profit indicators set out in the adjusted data in Note 4, "Segment information".

Adjusted financial data other than the data provided in Note 4, "Segment information" in section 3.1 are subject to the verification procedures applicable to all of the information provided in this report.

## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

/ COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

### 2.1.2 OVERVIEW OF THE GROUP'S PERFORMANCE IN 2012

#### ADJUSTED INCOME STATEMENT

<i>(in € millions)</i>	2011 Adjusted data	2012 Adjusted data
<b>Revenue</b>	<b>11,736</b>	<b>13,560</b>
Other income	216	209
<b>Income from operations</b>	<b>11,952</b>	<b>13,769</b>
Change in inventories of finished goods and work-in-progress	134	340
Capitalized production	371	642
Raw materials and consumables used	(6,836)	(8,226)
Personnel costs	(3,808)	(4,205)
Taxes	(235)	(270)
Depreciation, amortization, and increase in provisions, net of use	(342)	(574)
Asset impairment	(62)	(26)
Other recurring operating income and expenses	15	21
<b>Recurring operating income</b>	<b>1,189</b>	<b>1,471</b>
Other non-recurring operating income and expenses	(29)	(50)
<b>Profit from operations</b>	<b>1,160</b>	<b>1,421</b>
Cost of net debt	(42)	(54)
Foreign exchange gains (losses)	(46)	22
Other financial income and expense	(127)	(120)
<b>Financial loss</b>	<b>(215)</b>	<b>(152)</b>
Share in profit from associates	10	19
<b>Profit before tax</b>	<b>955</b>	<b>1,288</b>
Income tax expense	(289)	(263)
<b>Profit from continuing operations</b>	<b>666</b>	<b>1,025</b>
Profit from discontinued operations	3	-
<b>PROFIT FOR THE PERIOD</b>	<b>669</b>	<b>1,025</b>
Attributable to:		
• owners of the parent	644	999
• non-controlling interests	25	26
<b>Earnings per share attributable to owners of the parent (in €)</b>		
Basic earnings per share	1.59	2.41
Diluted earnings per share	1.58	2.40
<b>Earnings per share from continuing operations attributable to owners of the parent (in €)</b>		
Basic earnings per share	1.58	2.41
Diluted earnings per share	1.57	2.40
<b>Earnings per share from discontinued operations attributable to owners of the parent (in €)</b>		
Basic earnings per share	0.01	-
Diluted earnings per share	0.01	-

## REVIEW OF OPERATIONS

### ADJUSTED REVENUE

For full-year 2012, Safran's revenue was €13,560 million, a 15.5% year-on-year increase (8.6% organic growth), compared to €11,736 million in 2011.

Full-year 2012 revenue increased by €1,824 million on a reported basis, notably highlighting the performance in Aerospace and Security. On an organic basis, revenue increased by €1,009 million with higher Aerospace original equipment volumes, improving civil aftermarket trends, resilience in the Defence business (avionics) and momentum in Security (biometric identification, e-documents).

### ADJUSTED RECURRING OPERATING INCOME

For full-year 2012, Safran's recurring operating income was €1,471 million, or 10.8% of revenue, up 23.7% compared to €1,189 million (10.1% of revenue) in full-year 2011. After taking into account the positive currency impact (€131 million) and the impact of acquisitions and newly consolidated activities (€23 million), the organic year-on-year improvement was €128 million, or 10.8%. This also includes a negative €29 million impact due to a higher rate (announced in August 2012) in social contributions payable on employee profit sharing.

The improvement was primarily driven by the Aerospace Propulsion and Aircraft Equipment activities, which saw solid OEM growth and positive trends in the civil aftermarket, as well as by a turnaround of avionics in Defence.

<i>(in € millions)</i>	2011	2012
<b>Recurring operating income</b>	<b>1,189</b>	<b>1,471</b>
% of revenue	10.1%	10.8%
<b>Total non-recurring items</b>	<b>(29)</b>	<b>(50)</b>
Capital gain on disposals	-	1
Impairment reversal (charge)	23	(1)
Other unusual and material non-operating items	(52)	(50)
<b>PROFIT FROM OPERATIONS</b>	<b>1,160</b>	<b>1,421</b>
% of revenue	9.9%	10.5%

### ADJUSTED PROFIT FROM OPERATIONS

Adjusted profit from operations climbed 22.5% to €1,421 million versus €1,160 million in 2011. Non-recurring items represented an expense of €50 million during full-year 2012, of which €34 million of acquisition and integration costs mainly related to MorphoTrust, as well as a net expense of €16 million related to our customer Hawker Beechcraft, which had filed for Chapter 11 bankruptcy protection in May 2012.

### ADJUSTED INCOME TAX EXPENSE

The adjusted income tax expense for the year fell from €289 million in 2011 to €263 million in 2012, largely due to the change in mix of tax rates applicable in countries where the Group does business. The Group's tax expense includes the favorable impact of the absorption by Safran of subsidiaries which had been involved in loss making activities divested several years ago.

### ADJUSTED FINANCIAL INCOME (LOSS)

The Group reported an adjusted financial loss of €152 million in 2012, compared to loss of €215 million in 2011. The financial loss chiefly reflects the cost of net debt, which was up slightly year-on-year, to €54 million from €42 million in 2011. The financial loss also includes the cost of unwinding discounts on certain assets and liabilities (mainly provisions and repayable advances), as well as the impact of any changes in the discount rate used, particularly to calculate provisions. The cumulative impact of these non-cash items was an expense of €90 million in 2012 and an expense of €69 million in 2011. The interest cost on post-employment benefit obligations amounted to €21 million in 2012 versus €17 million in 2011.

### ADJUSTED PROFIT ATTRIBUTABLE TO OWNERS OF THE PARENT

Adjusted profit attributable to owners of the parent grew by 55% year-on-year. It was €999 million or €2.41 per share, compared to €644 million (€1.59 per share) in full-year 2011. In addition to the rise in recurring operating income, this improved performance includes:

- net financial expense of €152 million, including cost of debt of €54 million;
- tax expense of €263 million.

## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

/ COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

### 2.1.3 ADJUSTED KEY FIGURES BY BUSINESS

#### SUMMARY OF ADJUSTED KEY FIGURES BY BUSINESS

The backlog grew 13% to €48.5 billion in 2012 compared to €43.0 billion last year.

(in € millions)	Aerospace Propulsion		Aircraft Equipment		Defence		Security		Holding co. and other		Total	
	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012	2011	2012
Backlog <sup>(1)</sup>	24,490	29,879	14,469	14,467	2,704	2,380	1,334	1,737	N/A	N/A	42,997	48,463
Orders recorded during the year <sup>(2)</sup>	13,713	11,516	4,642	3,539	1,120	1,142	1,320	1,862	N/A	N/A	20,795	18,058
Revenue	6,110	7,005	3,097	3,691	1,264	1,315	1,249	1,546	16	3	11,736	13,560
Recurring operating income (loss)	909	1,099	202	287	58	81	139	145	(119)	(141)	1,189	1,471
Profit (loss) from operations	931	1,100	202	271	51	81	116	120	(140)	(151)	1,160	1,421
Free cash flow <sup>(3)</sup>	692	464	(19)	38	(80)	13	(61)	11	0	38	532	564
Acquisitions of property, plant and equipment	132	168	112	140	58	47	42	46	8	18	352	419
Self-funded R&D	420	649	159	213	118	117	111	124	N/A	N/A	808	1,103
Headcount <sup>(4)</sup>	22,065	23,271	21,543	22,874	6,587	7,182	7,530	7,727	2,080	1,504	59,805	62,558

(1) The backlog corresponds to orders recorded and not yet recognized in revenue.

(2) Orders recorded represent orders received during the year.

(3) Free cash flow is equal to cash flow from operating activities less changes in working capital and acquisitions of property, plant and equipment and intangible assets.

(4) Headcount at December 31.

