

# ARCHIVED REPORT

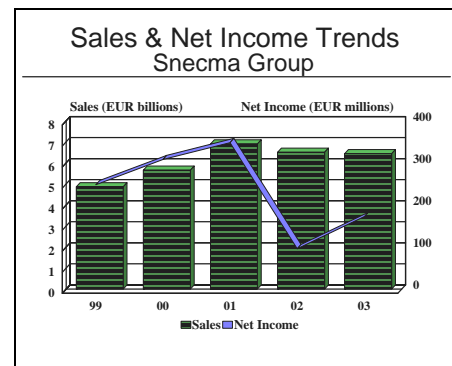
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## Snecma - Archived 1/2006

### Outlook

- In May 2005, Snecma and Sagem successfully completed their merger plan into a new company dubbed Safran.
- This report will now be archived and a new report on Safran created.



### Headquarters

Snecma  
2, Boulevard du Général Martial Valin  
75724 Paris, France  
Telephone: (33 1) 40 60 80 80  
Fax: (33 1) 40 60 81 02  
Web site: <http://www.snecma.com>

Snecma (Société National d'Étude et de Construction de Moteurs d'Aviation) was formed on August 29, 1945, from the merger of Gnome et Rhone, Société Anonyme des Moteurs RENAULT pour l'Aviation, Société Général de Mécanique et d'Aviation (formerly Moteurs LORRAINE), and Groupe d'Étude des Moteurs à Huile Lourde. Since that time, the overall organization has acquired several entities in France and elsewhere in

Europe. Snecma is France's largest and most important manufacturer of gas turbine engines for fixed-wing applications, and it is one of the largest aero-engine manufacturers in the Western world.

Aside from the production of gas turbine engines and machines, Snecma is involved in space systems, landing gears/brakes, thrust reversers/nacelles, components for aircraft and space propulsion systems, precision mechanics and machining of aircraft engine parts, and aircraft engine repair and maintenance.

The Snecma Group employs approximately 39,670 persons, spread through two core businesses, Propulsion and Equipment.

### Structure and Personnel

Jean Paul Béchat  
Chairman and Chief Executive Officer  
Dominique Paris  
Senior Executive Vice President  
Yves Imbert  
Senior Executive Vice President  
Dominique-Jean Chertier  
Executive Vice President, Social and Institutional Affairs  
Alain Marcheteau  
Executive Vice President, Finance  
Alain Bosser  
General Counsel and Secretary

Jean-Paul Herteman  
Executive Vice President, Propulsion Branch  
Dominique Hédon  
Executive Vice President, Equipment Branch  
François Courtot  
Vice President, International Affairs  
Philippe Bry  
Vice President, Corporate Management  
Christian Mari  
Vice President, Coordinator of Action V  
Françoise Descheemaeker  
Senior Vice President, Communications  
Marc Ventre

Chairman & CEO, Snecma Moteurs  
 Jean-Pierre Cojan  
 VP and General Manager  
 Snecma Moteurs, Commercial Engines  
 Jean-Luc Engerand  
 VP and General Manager  
 Snecma Moteurs, Military Engines  
 Joël Barre  
 VP and General Manager  
 Snecma Moteurs, Space Engines  
 Jean-Lin Fournereaux  
 Chairman & CEO, Snecma Services  
 Emeric d'Arcimoles  
 Chairman & CEO, Turbomeca  
 Phillippe Schleicher  
 President & CEO, Techspace Aero  
 Michel Laroche  
 Chairman & CEO, Snecma Propulsion Solide

Pascal Sénéchal  
 Chairman & CEO, Hispano-Suiza  
 Christian Knapp  
 Chairman & CEO, Hurel-Hispano  
 Louis Le Portz  
 Chairman & CEO, Messier-Dowty  
 Yves Leclère  
 Chairman & CEO, Messier-Bugatti  
 Gilles Bouctot  
 Chairman, Messier Services  
 Jean-Claude Lepage  
 Chairman & CEO, Labinal

## Product Area

Snecma Group companies are major international suppliers of aircraft equipment and systems, including aircraft and rocket engines, engine components, thrust reversers and nacelles, landing and braking systems, and electronics. The organization is structured as follows:

1. Propulsion
  - 1.1 Snecma Moteurs
    - 1.1.1 Commercial Engines Division
    - 1.1.2 Military Engines Division
    - 1.1.3 Space Engines Division
  - 1.2 Snecma Services
  - 1.3 Techspace Aero
  - 1.4 Turbomeca
  - 1.5 Snecma Propulsion Solide
2. Equipment
  - 2.1 Hispano-Suiza
  - 2.2 Hurel-Hispano
  - 2.3 Messier-Dowty
  - 2.4 Messier-Bugatti
  - 2.5 Messier Services
  - 2.6 Labinal
  - 2.7 Cinch
  - 2.8 Globe Motors

### Propulsion

Snecma Moteurs, the lead company in the Snecma Group, is one of the world's leading manufacturers of aircraft engines. Snecma designs, develops, manufactures, and markets both commercial and military jet engines. Commercial engine orders account for 70 percent of the total.

*Commercial Engines Division.* Products include the CFM56, GE90, and CF6 engines.

*Military Engines Division.* Produces turbojets and turboprops for combat, training, and transport aircraft.

*Space Engines Division* is the prime contractor for the liquid propellant engines on the Ariane 4 and 5, as well for Ariane 5's solid rocket motors, through the Europropulsion consortium. In addition, through the G2P consortium, it is the prime contractor of rocket motors for France's ballistic missile force.

Snecma Services provides repair and maintenance services for a wide range of repair parts and both commercial and military aircraft engines, using state-of-the-art technologies.

Techspace Aero teams with aerospace manufacturers to design, develop, produce, test, and maintain components for both aircraft and space propulsion systems. The company is jointly owned by Snecma (51 percent), Pratt & Whitney (19 percent), and the Walloon region of Belgium (30 percent). This company is active throughout the three core units of the Snecma group.

Turbomeca, a division of Labinal, produces gas turbines for helicopters for both land and marine applications.

Snecma Propulsion Solide. This unit produces solid rocket motors for launchers and strategic and tactical missiles, as well as thermostructural composite materials.

### Equipment

Hispano-Suiza is one of the world's leading suppliers of power transmission systems for gas turbine engines, and a major producer of thrust reversers for commercial transport aircraft. In the latter field, it developed the innovative pivoting door reversers for the CFM International CFM56-powered Airbus A320, working with Rohr of the USA. Hispano-Suiza's skill base covers a wide range of products, including nacelles, the propeller gearbox for the Dassault Atlantique ATL2's

Tyne engines, and ejection seats under license from Martin-Baker. The business entity is expanding its non-aerospace activities to include robotics for the French electricity utility EdF, turrets for light-armored vehicles, and high-speed diesel engine turbochargers for rail and naval applications.

Hurel-Hispano develops, designs, and produces nacelle/thrust reverser systems and aerostructures, and jet engine composite parts. This unit was created in early 2001 as part of the consolidation efforts of Hurel-Dubois and Hispano-Suiza Aerostructures.

Messier-Dowty is a world leader in the design, development, manufacture, and support of aircraft landing gear systems. The company's landing gear equips more than 15,000 civil and military aircraft. Messier-Dowty, originally established in 1995 as a joint venture, became a wholly owned Sneema Group company in July 1998 with its acquisition of the stake that Britain's TI Group had held.

Messier-Bugatti designs and produces complete landing systems for both commercial and military aircraft, including landing gears, braking systems, wheels, and brakes. Messier-Bugatti has established three

specialized subsidiaries to repair medium-duty landing gears and hydraulic equipment: A-Pro in the USA, S-Pro in Asia, and Hydrep for Europe and Africa. Messier-Bugatti recently became a participant in the Boeing 777, IPTN N-250, Franco-German Tiger, and Airbus A330 and A340 programs.

Messier Services, a maintenance, repair, and overhaul (MRO) network, was created in 1998 through the teaming of Sneema landing gear specialist Messier-Dowty with Messier-Bugatti. The new organization provides local support for nearly 7,000 users of landing gear, brakes, braking systems, and hydraulics.

Labinal produces small- and medium-sized gas turbines, electrical connectors, and equipment for aerospace, defense, and electronics industries.

Cinch is a specialist in connectors and interconnection products for commercial vehicles, aviation, defense, telecommunications, and computers.

Globe Motors, part of Labinal, designs, manufactures, and markets precision miniature electric motors and actuators for the automotive, office, medical instruments, and missile industries.

## Facilities

Sneema's major subsidiaries are located at the following addresses:

Sneema Moteurs, 10, allée du Brévent, CE1420 Courcouronnes, 91019 Evry, France. Telephone: (33 01) 69 87 09 00. Web site: <http://www.sneema-moteurs.com> Sneema Moteurs has production facilities at Villaroche Evry-Corbeil, Vernon, Gennevilliers, Bordeaux, Le Creusot, and Istres.