#### 2.1.3.1 AEROSPACE PROPULSION

##### ADJUSTED KEY FIGURES

	2011	2012	Year-on-year change
Quantities delivered			
CFM56 engines	1,308	1,406	7%
Helicopter turbine engines	922	924	-
(in € millions)			
Backlog	24,490	29,879	22%
Orders recorded during the year	13,713	11,516	-16%
Revenue	6,110	7,005	15%
Recurring operating income	909	1,099	21%
Profit from operations	931	1,100	18%
Free cash flow	692	464	-33%
Acquisitions of property, plant and equipment	132	168	27%
Research and development			
Self-funded R&D	(420)	(649)	55%
% of revenue	6.9%	9.3%	+2.4 pts
Research tax credit	47	47	-
Self-funded R&D after research tax credit	(373)	(602)	62%
Capitalized expenditure	161	342	112%
Amortization and impairment of R&D expenditure	(26)	(25)	-4%
Impact on profit from operations	(238)	(285)	20%
% of revenue	3.9%	4.1%	+0.2 pts
Headcount <sup>(1)</sup>	22,065	23,271	5%

(1) Headcount at December 31.



## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

### / COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

Aerospace Propulsion activities can be split into four key sectors that contribute to business line revenue as follows:

Sector	% of business line revenue	
	2011	2012
Civil aviation	60%	61%
Military aviation	11%	11%
Helicopter turbine engines	17%	16%
Ballistics and space	12%	12%

#### REVIEW OF AEROSPACE PROPULSION OPERATIONS IN 2012

Full-year 2012 revenue grew by 15% to €7,005 million, or 9.2% on an organic basis, compared to revenue of €6,110 million in the year-ago period. Revenue evolution resulted from a strong rise in civil OEM deliveries, with CFM56 reaching record production rates, and solid trends in the aftermarket for CFM56 engines and helicopter turbines. CFM56 engine deliveries amounted to 1,406 units, 98 units more than in 2011. Total CFM56 and LEAP orders and commitments now stand at 9,943 engines, about seven years of production at current rates. Excluding the contribution of newly acquired SNPE Matériaux Énergétiques (SME), space and missile propulsion revenue was flat in the year.

On a full-year 2012 basis, civil aftermarket revenue grew by 9.4% in USD terms, driven by first overhauls of recent CFM56 engines. Overall service revenue in Aerospace Propulsion grew by 9.9% in euro terms. The strength of the helicopter engines maintenance activity also contributed to service revenue growth. In contrast, that related to the military engines aftermarket reported lower revenue due to a high comparison base.

Full-year 2012 recurring operating income was €1,099 million (15.7% of revenue), up 21% compared to €909 million in the year-ago period (14.9% of revenue). This improvement resulted from healthy activity in the civil aftermarket and helicopter engines maintenance, as well as from increased volume on all military and commercial OEM engines. Profits were also driven by significant productivity gains from the transverse Safran+ cost reduction program. R&D expenses grew, primarily on LEAP and Silvercrest engines development. Currency hedging had a positive impact on profitability.

The 12-month contribution of SME was €273 million in revenue and €24 million (8.8% of sales) in recurring operating income.

#### COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

##### Civil aviation

##### ■ Low-thrust engines for civil aircraft (regional and business jets)

##### SaM146 (13,500 – 17,800 pounds of thrust)

The SaM146 engine, developed in partnership with Russian engine manufacturer NPO Saturn and with the participation of Italian engine manufacturer Avio, was certified by the European Aviation Safety Agency and by its Russian counterpart in 2010. The SaM146 engine has clocked up more than 30,000 flying hours. The SaM146

is used in the Sukhoi Superjet 100, which was itself certified by the Russian aviation authorities in January 2011, and by the European aviation authorities in February 2012. A total of eight Superjet 100 engines were delivered in 2012, bringing the total number of deliveries to 13 for four airline companies.

In May 2012, one of the Superjet 100 test aircrafts crashed during a demonstration flight in Indonesia. In December, the Indonesian National Transportation Safety Committee (KNKT) confirmed that the accident had been caused by a pilot error.

The backlog for Powerjet stood at 234 engines at the end of the year.

##### Silvercrest (9,500 – 12,000 pounds of thrust)

Chosen by two aircraft manufacturers, the Silvercrest engine incorporates leading-edge technology to offer unrivalled performance, with ambitious targets in terms of fuel consumption, reliability and respect for the environment.

Silvercrest will be used in Cessna's new Citation Longitude business jet, with a cruising speed of over 900km/h (490 knots) and an intercontinental flying range of 7,408km (4,000 nautical miles), the most of any Cessna aircraft.

The first engine was assembled in May 2012 and tests began in October. The engine should be brought into service in 2017.

##### SMA

In July 2012, US aircraft manufacturer Cessna chose turboprop SMA SR305-203E for the Turbo Skylane NXT, the latest aircraft in its Cessna 182 range. At the end of December, 142 orders had already been taken for this engine and the first ten production-standard engines had been delivered.

##### ■ CFM mid-thrust engines for civil aircraft (short-medium-haul aircraft)

##### CFM56 – LEAP

Having been selected by Chinese aircraft manufacturer COMAC in 2009 as the sole Western source for its C919 and by Airbus in 2010 to upgrade its A320 fleet (A320neo), in 2011 LEAP was chosen by Boeing as the sole engine in its 737 re-engining program known as 737 MAX. The 737 MAX is expected to be in service by 2017, and the A320neo and C919 by 2016. This third success, opening up further market opportunities for Safran, once again vindicates the strategic and technological decisions resulting from its partnership with General Electric.

## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

/ COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

2012 also saw a string of major commercial successes. Orders continued to grow for LEAP engines, set to gradually replace CFM56 units. With new orders and purchase commitments for 1,096 engines in 2012, the backlog for LEAP stood at over 4,300 engines under the C919, A320neo and 737 MAX programs at year-end.

The LEAP-1C is the sole Western source for the propulsion system (engine plus nacelle) on COMAC's C919 Chinese aircraft. On the A320neo, the LEAP-1A model competes with the PurePower PW1000G engine made by US firm Pratt & Whitney. At December 31, 2012, LEAP-1A had a market share of just over 50% in aircraft for which engines had already been chosen. The LEAP-1B model was chosen as the sole engine for the Boeing 737 MAX.

Taking into account the 898 orders for CFM56 engines taken during the year, the overall backlog (CFM56 + LEAP) represents around 10,000 engines, or more than seven years' production. This success confirms CFM as leader in the market of 100+ seat aircraft, and guarantees the success of these programs over several decades.

A record 1,406 CFM56 engines were delivered by Safran during the year, up 7% on 2011 (1,308). More than 24,000 CFM56 engines have been delivered since the launch of the program. The in-service fleet of CFM56 engines passed the 600 million flying hours mark in 2012 and the engines are used by over 530 customers and operators.

CFM56 engines deliver industry-leading reliability and operational performance.

### ■ High-thrust engines for civil aircraft (long-haul aircraft)

Production of high-thrust engines was up sharply in 2012, with 567 modules delivered compared to 514 in 2011.

#### GE90 family

Safran has an interest of around 24% in this General Electric program and enjoys a sole-source position on the B777, for which it delivered 187 modules in 2012. Production volumes remained upbeat, with Boeing announcing a further ramp-up in production of the 777, from seven aircraft per month in 2012 to 8.3 aircraft per month in first-quarter 2013.

#### GP7200 (engine for the A380)

Safran delivered 62 high- and low-pressure compressor modules in 2012. At the end of the year, the GP7200 was used by three airlines and has been selected for almost 56% of the A380 aircraft for which an engine has already been chosen.

#### GenX

The GenX engines manufactured for the Boeing 747-8 and Boeing 787, respectively GenX-2B and GenX-1B, were certified in 2011. The first 787 fitted with a GenX-1B engine entered into service in April 2012.

A total of 151 compressor modules were delivered in 2012.

#### CF6 – LM6000 family

A total of 167 modules were shipped in 2012.

### ■ Industrial operations

New production plants are currently being built in Commercy and Rochester (United States) for 3D woven composite fan blades, in a bid to adapt our industrial facilities to the increase in production and to the very latest technology.

The launch of the Safran Composites R&T center in Le Bouchet (France) signals further progress in the strategy to pool expertise for the benefit of all Group companies.

Lastly, in 2012 Nippon Carbon Company, Ltd., GE and Safran set up a joint venture to produce and sell silicon carbide continuous fiber (SiC), or Nicalon®, an important material for CFM's next-generation of high-performance LEAP engine components.

### Military aviation

#### ■ M88/Rafale

In 2012, 26 M88 engines were delivered for the Rafale. The in-service fleet clocked up more than 241,000 flying hours during the year. In the first half of 2012, the first "Pack CGP" (total cost of ownership) M88-4E engines were delivered to the French State. This engine model makes it possible to reduce maintenance costs as well as the frequency of inspections for major models, and increases the life of hot and rotating parts.

India has begun exclusive talks with Rafale EIG to purchase 126 aircraft.

#### ■ TP400

The TP400-D6 engine development program entrusted to the EPI consortium (ITP group, MTU Aero Engines, Rolls-Royce and Safran) and chosen to power the European military transport aircraft Airbus A400M, continued to progress satisfactorily during the year. The European Aviation Safety Agency certified the engine in 2011.

The backlog at the end of 2012 stood at 736 engines for the 174 A400M ordered by Airbus Military.

Good progress was made in the A400M program, with 300 hours of functionality and reliability tests performed as a step towards obtaining civil and military certification of the aircraft during first-quarter 2013. The first delivery of the aircraft to the French Armed Forces is slated for the second quarter of 2013, with four deliveries to be made by the end of the year currently in the final assembly phase.

#### ■ Adour

A total of 43 Adour engines were delivered in 2012. The backlog for Adour engines at the end of the year was 88 units, of which 44 were ordered by India for its Hawk fighter plane.

### Helicopter turbine engines

The tentative rally in the global helicopter market observed in 2011 took hold in 2012, with an increase in the number of flying hours per engine and in the total volume of hours under Service-by-the-Hour (SBH) contracts. Net new orders totaled 774 units in 2012 and the backlog at the end of the year stood at 1,359 engines. Deliveries of new equipment rose to 924 production-standard helicopter engines versus 922 in 2011.

Bullish momentum in the offshore oil market was also confirmed in 2012, although austerity measures could act as a brake on military spending in the main developed markets.

Consolidation and internationalization trends continued among major helicopter operators in 2012, with several large-scale acquisitions. In Europe, Avincis was created out of the merger of Spanish firm Inaer and UK firm Bond, while in the US, Air Methods acquired the helicopter operator Sundance.

#### ■ Light helicopters

This segment continued to grow on emerging markets:

- in China during the first half of the year, after local certification was obtained for the Arriel 2D engine, Safran and Avic stepped up their cooperation in the areas of new engine assembly, maintenance and repair. Safran continued to provide technical assistance and industrial support to engine manufacturer Dongan, with a view to delivering the first Ardiden 3c/WZ16 engines for the Z15 helicopter in 2014;
- at the Zhuhai trade show in China, an order was signed for a first series of 20 Arriel 2C engines for the Chinese coastguard. Deliveries began at the end of 2012;
- in Russia, a cooperation agreement was signed in June 2012 with Russian Helicopters for the maintenance of Safran engines used in the new Ka-226T light helicopters and medium twin Ka-62 models operated by the military and the government;
- in September 2012 in Russia, Russian Helicopters sold its first Ka-226T helicopters fitted with two Safran Arrius 2G1 engines to GazpromAvia. The contract covers a total of 18 aircraft.

In summer 2012, Safran enjoyed further success when its new turbo-shaft engine, the TM800, was selected by Eurocopter to power its next-generation X4 helicopter. This new engine benefits from technological advances resulting from Safran's R&T strategy, for example in significantly reducing specific consumption in comparison with the generation currently in service. This will help improve performance (range, payload) and reduce environmental footprint. The plan for the engine's development and certification are aligned with the entry into service of the initial version of the helicopter in 2017.

Lastly, the new Arriel 2 (2E) engine was certified in January 2013. This model will power Eurocopter's twin-engine EC145T2 helicopter, which is expected to come into service at the end of 2013. The certification comes after that of the Arriel 2D model in May 2011, used in Eurocopter's Écureuils helicopters EC130T2 and AS350B3e.

#### ■ Heavy-lift helicopters

Following the launch of successors on two fiercely competitive segments (4- to 6-ton and 6- to 8-ton), attention is now focused on upgrading the 10-ton segment, with the X6 engine (successor to the Super Puma), the new improved Russian Mi-17 model, and the 10-ton Chinese helicopter.

#### ■ Services

In 2012, Safran renewed its Global Support Package contract with the French Ministry of Defence and Civil Security for a period of ten years. Under the terms of this contract "MCO2", Safran undertakes to ensure availability of the 1,408 turbo-shaft engines. Also in 2012, Safran signed a Support-by-the-Hour contract with the German federal police and the Swedish air force.

Another agreement was also signed specifically for the maintenance of RTM322 engines used in NH90 military helicopters delivered to France, the Netherlands, Belgium and Portugal.

At the end of the year, CHC, the world's leading operator in the Oil & Gas segment, signed a Support-by-the-Hour contract for its entire fleet of Makila 2 engines used to power the EC225.

#### ■ Industrial operations

In September 2012, Safran opened the extension of its Xerém plant in the State of Rio de Janeiro, Brazil. This facility houses the new assembly line and repairs for the Makila 2 engine and for the auxiliary power unit (APU) Saphir 20. These engines and units, designed for both civil and military EC225/725 helicopters, will be operated for the Brazilian market and in Latin America more generally.

#### ■ Ballistics and space

Following Safran's April 2011 purchase of SME and its subsidiaries (mainly 85% of Pyroalliance, 50% of Roxel [owner of Roxel France], and 40% of Regulus), the activities of SME and SPS were merged to form Herakles.

Herakles, number one in Europe and number two worldwide<sup>(1)</sup> in solid propulsion technologies, employs more than 3,000 people, including a research and development unit boasting over 600 engineers and researchers.

To effectively merge research teams with testing teams from a functional standpoint, lean manufacturing procedures were rolled out at the end of 2012. MBDA France acquired Roxel France's ramjet<sup>(2)</sup> integration and testing activities. This transaction did not include ramjet solid propulsion boosters or thermo-structural materials activities, businesses which continue to be operated by Roxel.

In the liquid propellant engine segment, six Vulcain engines and five HM7 engines were delivered in 2012.

Seven Ariane 5 satellites were successfully launched in 2012 (versus five in 2011). This marks the European launch vehicle's 53rd consecutive success and confirms the excellent reliability of Ariane.

Safran is also a major contributor to the European launch vehicle Vega. The first test launch in February 2012 from the Kourou Space Center in French Guiana was a big success.

In the industrial applications sector, an agreement was signed with automotive parts manufacturer Autoliv to supply propellants for airbags in cars over the period 2012-2017.

<sup>(1)</sup> Source: Safran.

<sup>(2)</sup> Air-breathing engines particularly suited to power supersonic aircraft over long distances.

## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

/ COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

### 2.1.3.2 AIRCRAFT EQUIPMENT

#### ADJUSTED KEY FIGURES

	2011	2012	Year-on-year change
Quantities delivered			
Power transmission systems	1,815	2,019	11%
A320 thrust reversers	489	489	-
A380 nacelles	104	108	4%
<i>(in € millions)</i>			
Backlog	14,469	14,467	-
Orders recorded during the year	4,642	3,539	-24%
Revenue	3,097	3,691	19%
Recurring operating income	202	287	42%
Profit from operations	202	271	34%
Free cash flow	(19)	38	N/A
Acquisitions of property, plant and equipment	112	140	25%
Research and development			
Self-funded R&D	(159)	(213)	40%
% of revenue	5.1%	5.8%	+0.9 pts
Research tax credit	29	29	-
Self-funded R&D after research tax credit	(130)	(184)	42%
Capitalized expenditure	81	126	66%
Amortization and impairment of R&D expenditure	(55)	(32)	-42%
Impact on profit from operations	(104)	(90)	-13%
% of revenue	3.4%	2.4%	-1.0 pts
Headcount <sup>(1)</sup>	21,543	22,874	6%

(1) Headcount at December 31.

Aircraft Equipment activities can be split into four key sectors that contribute to business line revenue as follows:

Sector	% of business line revenue	
	2011	2012
Landing and aircraft systems	47%	47%
Engine systems and equipment	27%	27%
Electrical systems and engineering	24%	24%
Other equipment	2%	2%

## REVIEW OF AIRCRAFT EQUIPMENT OPERATIONS IN 2012

The Aircraft Equipment segment reported full-year 2012 revenue of €3,691 million, up 19% (12.5% on an organic basis) compared to the year-ago period.

Increases in OEM production rates (notably the Boeing 787 and Airbus A330 and A380 programs) and a recovery of the regional jets market drove revenue increases in all activities. The nacelle activity recorded a significant increase in small nacelles deliveries (up 24%), as well as higher deliveries of A380 nacelles and of A330 thrust reversers. The harnessing and landing gear activities saw a robust performance driven by a production ramp-up in all their product lines.