Hispano-Suiza, 18, Blvd Louis Seguin, 92707 Colombes 15, France. Telephone: (33 1) 41 30 50 10. Web site: <http://www.hispano-suiza-sa.com> Messier-Bugatti, Zone Aéronautique Louis Breguet, 78141 Vélizy-Villacoublay, France. Web site: <http://www.messier-bugatti.com> Messier-Bugatti and its subsidiaries also have facilities in Bidos and Molsheim.

Messier-Dowty International, BP 133, Zone Aéronautique Louis Breguet, F-78148, Velizy, France. Web site: <http://www.messier-dowty.com> Messier-

Dowty has additional facilities in the U.K., France, and Canada.

Turbomeca, Avenue Szydlowski, 64511 Bordes Cedex, France. Web site: <http://www.turbomeca.com>

Labinal, 9, avenue Franklin - BP 218, 78051 Saint-Quentin-en-Yvelines, France. Web site: <http://www.labinal.com>

Sneema Inc (U.S. Office), 111 Merchant Street, Cincinnati, OH 45215. Telephone: (513) 552-3230. Web Site: <http://www.sneemausainc.com>

Techspace Aero, Route de Liers 121, B-4041 Herstal Milmort, Belgium. Telephone: (32 0 4) 278 81 11. Web site: <http://www.techspace-aero.be>

Hurel-Hispano Le Havre, Route du Pont 8, BP 91, 76700 Gonfreville l'Orcher, France. Web site: <http://www.hurel-hispano.com> This operation has additional locations throughout France and in the United Kingdom.

## Corporate Overview

Sneema operates in two broad business segments: Propulsion and Equipment. Within these categories for 2003, Propulsion accounted for 62 percent of the company's sales and Equipment 38 percent.

### New Products and Services

**RRJ Landing Gear.** In October 2003, Messier-Dowty was selected to provide the integrated landing gear system for the Russian Regional Jet (RRJ) program. The company values the contract at approximately \$400 million, based on a projected market for 600 aircraft, and plans to include Russian suppliers. Messier-Dowty

will be responsible for managing the design and production of the entire integrated RRJ landing gear system less the braking system, for which the airframer plans to retain control.

**SM146.** A joint effort between Snecma and Russian engine-maker NPO Saturn, the SM146, a 12,000- to 15,000-lb-st-class engine, is intended for the regional and large business jet market, which is expected to be the most active part of the commercial air transport business over the next 20 years. If the development proceeds, the SM146 might reach certification in 2005 or 2006.

### **Plant Expansion/Organization Update**

Snecma Privatization Begins. In June 2004, Snecma began its long awaited privatization with an offering for 35 percent of the company's shares, up from the 25 percent originally proposed in 2001 (see below). Following the initial public offering, the French government's stake has dropped to 62 percent, down from 97 percent. The other shareholders of note in Snecma is Pratt & Whitney with 1.7 percent. The remaining 1.3 percent is in diverse hands.

Turbomeca Expands Production in the U.S. In March 2004, Turbomeca announced the expansion of their U.S. affiliated company, Turbomeca USA, located in Grand Prairie, Texas. The facility expansion, an additional 15,000 square feet plus land acquired for a future expansion, is necessary in order to support an increase in manufacturing activity. This will bring the total square footage of the facility to roughly 80,000, and the additional land will allow Turbomeca USA to double its size in the future. The expansion thus far has resulted in the creation of numerous jobs in Grand Prairie with expectations of even more in 2005. The current employee count is 228, which is up from 209 just one year ago.

Messier-Dowty Inaugurates Suzhou Facility. In February 2004, Messier-Dowty International inaugurated its Suzhou production facility in China. The Suzhou plant, located 45 miles outside of Shanghai, is the most recent of the Messier-Dowty facilities, originally formed as a joint venture with Singapore Aerospace Manufacturing in 2002 and became fully owned by Messier-Dowty in 2003. The 6,500-square-meter facility employs 114 workers, and specializes in the manufacture of landing gear components for a number of programs, including the Airbus A320, Dassault Falcon 900/2000EX, Bombardier Challenger 300, and Raytheon Hawker 800XP.