On a full-year basis, aftermarket service revenue grew by 9.9% in euro terms in 2012, driven by growth in carbon brakes where the Group continues to win market share.

Full-year 2012 recurring operating income was €287 million (7.8% of revenue), up 42% compared to €202 million in the year-ago period (6.5% of revenue). This significant improvement was driven by a favorable mix/volume impact and productivity gains on harnessing and landing systems with the ramp-up of OEM volumes. The increased activity in carbon brakes and auxiliary power transmission spares also contributed to this performance. Currency hedging had a positive impact on profitability.

## COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

### Landing and aircraft systems

To meet the demand for more integrated equipment offerings from both aircraft manufacturers and airlines, Safran and Honeywell set up a joint venture in June 2012 to jointly develop and sell an innovative new electric Green Taxiing System for aircraft.

The aim is to fit both in-service and new aircraft with this system as from 2016.

Promotional campaigns continue to be rolled out for airline companies with positive feedback in terms of both OEM and retrofits.

### Wheels and brakes

At December 31, 2012, more than 5,500 aircraft with seating capacity of 100 or more were equipped with Safran carbon brakes. This represents a market share of close to 50%<sup>(1)</sup>, a rise on 2011.

Safran brakes had been selected for 891 Boeing 737NG aircraft (cumulative basis) at December 31, 2012 (700 at end-2011), including 391 aircraft in connection with retrofit projects. A total of 428 of these 891 aircraft are already in service. The remaining 463 are expected to come into service in the near future.

Ethiopian Airlines' first Boeing 787 came into service in September 2012, fitted with electric brakes and wheels manufactured by Messier-Bugatti-Dowty. Ethiopian Airlines is the launch customer for Messier-Bugatti-Dowty electric brakes and has already ordered ten Boeing 787s which will be equipped.

In September 2012, an agreement was signed with Eurocopter as a single-source supplier of wheels and brakes for its next-generation X4 helicopter. Safran will provide the four wheels and two electric brakes. The electric brakes will be designed so as to reduce weight

while retaining excellent friction properties and offering the simplified maintenance needed to meet Eurocopter's in-service performance objectives for this next-generation rotorcraft.

Also in September 2012, construction work began on a plant in Malaysia that will manufacture carbon brakes.

### Landing gear

In all, 1,191 landing gear units were delivered by Safran in 2012, 100 more than in 2011.

In January 2012, Safran delivered the first production-standard main landing gear shipset for the Airbus A400M. Selected in 2004, Safran is responsible for the design, development, manufacture, integration and support of the A400M landing system.

The first main A350 landing gear for aircraft testing was also delivered.

Safran continued to upgrade its production facilities in the year, chiefly in Bidos (France), Montreal (Canada), and Gloucester (UK). These sites will be housing all production of parts for the 787 and A350.

Throughout 2012, Safran signed landing gear maintenance and repair contracts for the Airbus fleets operated by Aegean Airlines, Cyprus Airways, Maximus Air, EgyptAir, South African Airways Technical and Qatar Airways.

### Ventilation systems

Through Technofan, Safran was selected by Embraer to supply the ventilation system on its new KC-390 military cargo plane, thereby confirming its growing foothold on the market for next-generation aircraft.

### Engine systems and equipment

### Nacelles and thrust reversers

A total of 108 A380 nacelles were delivered in 2012, compared to 104 in 2011.

Safran is responsible for the entire nacelle (including integration on the engine) for the A320neo powered by CFM's LEAP engines. In 2012, an important milestone was reached when production began on the first full-scale components. These components were produced with composite and metallic materials, applying the same manufacturing process that will be used in its series production of A320neo nacelles. The components were subsequently assembled at the company's Le Havre plant in France, enabling their integration to be assessed and the industrial processes and ergonomic aspects of the production line to be validated.

Another major advance was recorded in 2012 for the LEAP-1C nacelle to be used in China's future C919 aircraft, with the completion of the preliminary design review (PDR). Safran will supply the complete nacelle for the C919 through Nexcelle, a subsidiary jointly owned with Middle River Aircraft Systems (General Electric).

Safran is also involved in three nacelle development projects in the business aviation sector (Silvercrest, Learjet 85, and Passport) on behalf of GE for the Bombardier Global 7000/8000.

(1) Source: Safran.

## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

/ COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

Safran reported a 7% rise in aftermarket services, and signed a services contract with Rolls-Royce for nacelles used in the Trent 900 engines powering British Airways' A380 fleet. This marks a long-term global care package commitment by the two aerospace equipment manufacturers on a key component of the Airbus flagship jetliner. The contract, which was signed at the Farnborough airshow in July 2012, covers a period of 25 years beginning in 2013, during which Safran will provide complete support on the nacelles it supplies for the Rolls-Royce Trent 900s that power British Airways' fleet of A380s.

### ■ Power transmissions

In 2012, Safran made its 30,000<sup>th</sup> delivery of power transmission. Safran is a major player in airborne applications of electrical power and supplies an installed base of more than 24,000 CFM56 engines and over 5,000 engines in the Rolls-Royce Trent and BR700 families.

Besides these programs, Safran is also developing power transmission for the LEAP and Trent XWB engines used in the A350.

### Electrical systems and engineering

#### ■ Power electronics and transmission systems

Safran can call on its engineering and research teams to develop cutting-edge electrical solutions for all the energy needs of an aircraft. Compared to the current architecture combining electrical, hydraulic, pneumatic and mechanical networks, the "more electric" aircraft offers optimum performance, superior reliability, a lighter carbon footprint and significantly lower production and maintenance costs.

Brazilian aircraft manufacturer Embraer selected Safran for its upcoming KC-390 military transport aircraft, confirming Safran's leadership in the "more electric" aircraft market. Safran was first selected to work on this program in 2011, in order to supply the aircraft's power transmission system. Safran will supply the power transmission system (primary and secondary power distribution and emerging electrical power generation) as well as the complete power transmission system for the KC-390. In 2012, Embraer once again chose Safran to supply the horizontal stabilizer trim system (HSTS)<sup>(1)</sup> for this aircraft. The maiden flight of this military transport and tanker aircraft is slated for 2014.

Along the lines of its wish to continue developing in this segment, in October 2012 Safran announced that it had entered into a definitive agreement to purchase Goodrich Electrical Power Systems (GEPS). By adding new capabilities in electrical technologies, this transaction will lead to the creation of a world leader in aerospace electrical power systems, and mark a decisive breakthrough in Safran's "more electric" aircraft strategy. The acquisition will also allow Safran to continue to develop new leading-edge solutions for the electrification of aircraft equipment and closer integration of electrical systems with the aircraft engine.

### ■ Electrical wiring and engineering

In June 2012, Shanghai Saifei Aviation EWIS Manufacturing Co. Ltd, a joint venture between Safran and COMAC, began operations. Specializing in research and production of wiring for the aerospace market in the Asia-Pacific region, the venture will be responsible for running the EWIS program for COMAC's C919 aircraft.

The wiring contract with Lockheed Martin for the F16 was extended until the end of 2015.

Two major industrial operations were carried out in the year:

- in Mexico, a new plant opened in Chihuahua manufacturing wiring systems for civil and military aircraft and helicopters. The plant is designed to enable the Group's existing facilities to meet the ramp-up of production for the Boeing 787;
- in the US, production lines and offices of the North American division were transferred from Corinth to Denton (both in Texas).

In the engineering business, 2012 highlights include:

- Safran's first certification for Embraer in several technical areas;
- Safran's renewal as a preferred supplier for the Airbus in 2012 to 2016.

(1) The horizontal stabilizer trip system enables the pilot to control the horizontal stabilizer trim as efficiently as possible, to keep the aircraft's attitude stable, while also minimizing the aerodynamic control forces to fly the plane.

## 2.1.3.3 DEFENCE

### ADJUSTED KEY FIGURES

	2011	2012	Year-on-year change
Quantities delivered			
Inertial units	369	454	23%
Felin systems	3,900	4,000	3%
<i>(in € millions)</i>			
Backlog	2,704	2,380	-12%
Orders recorded during the year	1,120	1,142	2%
Revenue	1,264	1,315	4%
Recurring operating income	58	81	40%
Profit from operations	51	81	60%
Free cash flow	(80)	13	N/A
Acquisitions of property, plant and equipment	58	47	-19%
Research and development			
Self-funded R&D	(118)	(117)	-1%
% of revenue	9.3%	8.9%	-0.4 pts
Research tax credit	32	36	12%
Self-funded R&D after research tax credit	(86)	(81)	-6%
Capitalized expenditure	24	22	-8%
Amortization and impairment of R&D expenditure	(7)	(8)	14%
Impact on profit from operations	(69)	(67)	-3%
% of revenue	5.5%	5.1%	-0.4 pts
Headcount <sup>(1)</sup>	6,587	7,182	9%

(1) Headcount at December 31.

Defence activities can be split into three key sectors that contribute to business line revenue as follows:

Sector	% of business line revenue	
	2011	2012
Optronics	55%	53%
Avionics	38%	38%
Electronics and critical software (Safran Electronics)	7%	9%

### REVIEW OF DEFENCE OPERATIONS IN 2012

Full-year 2012 revenue was up 4.0% at €1,315 million, or up 1.0% on an organic basis, compared to the previous year. Avionics revenue grew on the back of higher deliveries of Mistral seeker kit modules and a solid inertial navigation activity. This trend was partially offset by softer revenue in optronics given the tough year-on-year comparison base for the long-range infrared goggles on export markets. Deliveries of portable optronic devices were down in the year, as a consequence notably of US military budget contraction. Safran Electronics benefited from the increasing deliveries of its digital engine control system (FADEC) for the CFM56 engines.

Full-year 2012 recurring operating income at €81 million (6.2% of revenue) was up 40% (up 27.6% organically) compared to €58 million (4.6% of revenue) in full-year 2011. The expected turnaround of profitability in avionics resulted from a combination of a favorable volume, price and mix effect, a significant reduction in SG&A, a drastic reduction in manufacturing costs and an improvement in production quality. Optronics continued to deliver solid profits, although lower than last year, thanks to robust deliveries of the Felin soldier integrated equipment.



## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

/ COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

### COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

#### Optonics

##### ■ Modernizing infantry

In 2012, deliveries of the Felin infantry combat system to the French Army continued in line with contractual arrangements, with ten regiments equipped by the end of the year. The units outfitted with the system include mountain infantry battalions and a parachute regiment as well as infantry regiments. Felin continues to attract interest outside France and good feedback from its use in overseas operations in Afghanistan should further cement its reputation. The RIF NG next-generation soldier information network which offers an extended network range, was put through its paces in several tests carried out under real-life conditions.

##### ■ Portable optronic equipment, sight equipment and drones

#### Portable optronic equipment

2012 was a successful year for portable optronics, confirming the front-ranking position of Safran technology despite a decline in the market driven by the withdrawal of armed forces from overseas military operations. Safran also landed the Long Range Thermal Imager contract with the UK Ministry of Defence. This brings the number of JIM-LR multifunction goggles in service and on order across the globe to 5,000, including 2,000 for the French armed forces.

2012 also witnessed success for Sterna, a compact precision target locating system for armed forces, featuring a North Seeker using hemispheric resonator gyro (HRG) technology. The first order was received from the US Army, which intends to swiftly put the equipment to use in operations.

#### Onboard optronic equipment

Business remained brisk in this segment with a high order intake.

In the shipbuilding market, the growing popularity of the EOMS NG<sup>(1)</sup> surveillance system and gun fire control device for surface vessels was confirmed with orders for French and Russian Landing Helicopter Docks (LHDs). These systems will also be used in upgrading the French Navy's six Floréal vessels.

Safran was chosen by the Ukrainian Navy to supply Vigy Observer watchtowers for its patrol vessels.

In the periscope business, Safran continued to develop optronic surveillance masts for Barracuda nuclear attack submarines.

In the airborne segment, Safran and Thales worked together within the scope of their Optrolead joint venture to prepare a bid for the program to modernize the Atlantique 2 maritime patrol craft.

For ground forces, Safran delivered further SAVAN 11 devices for bullet-proof vehicles for the Saudi Army and in conjunction with MBDA, began to develop firing stations for medium-range missiles.

#### Drones

Intensive use of the Sperwer drone in Afghanistan led to orders from SIMMAD<sup>(2)</sup> for numerous spare parts within the scope of maintenance operations. In parallel, the French defence procurement agency (DGA) informed Safran of its order of five further drones to round out existing in-service capabilities.

#### Avionics

##### ■ Navigation systems and sensors

2012 confirmed the operational success of the new Coriolis production plant in Montluçon, which now houses production of all gyrolasers and hemispherical resonators, a core component of Sagem's inertial units. It also integrates these units at the end of the process. Safran invests heavily in this extremely high-tech business.

Hemispherical resonator gyro (HRG) technology confirmed its competitive edge with the successful launch of BlueNaute at the Euronaval trade show. BlueNaute is a next-generation attitude and heading reference system for shipborne applications. Thanks to HRG's excellent reliability, BlueNaute signals a major improvement in maintainability and total cost of ownership compared with the previous generation of maritime navigation equipment.

Further afield, the RS Alliance joint venture created by Sagem, Rosoboronexport and ITT to serve the market for gyro-based inertial navigation for planes carrying weapons in Russia, landed its first major contract.

##### ■ Seekers and guidance systems

In 2012, Safran continued to develop its range of AASM Modular Air-to-Ground Weapons, after the excellent performance of GPS/inertial guidance models with or without infrared imaging in operations (Operation Harmattan in Libya). Three qualification firing tests of the new laser-guided missile were successfully completed on the Rafale, confirming the superior performance expected by ground forces and paving the way for production-standard weapons deliveries.

##### ■ Flight control systems

Several milestones were reached in 2012, testifying to Sagem's expertise in electric flight control systems:

- the first AP180 autopilot prototypes were delivered and first flights made on the AgustaWestland AW169 helicopter, while integration continued on the AW149 and AW189;
- the preliminary design review (PDR) of the horizontal stabilizer trim system which Sagem produced for Embraer's KC 390 program was completed;
- the preliminary design review of the electric thrust reverser actuation system was completed for the COMAC C919 (Sagem is responsible for the actuation system);

(1) EOMS NG: Electro-Optical Multifunction System.

(2) SIMMAD: French Ministry of Defence aircraft maintenance and procurement agency.



## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

### / COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

- technological research projects continued apace, focusing on flight control systems, onboard electronics and an optronics program for the future X4 Eurocopter.

#### ■ Electronics and critical software

Two joint ventures of significant importance for the future of Safran Electronics were set up in 2012. Firstly, Fadec Alliance Inc, a joint venture set up by GE Aviation and Fadec International (itself a joint venture between Sagem and BAE) to supply next-generation Fadec 4 (Full Authority Digital Engine Control) devices to be fitted to the LEAP and Passport engines. Secondly, Munich-based

Aerospace Embedded Solutions GmbH, created by Sagem and the German engine manufacturer MTU and combining teams and resources to develop engine control devices.

Numerous in-progress projects have successfully completed important milestones:

- the first brake actuator controllers and extended landing gear for the Airbus 350 were delivered in the year;
- the first A400M engine control devices were supplied ready to be put in to service;
- the first prototype of Fadec 4 was delivered to GE for software integration.

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### 2.1.3.4 SECURITY

#### ADJUSTED KEY FIGURES

	2011	2012	Year-on-year change
Quantities delivered			
Smart cards (millions of units)	638	630	-1%
Biometric terminals	221,000	230,000	4%
<i>(in € millions)</i>			
Backlog	1,334	1,737	30%
Orders recorded during the year	1,320	1,862	41%
Revenue	1,249	1,546	24%
Recurring operating income	139	145	4%
Profit from operations	116	120	3%
Free cash flow	(61)	11	N/A
Acquisitions of property, plant and equipment	42	46	10%
Research and development			
Self-funded R&D	(111)	(124)	12%
% of revenue	8.9%	8%	-0.9 pts
Research tax credit	13	12	-8%
Self-funded R&D after research tax credit	(98)	(112)	14%
Capitalized expenditure	16	14	-13%
Amortization and impairment of R&D expenditure	(2)	(3)	50%
Impact on profit from operations	(84)	(101)	20%
% of revenue	6.7%	6.5%	-0.2 pts
Headcount <sup>(1)</sup>	7,530	7,727	3%

(1) Headcount at December 31.