Snecma Polska Opened. In February 2003, Snecma Polska, the new Polish subsidiary of the Snecma group of France, was officially opened. The plant is located on a 30,000-square-meter site in Sedziszow Malopolski

near Rzeszow, and has 15,000 square meters of floorspace. A wholly owned subsidiary of Snecma, Snecma Polska specializes in the production of aircraft engine parts. Its workforce is 100 percent Polish.

Turbomeca Canada Launched. In January 2003, Turbomeca launched its new subsidiary, Turbomeca Canada Inc. within the "Zone de Commerce International de Mirabel" located at the Mirabel International Airport. The new facility offers North American Turbomeca customers a full range of OEM products and services including sales, promotion, and support services, as well as repair and overhaul of Turbomeca engines and components, for Arriel 1 engines in its first development phase.

Snecma Control Systems Absorbed by Hispano-Suiza. In April 2002, Hispano-Suiza expanded considerably by adding Snecma Moteurs' engine control systems business to its own power transmission operations. The new entity will retain the name Hispano-Suiza. This consolidation enhances Hispano-Suiza's ability to offer its customers complete product and service packages for aircraft systems and equipment. The expanded Hispano-Suiza will have 1,800 employees and two main sites in the Paris area: the first groups two facilities at Colombes (headquarters, power transmission division) and Bezons (hydromechanical assemblies); the second is at Réau, near Melun. The company will also coordinate operations at the Peterborough plant in Canada, which develops and markets aircraft and aircraft engine electronics.

Aircelle Becomes Snecma Subsidiary. In March 2002, Airbus and Snecma signed an agreement providing for the transfer by Airbus of its 50 percent stake in Aircelle to Snecma, making Aircelle a wholly owned subsidiary. The consolidation of Aircelle and Hurel-Hispano within Snecma will bolster the group's ability to offer complete nacelle packages worldwide, ranging from design, development, and integration to full aftermarket support for airlines and distribution of spare parts. Aircelle was originally created in March 1998 as an equal joint venture between Airbus and Snecma.

Snecma Propulsion Solide Created. In February 2002, Snecma Moteurs spun off the company's Bordeaux-Le Haillan operation as a subsidiary. The new company, Snecma Propulsion Solide, is a wholly owned subsidiary of Snecma Moteurs. It designs and produces solid rocket motors (for the Ariane 5 commercial launcher, the M45 and M51 strategic missiles, and tactical missiles), and thermostructural composite materials for aviation, space, and industry. This spinoff is the first step in the merger of these operations with SNPE's energetic material businesses, within the scope of the planned creation of Herakles, a jointly owned subsidiary of Snecma and SNPE. Herakles will be the

European leader in solid propulsion solutions for launch vehicles and strategic missiles.

**Messier Services Formed.** In February 2002, Messier Services became a full-fledged company. The operation was reorganized around a new French-registered holding company, Messier Services International, headed by Benoît Gosset. Messier Services International oversees the operating companies in the United States, United Kingdom, France, and Singapore, which provide maintenance, repair, and overhaul services for landing and braking systems. Messier Services is a part of the Equipment core business in the Snecma group, and is jointly owned by Messier-Dowty and Messier-Bugatti. Because of the relative weight of landing gear services in Messier Services' overall business, Messier-Dowty is the core shareholder.

**Partial Privatization Plan Postponed.** In June 2001, the French government announced its intent to sell 25 percent of Snecma in an initial public offering. Snecma is currently 97 percent owned by the French government, and the selloff is aimed at raising cash and making the operation more attractive to outside partners. However, France has pushed the offering back due to poor market conditions that were exacerbated by the terrorist attacks on the United States.

**Hurel-Hispano Formed.** In March 2001, Hurel-Hispano was created within the Snecma Group. The new unit, created from Hurel-Dubois and Hispano-Suiza Aerostructures, is a leading player in worldwide nacelle markets, employing 2,500 people and generating sales of EUR500 million. The No. 1 nacelle manufacturer in Europe, Hurel-Hispano ranks third in the world behind Boeing (which produces the nacelles for its own aircraft in-house). The holding company, Hurel-Hispano, coordinates three operational business units: Hurel-Hispano Le Havre (Hispano-Suiza Aerostructures), Hurel-Hispano Meudon (Hurel-Dubois), and Hurel-Hispano UK (Hurel-Dubois UK).

**Snecma Reorganizes.** In September 1999, Snecma reorganized into two major divisions under a new holding company: Snecma Moteurs and Snecma Equipment. The reorganization was undertaken to make the company more attractive to outside investment. For details on the new structure, please refer to the **Product Area** section of this report.

### **Mergers/Acquisitions/Divestitures**

**Snecma and Sagem Merge.** In May 2005, Snecma and Sagem successfully completed their merger plan which was originally announced in October 2004. The name of Safran was chosen for the newly merged company. According to the companies, the merger enables the two groups to energize their development through complementary technology skills and a denser inter-

national sales and marketing network, backed by similar corporate cultures and values. For example, Sagem's technical expertise, especially in electronics, is expected to find new outlets through applications on Snecma's aircraft engines and equipment. In the same way, Snecma is providing provide Sagem with access to an extended international commercial network.

The merger is designed to create a major industrial and technology group that is competitive on the global stage and enjoys strong positions in growth sectors. The balance and diversity of the group's businesses, thanks to their complementary operating cycles, would give the new entity greater financial stability, significantly reduced exposure to the U.S. dollar, and expanded capability for growth.

**Liquid and Electric Space Propulsion Merger?** In October 2004, Snecma and EADS SPACE began studying the possibility of merging the launcher and satellite space propulsion operations of Snecma Moteurs in France and EADS SPACE Transportation GmbH in Germany. Snecma Moteurs and EADS SPACE Transportation have teamed up for many years on the liquid-propellant engines for the Ariane launcher, and have contributed to the success of European space programs from the outset. The operations that would be involved are liquid-propellant propulsion for launchers and satellites, and electric propulsion for satellites. These operations are based at Vernon (west of Paris) and Villaroche (near Paris) in France, and at Ottobrunn (Bavaria) and Lampoldshausen (Baden-Wurtemberg) in Germany. They generate total sales of about EUR400 million a year, with 1,250 employees in France and 450 employees in Germany.

**Hurel-Dubois Acquired.** In September 2000, Snecma acquired a 54.5 percent stake in Hurel-Dubois from the banking group BNP Paribas. Based in Meudon, near Paris, Hurel-Dubois is a leading French aircraft equipment manufacturer specializing in nacelles and thrust reversers. In 1999 the company posted a net profit of EUR10.5 million on sales of EUR266 million. The holding was acquired for EUR175 per share, or a total of EUR100 million.

**Labinal Group Acquired.** In May 2000, Snecma acquired France's Labinal Group, owner of the Turbomeca helicopter engine company, in a deal worth an estimated EUR1.1 billion (\$996 million). The purchase, which was completed in July 2000, adds Labinal's Turbomeca, Microturbo, Globe Moteurs, and Cinch Connectors operations to Snecma. The purchase also includes three automotive companies that are slated to be divested by Snecma.

**Snecma Buys Out Messier-Dowty.** In June 1998, Snecma completed its acquisition of the TI Group's 50 percent stake in the jointly owned Messier-Dowty

International and its 100 percent stake in Dowty Aerospace Aviation Services repair network for around \$350 million. In the maintenance and customer service area, this transaction will enable Snecma to consolidate Messier-Bugatti's product support services with those of Dowty Aerospace Aviation Services in order to form a single integrated network known as Messier-Services. Snecma's landing systems business consists of three dedicated entities: Messier-Dowty (landing gears); Messier-Bugatti (brakes, braking systems, and hydraulics); and Messier-Services (maintenance, repair, and overhaul).

### Teaming/Competition/Joint Ventures

**Avio.** In July 2004, Snecma and Avio, signed a collaboration agreement on the SM146 engine in which Avio took 8.8% of the SM146 engine program as a risk sharing partner within the Snecma share. According to this agreement, Avio will be in charge of the development, the production, and the support of the combustor sub assembly, as well as the transfer and the accessory gearboxes.

**Creuzet Polska.** In February 2003, Creuzet Aéronautique and Snecma Moteurs created a joint venture in Poland to manufacture aircraft engine parts. Called Creuzet Polska, the new company is located in Sedziszow, southeast Poland. It shares the premises of Snecma Polska, a new Snecma group plant. Creuzet Polska will handle the machining and finishing of compressor blades using semi-finished products supplied by Creuzet Aéronautique's plant in Marmande. The new company is jointly owned by Creuzet Aéronautique, with a 70 percent share, and Snecma Moteurs, with the remaining 30 percent.

**FADEC International.** In January 2003, BAE Systems Controls and Hispano-Suiza announce the formed FADEC International. This limited-liability company focuses the two companies' capabilities to design, produce, and support full-authority digital engine controls (FADEC) for large commercial engines. The two companies have produced the FADEC for CFM56, CF6-80, and GE90 engines.