Security activities can be split into three key sectors that contribute to business line revenue as follows:

Sector	% of business line revenue	
	2011	2012
Identification	58%	63%
e-Documents	25%	22%
Detection	17%	15%

## REVIEW OF OPERATIONS IN 2012 AND OUTLOOK FOR 2013

/ COMMENTS ON THE GROUP'S PERFORMANCE IN 2012 BASED ON ADJUSTED DATA /

### REVIEW OF SECURITY OPERATIONS

The Security activity reported full-year 2012 revenue of €1,546 million, up 24% compared to the year-ago period. On an organic basis, moderate growth of 4.6% reflects increasing momentum in biometric identification in some emerging countries and in e-Documents activities, partially offset by temporary adjustments of government budgets in other countries. The e-Documents activity continued to gain traction in the high-end banking market in Latin America as the technology migrates to EMV standard (Europay, Mastercard and Visa) with higher unit prices. MorphoTrust grew its contribution showing strong US Federal sales and higher-than-expected volumes in driving license programs and enrollment services. Detection had a flat performance reflecting renewed Transportation Security Administration (TSA) orders for large CTX devices across the United States being offset by lower Trace equipment deliveries.

Full-year 2012 recurring operating income increased by 4% at €145 million (9.4% of revenue) compared to €139 million in the year-ago period. The relatively slight incremental contribution was driven by the migration to high-end products in e-Documents and the increasingly positive contribution of MorphoTrust, fully achieving the synergies expected at the start of integration. This performance was partially offset in biometric identification (outside the former L-1 ID businesses) which suffered from an unfavorable contract mix. The detection business recorded solid profits, though somewhat below last year's level, notably due to higher R&D expenses in preparation of a major breakthrough in liquid explosives detection and the integrated access control checkpoint in airports.

The 12-month contribution of L-1 Identity Solutions (MorphoTrust and non-proxy businesses) was €335 million in revenue and €48 million in recurring earnings before interest, taxes, depreciation, and amortization (EBITDA). In USD terms, revenue was USD 431 million and recurring EBITDA USD 62 million (14% of sales).

### COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

#### Identification systems

In 2012, Safran iris and fingerprint-based personal authentication technologies were each ranked number one by the US National Institute of Standards & Technology (NIST)<sup>(1)</sup>. The fingerprint identification algorithms earned praise in particular for their high degree of accuracy and were ranked as the leading automated fingerprint identification technology.

#### ■ Major identity management systems

Orders taken for identity management systems totaled over €1 billion in 2012, up 45% on 2011 based on a constant scope of business (i.e., excluding activities previously carried out by L-1-ID). In February, a major ten-year contract was signed with Chile's National Records Administration (*Servicio de Registro Civil e Identificación*) to produce e-ID cards and e-passports under the country's new

identification and ID and travel document issuance system. Safran will be responsible for end-to-end secure ID management and document production and will also supply enrollment stations for capturing biometric data (photos and fingerprints). For additional security, the ID cards and passport data pages will be manufactured in highly secure production sites using polycarbonate, the most resistant material on the market today.

In May 2012, Safran also landed the contract to supply e-passports in Panama, conferring additional credentials on the Group for future electronic ID bidding processes in Latin America.

In September, Safran was chosen to supply Kenya's Independent Electoral and Boundaries Commission with a comprehensive national electoral enrollment system for the March 2013 general elections. It was also asked to prepare electoral lists within the space of a few weeks. All electoral enrollment stations were delivered and came into service less than two months after the contract was signed.

In the US, Safran is the leading supplier of identity management solutions, with its system for issuing driving licenses currently used in 42 of 50 states. Several states (Louisiana, Mississippi, Ohio and Vermont) renewed their commitment to Safran in 2012 for the replacement and upgrade of their driving license issuance systems. In 2013, Safran and the state of Tennessee joined forces to create self-service kiosks for renewal of driving licenses. Safran also supplies all 50 US states with background vetting systems and other identification services through 1,200 local service centers, as well as biometric identification systems for the US Federal Bureau of Investigation (FBI), Department of Defense, and State Department.

The Netherlands opted for Safran's vehicle registration document production systems and ordered extensions for Dutch passports. Two major contracts were also signed in Finland to supply passports and driving licenses, along with a driving license agreement in Sweden.

In the United Arab Emirates, Group customer Emirates Identity Authority (EIDA) ordered 10 million additional ID cards. In March, Morpho landed the Egyptian contract for upgrading the country's ID card system. The contract was previously held by a competitor for 15 years.

On December 31, the Unique Identification Authority of India delivered over 240 million Indian residents their unique identification number from its Aadhaar biometric system which uses Morpho technology. The first biometric terminals manufactured by Safran in India were also sold under this project in 2012.

#### ■ Border control

The European Commission awarded a consortium led by Morpho a contract to maintain the European Schengen Visa Information System (VIS).

The PARAFE (*Passage Automatisé Rapide Des Frontières Extérieures*) automatic border control e-gates, already in service at Orly and Roissy airports in Paris and which recorded their millionth passenger in July, have been installed at Marseille Provence airport.

(1) Source: NIST – Evaluation of Latent Fingerprint Technologies: Extended Feature Sets – Evaluation #2 – 2012.  
NIST – IRES III – Performance of Iris Identification Algorithms – 2012.

### ■ Criminal identification

Several European countries ordered extensions or adaptations of their Automated Fingerprint Identification System (AFIS), which can link up with systems in other countries that are members of the Prüm treaty. This helps to reinforce cross-border cooperation in the fight against crime, illegal immigration and terrorism.

Around ten next-generation (creations or extensions of existing systems) Morpho Face Investigate™ systems (automated finger and palm identification solutions) were sold in all four corners of the globe, including to the police forces of Sweden and Peru.

AFIS devices were also ordered for the Orange County Sheriff's Department and for the Colorado Bureau of Investigation (CBI) in the US.

Lastly, the fingerprint identification module of the FBI's next-generation identification system (NGIS) was successfully delivered to the customer's satisfaction. A six-year maintenance contract was also signed.

### ■ Biometric enrollment services

In the US, the Transportation Security Administration (TSA) selected Safran as prime contractor for its Universal Enrollment Service (UES) aimed at individuals requiring security enrollment and registration (verification of biometric and background data for individuals seeking access to critical premises or segments of the transportation system).

### ■ Biometric equipment

The compact, high-speed fingerprint scanner, MorphoTop™, was certified by the FBI during the year. This certification covers both tenprint rolled or flat fingerprint capture for background checks, civil enrollment, criminal booking or personal identity verification purposes.

### ■ Other activities

In road safety, the first automatic average speed control devices were brought into operation in France at the end of the year.

Also at the end of the year, *La Française des Jeux* signed an amendment to its 2009 framework agreement under which 34,000 next-generation Smart terminals were ordered. These terminals will ultimately replace all existing gaming terminals.

### e-Documents

The e-documents business neared double-digit growth in value terms in 2012, amid fierce international competition. Growth in the bank cards segment outperformed the market owing chiefly to the continued expansion of the card personalization center network.

The Group's strategy of rolling out this technology offering to all geographical regions helped it win a large number of new clients and bolster its positions with major multinational telecommunications groups and banks, especially in Latin America and Europe.

2012 also saw the launch of the SIM NFC (Near Field Communication) technology in Asia (South Korea) and in Europe, where Morpho began volume deliveries in the second half of the year.

Vigorous growth continued in the bank cards segment, powered by the migration from magnetic cards to smart cards compliant with EMV (Europay MasterCard Visa), particularly in Latin America and Eastern Europe, as well as by the migration to Contact and Contactless Dual Interface technology in Western Europe.

During the year, the e-documents business continued to enhance its offering and extend its geographic footprint, through two selective acquisitions. Cassis International (Singapore/Malaysia) was acquired in July and adds Trusted Services Management (TSM) technology to Safran's service offering as well as a bank card personalization center in Malaysia. ABN Europe (France and Czech Republic) was acquired in December, adding a card personalization center in France and a bank card production and personalization center in the Czech Republic.

### Detection

In December, Safran acquired General Electric's residual 19% stake in Morpho Detection Inc. (MDI). This transaction results from the exercise of an option provided for in the 2009 agreements concerning Safran's purchase from General Electric of an 81% stake in MDI. The acquisition gave Morpho USA a 100% stake in Morpho Detection Inc. and was financed by Safran's available cash.

Other key events of 2012 are discussed below.

### ■ Tomography and diffraction-based detection systems

A non-exclusive framework agreement spanning several years was signed with the US Transportation Security Administration (TSA) for the purchase of explosives detection systems. Fixed-price orders under this agreement could represent USD 528 million over the next five years. Safran will supply its medium-throughput CTX 9800 devices and associated equipment and services. The first order received was for 37 systems, to be put into service in early 2013.