**Turbomeca Africa.** In May 2002, Denel and Turbomeca created a new company, Turbomeca Africa, for the manufacture of engine components and maintenance of helicopter engines and industrial turbines for trains and cogeneration. The agreement gives the French parent a majority (51 percent) holding in Turbomeca Africa, with Denel retaining 49 percent. Predicted turnover for the new Turbomeca Africa will be between ZAR300 and ZAR400 million (EUR30 million to EUR40 million) per year. Turbomeca agreed to channel its Defence Industrial Participation obligations through the new company. The Denel Airmotive name will be dropped as its operations are absorbed into the new

venture. Turbomeca Africa will be based on the premises occupied until now by Denel Airmotive.

The new company will manufacture engine components for Turbomeca, General Electric, Rolls-Royce, and Volvo, as well as repair and overhaul certain types of Turbomeca, Snecma, and other engines. It is also now the only service center for Turbomeca products on the African continent, responsible for sales, maintenance, and customer service. The new company will support its engines in use by the South African Air Force.

**VOLGA.** In March 2002, the Keldysh Research Center, NPO Energomash, and Chemical Automatics Design Bureau, all from Russia, and Snecma Moteurs (France), Astrium (Germany), Volvo Aero Corporation (Sweden), and Techspace Aero (Belgium) signed a Memorandum of Understanding aiming at starting a long-term cooperation program named Volga related to an advanced reusable rocket engine for future space transportation systems. Other partners in Europe are anticipated to join the Volga program later. The project concerns a high thrust (about 400 tons in vacuum) rocket engine using liquid oxygen and liquid methane as propellants.

**Smartec.** In February 2002, Snecma Moteurs and NPO Saturn established the Smartec joint technical interface team for the SM146 turbofan engine development program. Based in Russia, Smartec will initially focus on the design of aircraft engine components. It will then add work on various joint programs, in particular the SM146 engine intended for the planned Sukhoi/Ilyushin/Boeing Russian Regional Jet (RRJ) project. The core engine is currently under development for the SM146, and uses Snecma's DEM 21 core.

**Herakles.** In late 2001, Snecma and Groupe SNPE resumed negotiations to merge their solid propulsion subsidiaries into a new joint venture dubbed Herakles. In February 2002, Snecma Moteurs spun off the company's Bordeaux-Le Haillan operation as a subsidiary into a new company, Snecma Propulsion Solide, in preparation for the merger (see Plant Expansion/Organization Update section for more details).

**NPO Saturn.** In mid-2001, France's Snecma and Russian engine-maker NPO Saturn teamed to develop the SM146, a 12,000- to 15,000-lbst-class engine intended for the regional jet and large business jet market, which is expected to be the most active part of the air transport business through the next 20 years. NPO Saturn is a new company formed through the merger of Rybinsk and combat aircraft engine-maker NPO Saturn with the Central Institute of Aviation Motors. Russian aircraft-makers Ilyushin and Sukhoi and U.S. aerospace giant Boeing recently announced their Russian Regional Jet (RRJ) project, and Snecma has identified this as an

opportunity to launch the new engine. Snecma believes that high-quality, low-cost Russian engineering talent will allow it to develop and produce a cost-competitive engine.

**Aero Propulsion Alliance.** In June 2001, this joint venture was formed to develop, manufacture, and support the TP400 turboprop engine chosen to power the Airbus A400M military transport aircraft. The companies composing the new company are FiatAvio (Italy), ITP (Spain), MTU Aero Engines (Germany), Rolls-Royce (United Kingdom and Germany), Snecma Moteurs (France), and Techspace Aero (Belgium). Headquartered in Munich, Germany, APA will manage the TP400 program and act as a single point of contact for customers: the European nations (through procurement agency OCCAR) and Airbus Military Company (AMC). The participating companies will staff the management company in accordance with their percentage participation in the program. The shareholding in the company is equal to the workshare percentages in the TP400 program: MTU, Rolls-Royce, and Snecma Moteurs will each hold 24.8 percent, ITP 13.6 percent, FiatAvio 8 percent, and Techspace Aero 4 percent. Dependent upon discussions with potential new customers and participating companies such as Turkish Engine Industries, additional partners could join APA in the future.

However, in February 2002, AMC rejected APA's bid due to performance shortcomings, and reopened the engine competition. Four of the APA partners (Rolls-Royce, ITP, MTU, and Snecma) formed a new company, called Euro Prop International, to propose an engine for the A400M. The new engine will be based on Snecma's M88 technology, currently in use on the Rafale fighter. The company will also provide the high-pressure compressor and high-pressure turbine.

**Rolls-Royce.** In early 2001, Rolls-Royce and Snecma Moteurs set up a new joint venture company to conduct programs related to military combat aero engines that are supported by the United Kingdom and French governments, starting with joint technology acquisition programs. Rolls-Royce Snecma Limited will take over responsibility for developing the joint Advanced Military Engine Technology (AMET) program and for collaborative propulsion studies on the Future Offensive Air System (FOAS). AMET is a bilateral effort aimed at producing a fighter engine that will succeed the Eurojet EJ 200 and the Snecma M88. The new company, a 50/50 joint venture, will be based in London and managed by Guillaume Giscard d'Estaing. It will act as prime contractor and single point of contact to the two governments, and will be in charge of whole engine integration studies. All other activities will be subcontracted, initially to the parent companies but with

the possibility of being extended to other companies as the program evolves.

**Pratt & Whitney.** In February 2000, Snecma and Pratt & Whitney announced that they will jointly develop the SPW2000 liquid propellant upper stage for both American and European launch vehicles. Once development has been completed, Snecma will be responsible for marketing the engine to Europe. Pratt will handle the business end in America.

**Praxair.** In June 1999, Snecma Services and the Praxair Surface Technologies Inc (a subsidiary of Praxair of the United States) created an equally owned subsidiary, International Compressor Technologies. This new facility will be the first plant in Europe capable of refurbishing high-pressure compressor components. Located in Saint-Etienne, the new company will provide a complete range of compressor component manufacturing and repair services for CFM56 and GE90 turbofans, including the blades, nozzle guide vanes, and sealing rings. Its business will focus on customers in Europe, the Middle East, Africa, India, and South America.

**MTU.** In June 1999, MTU München (a subsidiary of DaimlerChrysler) and Snecma created a joint venture specializing in the application of ceramic coatings on gas turbine and aircraft engine parts. Called Ceramic Coating Center, this equally owned company will be based in Châtellerault and will eventually employ 40 people. MTU and Snecma are each responsible for half of the investment, totaling EUR12 million. The new company's business will focus on coating parts produced by MTU for the General Electric CF6 engine, and coating parts of CFM56 engines and M88 engines.

**Europropulsion SA.** This is a joint venture between FiatAvio and Snecma. The operation, located in Suresnes, France, develops and produces solid rocket boosters.

**Pratt & Whitney.** In September 1996, Snecma and Pratt & Whitney signed a collaborative agreement to develop, manufacture, market, and support the SPW14 turbofan engine family. A new joint venture company created for the task will undertake development.

**Denel.** In July 1995, Snecma and Denel of South Africa signed an agreement to upgrade the French-made Atar 8K50 and 9K50 turbojets that power South African Air Force Mirage aircraft. In addition to South African aircraft, the deal is aimed at 13 countries worldwide that operate French fighters and have a combined requirement for 900 upgraded engines.

**CFM International.** One of the most significant teaming efforts undertaken by Snecma is CFM International SA, the joint venture company formed with General Electric Company USA through its subsidiary GE Aircraft

Engines (Evendale, Ohio, USA) for the production of the CFM56 series of medium-thrust turbofan engines. Also participating in the CFM56 program are Alsthom SA (subsidiary of GEC-Alsthom), FN Moteurs (a 51 percent owned subsidiary of Snecma), BMW Rolls-Royce GmbH (including the former KHD Luftfahrttechnik GmbH), and Norsk Jetmotor A/S (11 percent owned by Snecma).

**General Electric.** Snecma is a participant in GE Aircraft Engines' current generation family of high-thrust commercial turbofan engines, the CF6 series. Snecma has a 10 percent stake in the CF6-80C2 program and a 20 percent stake in the CF6-80E1 program. Snecma is also involved in the GE90 engine program. The GE90 is the next-generation General Electric Aircraft Engines high-thrust commercial turbofan engine.

In July 2002, Snecma Services invested in GE Aviation Materials LP, a division of GE Engine Services. Terms of the agreement were not disclosed. GE Aviation Materials, based in Dallas, Texas, provides serviceable aircraft engine parts and refurbished aircraft engines, as well as operators and overhaul and service shops around the world, managing the procurement, sale, and distribution of these engines and parts to provide more rapid response and customer value.