The Israel Airport Authority (IAA) chose Safran's "System of Systems" to meet the country's stringent detection requirements for checked baggage at Ben Gurion international airport in Tel Aviv. This system consists of an X-ray diffraction-based XRD 3500™ explosives detection system fully integrated with one or more CTX 9000 DSi™ computer tomography-based explosives detection systems. This "System of Systems" significantly reduces false alarms and the resultant costly and time-consuming manual inspections of bags.

■ **Spectrometry-based trace detection equipment**

Certification was obtained for explosives detection devices, whether mobile (Itemiser desktop, certified for air cargo screening in the UK)

or portable (Mobile Trace, certified for use in airports in France), used to control checked or cabin baggage and light airfreight (express international transport of packages for businesses).

2.2

## COMMENTS ON THE CONSOLIDATED FINANCIAL STATEMENTS

### 2.2.1 CONSOLIDATED INCOME STATEMENT

(in € millions)	2011	2012	Year-on-year change
<b>Revenue</b>	<b>11,658</b>	<b>13,615</b>	<b>+16.8%</b>
Other operating income and expenses	(10,794)	(12,345)	
<b>Recurring operating income</b>	<b>864</b>	<b>1,270</b>	<b>+47.0%</b>
Other non-recurring operating income and expenses	(29)	(56)	
<b>Profit from operations</b>	<b>835</b>	<b>1,214</b>	<b>+45.4%</b>
Financial income (loss)	(150)	535	
Share in profit from associates	10	19	
Income tax expense	(201)	(442)	
Profit from continuing operations	494	1,326	
Profit from discontinued operations	3	-	
Profit (loss) for the period attributable to non-controlling interests	(19)	(24)	
<b>PROFIT FOR THE PERIOD ATTRIBUTABLE TO OWNERS OF THE PARENT</b>	<b>478</b>	<b>1,302</b>	

#### CONSOLIDATED REVENUE

Consolidated revenue climbed 16.8% year-on-year, to €13,615 million from €11,658 million in 2011.

The difference between adjusted revenue and consolidated revenue is due to the exclusion of foreign currency derivatives from the adjusted figures. Neutralizing the impact of foreign currency hedging added €55 million to consolidated revenue in 2012 while it decreased consolidated revenue by €78 million in 2011. This year-on-year change in the revenue impact of foreign currency hedging results from movements in average exchange rates with regard to the effective hedged rates for the period on the portion of foreign currency denominated flows hedged by the Group. For example, the hedged EUR/USD rate in 2012 was 1.32, against an annual average rate of 1.29, which explains why netting out the effect of foreign currency hedging gives a consolidated revenue figure that is higher than adjusted consolidated revenue. Year-on-year changes in revenue excluding the impact of adjusting items are analyzed below (see section 2.1.2).

#### RECURRING OPERATING INCOME

Recurring operating income rose 47% to €1,270 million in 2012 from €864 million in 2011. The difference between recurring operating income and adjusted recurring operating income, which came in at €1,471 million, reflects:

- amortization charged against intangible assets measured when allocating the purchase price for the May 2005 Sagem-Snecma business combination (€156 million in 2012 versus €158 million in 2011) and in connection with other business combinations (€97 million in 2012 versus €71 million in 2011);
- a positive €52 million impact resulting from foreign currency transactions (negative impact of €96 million in 2011).

Changes in recurring operating income, excluding the impact of adjusting items, are analyzed below (see section 2.1.2).

## PROFIT FROM OPERATIONS

Profit from operations came in at €1,214 million for the year, compared to €835 million in 2011. Profit from operations includes recurring operating income of €1,270 million in 2012 (€864 million in 2011) and a non-recurring loss of €56 million (€29 million in 2011).

Changes in profit from operations, excluding the impact of adjusting items, are analyzed below (see section 2.1.2).

## FINANCIAL INCOME (LOSS)

The Group reported financial income of €535 million in 2012, compared to a financial loss of €150 million in 2011.

Two items account for the difference between consolidated and adjusted financial income (loss) for 2012:

- changes in the fair value of unwound foreign currency hedging instruments which had a positive impact of €742 million in 2012 compared to a negative impact of €11 million in 2011. This amount is recognized in full in financial income (loss) in the consolidated financial statements. However, the impact the changes in fair value of unwound foreign currency hedging instruments is neutralized in the adjusted financial statements;
- the net negative impact of foreign currency hedging on the portion of foreign exchange denominated flows hedged by

the Group totaling €55 million in 2012 (positive impact of €76 million in 2011). This impact is recognized in financial income (loss) in the consolidated financial statements, but within profit from operations (mostly in revenue) in the adjusted income statement.

## INCOME TAX EXPENSE

Income tax expense in full-year 2012 came in at €442 million compared to €201 million in 2011. The increase in this caption chiefly results from the €1,073 million rise in profit before tax between 2011 and 2012. The rise in profit before tax results partly from changes in the Group's business (€379 million rise in profit from operations - see section 2.1.2) and partly from movements in foreign exchange gains and losses between 2011 and 2012, which represented a net gain of €709 million in 2012 versus €19 million 2011.

## CONSOLIDATED PROFIT ATTRIBUTABLE TO OWNERS OF THE PARENT

This caption amounted to €1,302 million for 2012 and €478 million for 2011.

## 2.2.2 SIMPLIFIED CONSOLIDATED BALANCE SHEET AT DECEMBER 31, 2012

The simplified consolidated balance sheet at December 31, 2012 presented below is taken directly from the consolidated financial statements included in section 3.1 of this document.

(in € millions)	Dec. 31, 2011	Dec. 31, 2012
<b>Assets</b>		
Goodwill	3,126	3,078
Property, plant and equipment and intangible assets	5,984	6,476
Other non-current assets	762	788
Derivatives (positive fair value)	279	647
Inventories and work-in-progress	3,799	4,131
Trade and other receivables	5,005	5,025
Other current assets	316	597
Cash and cash equivalents	1,431	2,193
<b>TOTAL ASSETS</b>	<b>20,702</b>	<b>22,935</b>
<b>Equity and liabilities</b>		
Share capital	5,122	6,228
Provisions	2,438	2,579
Borrowings subject to specific conditions	682	670
Interest-bearing financial liabilities	2,445	3,175
Derivatives (negative fair value)	658	225
Other non-current liabilities	917	1,135
Trade and other payables	8,348	8,767
Other current liabilities	92	156
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>20,702</b>	<b>22,935</b>

## 2.2.3 CHANGE IN NET DEBT

The year-on-year change in the Group's net debt breaks down as follows:

<i>(in € millions)</i>	2011	2012
<b>Cash flow from operations</b>	<b>1,200</b>	<b>1,702</b>
Change in working capital	47	(85)
Acquisitions of property, plant and equipment	(352)	(419)
Acquisitions of intangible assets	(363)	(634)
<b>Free cash flow</b>	<b>532</b>	<b>564</b>
Dividends paid	(317)	(300)
Divestments/acquisitions of securities and other	(1,236)	(199)
<b>NET CHANGE IN CASH AND CASH EQUIVALENTS</b>	<b>(1,021)</b>	<b>65</b>
Net debt at January 1	24	(997)
<b>Net debt at December 31</b>	<b>(997)</b>	<b>(932)</b>

Cash flow from operating activities is calculated by taking profit or loss before tax and adjusting for income and expenses with no cash impact, for example net charges to depreciation, amortization and provisions and changes in the fair value of hedging instruments not yet unwound at the end of the reporting period<sup>(1)</sup>. The Group's ability to finance working capital requirements, acquisitions of property, plant and equipment and intangible assets and dividends out of operating activities rose by €502 million over the year, from €1,200 million in 2011 to €1,702 million in 2012.

Operations generated €564 million of free cash flow (38% of recurring operating income). The net debt position was €932 million at December 31, 2012 compared to €997 million at December 31, 2011.

Free cash flow generation of €564 million results from cash from operations of €1,702 million partially offset by an increase in working capital requirements of €85 million – very moderate considering the rise in production volumes – and R&D spend and industrial investments higher respectively by 37% and 19%. Good progress was made in containing working capital requirements in the second half of 2012, despite overdue payments from the French Ministry of Defence amounting to €164 million at the end of the year.

Major cash outflows in the year were a 2011 final dividend payment (€0.37 per share) as well as an interim 2012 dividend payment (€0.31 per share) for a total of €283 million, in addition to acquisitions (principally €90 million for the 19% stake in Morpho Detection Inc. which GE had retained in 2009, and €24 million for an additional 10% in Sofradir, the subsidiary specialized in infrared matrices, jointly owned with Thales). Net proceeds of the sale to employees of treasury shares upon implementation of the leveraged employee shareholding plan were €118 million in 2012.

The February 9, 2012 issue of USD 1.2 billion in senior unsecured notes on the US Private Placement (USPP) market was maintained in US dollars and no foreign exchange swaps were taken out in this respect. Changes in the euro value of this issue had a negative impact of €6 million on the Group's net debt at December 31, 2012.

As of December 31, 2012, Safran had cash and cash equivalents of €2.2 billion and €2.55 billion of secured and undrawn facilities available.

The gearing ratio was 15% at end-2012 versus 19.5% one year earlier.

<sup>(1)</sup> See section 3.1, "Consolidated statement of cash flows".

## 2.3

# COMMENTS ON THE PARENT COMPANY FINANCIAL STATEMENTS

The financial statements of Safran SA for the year ended December 31, 2012 were prepared using the same accounting principles as those used for the 2011 parent company financial statements.

Safran decided that the assets and liabilities of its subsidiary Sagem Télécommunications would be transferred to Safran SA with effect from August 28, 2012, based on their net carrying amount. This transaction generated a €2.4 million deficit which was recognized in goodwill and allocated to a property "off-the-books", i.e., without adjusting any carrying amounts in the accounts of Safran.

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## 2.3.1 SAFRAN SA INCOME STATEMENT

(in € millions)	2011	2012
Revenue	243	314
Other operating income and expenses	(356)	(443)
Loss from operations	(113)	(129)
Financial income	393	732
Non-recurring items	69	(5)
Income tax benefit	4	167
<b>PROFIT FOR THE PERIOD</b>	<b>353</b>	<b>765</b>

Revenue came in at €314 million in 2012 versus €243 million in 2011, and chiefly includes billings of general assistance services provided by the parent company to its subsidiaries, as well as amounts billed in respect of rent, employees, IT services and miscellaneous services related to projects managed by the parent company on behalf of all of its subsidiaries. The €71 million increase in revenue in 2012 results primarily from the development of research projects and from the growth in volume of IT services carried out on behalf of subsidiaries and rebilled to those companies.

Other operating income and expenses represented a net expense of €443 million in 2012 and €356 million in 2011. The increase in other operating expenses in 2012 stems mainly from the rollout of Group-wide projects and from the rise in the number of Safran SA employees following the implementation and completion of projects to upgrade the Group's administrative and support functions.

Loss from operations totaled €129 million in 2012 and €113 million in 2011.

Safran SA reported financial income of €732 million in 2012 and €393 million in 2011. This figure mainly includes dividends received

from subsidiaries for €574 million (€385 million in 2011), interest income of €39 million (€5 million in 2011), foreign exchange gains amounting to €72 million (foreign exchange losses of €32 million in 2011), and net reversals from provisions for impairment of financial assets or exchange losses totaling €47 million (€35 million in 2011).

The Company reported a non-recurring loss of €5 million in 2012 and €69 million in 2011.

The income tax line represented a benefit of €191 million under the Group's tax consolidation regime (benefit of €85 million in 2011). This tax benefit chiefly results from the absorption by Safran of Sagem Télécommunications, which had been involved in loss making activities divested several years ago. This benefit also includes a net charge to the provision for the transfer of the tax saving relating to the French tax group from Safran SA to its loss-making subsidiaries, in an amount of €24 million (€81 million in 2011).

On account of the above, profit for the year came in at €765 million, compared to €353 million in 2011.

## 2.3.2 SAFRAN SA SIMPLIFIED BALANCE SHEET AT DECEMBER 31, 2012

<i>(in € millions)</i>	Dec. 31, 2011	Dec. 31, 2012
<b>Assets</b>		
Non-current assets	9,460	9,462
Cash and cash equivalents and marketable securities	1,198	1,861
Other current assets	1,768	2,144
<b>TOTAL ASSETS</b>	<b>12,426</b>	<b>13,467</b>
<b>Equity and liabilities</b>		
Share capital	5,266	5,758
Provisions	855	677
Borrowings	2,030	2,814
Other payables	4,275	4,218
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>12,426</b>	<b>13,467</b>

The increase in share capital reflects a portion of the 2012 profit for €765 million, outstanding dividends paid in 2012 in respect of 2011 for €154 million, interim dividends for 2012 paid in December of that year for €129 million, and a net charge to tax-driven provisions amounting to €10 million.

The attendant increase in cash and cash equivalents and borrowings results from the February 9, 2012 issue of USD 1.2 billion in senior unsecured notes on the US private placement (USPP) market. The funds raised by the bond issue allowed Safran to diversify its sources of financing and extend the average maturity of its borrowings. They have also provided the Group with the means to pursue its development going forward.

## 2.3.3 INFORMATION CONCERNING SUPPLIER PAYMENT PERIODS

<i>(in € millions)</i>	Amounts due	Amounts not yet due		Total trade payables
		Amounts due in 0-30 days	Amounts due in 30-60 days	
December 31, 2012	7.9	4.5	67.4	79.8
December 31, 2011	5.3	12.5	55.5	73.3



## 2.4 OUTLOOK FOR 2013

Safran expects on a full-year basis:

- adjusted revenue to increase by around 5% (at an estimated average rate of USD 1.29 to the euro);
- adjusted recurring operating income to increase by almost 15% (at a hedged rate of USD 1.29 to the euro);
- free cash flow to represent about 40% of adjusted recurring operating income taking into account the expected increase in capital expenditure and R&D to cope with rising production rates and new business opportunities.

The full-year 2013 outlook is based on the following underlying assumptions:

- healthy increase in Aerospace OE deliveries;
- civil aftermarket increase of close to 10%;
- incremental R&D cash effort of around €200 million;

- increase in acquisitions of property, plant and equipment of around €200 million;
- continued margin improvement in Aircraft Equipment;
- stable profitability in Defence;
- profitable growth for the Security business;
- continued benefits from the ongoing Safran+ plan to enhance the cost structure and reduce overheads.

### FACTORS WITH A POTENTIAL IMPACT ON RESULTS

Major risk factors that could have an adverse impact on the Group's business, financial position or results of operations are described in section 4.

## 2.5 SUBSEQUENT EVENTS

### SALE OF 12.57% OF THE SHARE CAPITAL OF INGENICO

March 15, 2013 – Pursuant to the authorizations granted by the Boards of Directors of Safran on March 13, 2013 and of Morpho on March 14, 2013, Safran, through its subsidiary Morpho, divested part of its stake in payment solutions provider Ingenico by way of a private placement, through an accelerated book building process. A total of 6.6 million shares, representing 12.57% of the share capital of Ingenico, were sold at a per-share price of €43.45, for a total amount of €286.8 million. The resulting profit after tax for Safran, calculated on the basis of a value per Ingenico share of €22.74 in Safran's consolidated financial statements for the year ended December 31, 2012, is approximately €130 million and will be recorded in Safran's 2013 half-year consolidated financial statements. Safran intends to remain a significant shareholder of Ingenico with a stake representing 10.2% of the share capital and approximately 17% of the voting rights.

### FINALIZATION OF GOODRICH ELECTRICAL POWER SYSTEMS (GEPS) ACQUISITION

After completing all required approval procedures, Safran has finalized on March 26, 2013, the acquisition of Goodrich Electrical Power Systems (GEPS), a leading supplier of on-board aerospace electrical power systems. The cash consideration for the transaction amounts to approximately Euro 300 million.

GEPS brings new capabilities to Safran's product offering, including the critical electrical power generation know-how and experience which is the heart of electrical power systems. This transaction, by combining GEPS and Safran's complementary strengths, gives birth to a world leader in aerospace electrical power systems with a comprehensive product portfolio.

### SALE OF 3.12% OF THE SHARE CAPITAL BY THE FRENCH STATE

On March 27, 2013, the French State finalized the sale of a 3.12% stake in Safran's share capital by way of a private institutional placement through an accelerated book building process reserved for institutional investors. The French State's holding in Safran now stands at 27.08%.

The French State has indicated that, in accordance with article 11 of Law 86-912 of August 6, 1986, it will offer shares of the Company to Safran employees at a later date. The French State further indicated that the shares will be offered under preferential conditions.