**APIC.** In June 1989 at the Paris Air Show, Sundstrand and Labinal created a joint venture to design, produce, and market airborne power units (APUs) for commercial applications worldwide. The joint firm, Auxiliary Power International Corp (APIC), located in San Diego, California, capitalized on Sundstrand's and Labinal's respective and complementary expertise and experience in the field of small gas turbine engines and auxiliary power units. The APUs developed by Sundstrand's or Labinal's units are marketed, sold, and supported by APIC. Orders for the APU machines are placed with APIC, which in turn subcontracts the production of the machines to either Sundstrand or Labinal. Hamilton Sundstrand continues to market the APIC APS series as part of APIC, which it has been wholly owned since Sundstrand bought out Labinal's 50 percent share in 1996.

**Norsk Jetmotor A/S.** Norsk Jetmotor A/S, founded in 1989 from Kongsberg Vapenfabrikk, is a manufacturer of components for aircraft jet engines. The firm, located in Norway, is partially owned by Snecma (11 percent) and Pratt & Whitney in the U.S. (22 percent).

**ACE International.** In 1987, Snecma (20 percent), Dassault Aviation (60 percent), Thales (10 percent), and Dassault Electronique (10 percent) formed ACE International to develop the Rafale combat aircraft.

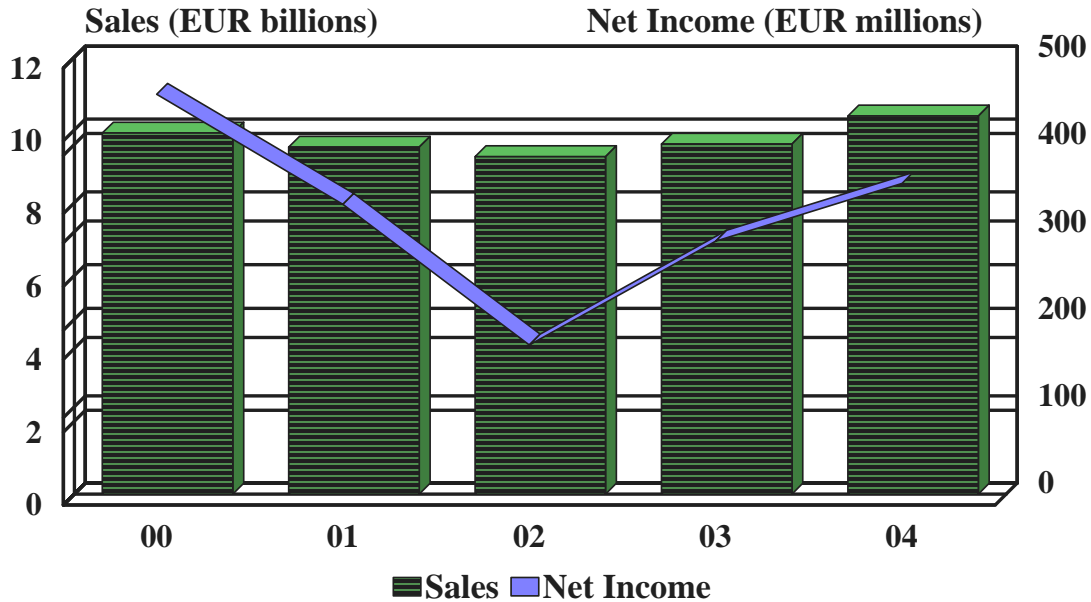
## Financial Results/Corporate Statistics

Pro forma 2004 sales for Safran were EUR10.4 billion. The company also reported net income of EUR368 million for 2004. Simple pro forma results for the past five years are presented below. U.S. dollar figures translated as of December 31, 2004, at the rate of EUR1 = USD1.364

Y/E December 31	2000	2001	2002	2003	2004	2004
(EUR millions)						USD
Net Sales	9916	9527	9267	9611	10382	14161
Net Income	470	344	183	302	368	502



# Sales & Net Income Trends Safran



Snecma Group's 2004 sales rose almost six percent to EUR6.8 billion from sales of EUR6.4 billion in 2003. The company posted net income (excluding minority interests) of EUR234 million in 2004, up from EUR182 million in 2003. The anemic state of the world aviation markets was attributed to the declines.

Y/E December 31	2000	2001	2002	2003	2004	2004
(EUR millions)						<b>USD</b>
Net Sales	5646	6893	6504	6431	6812	9291
Net Income	318	358	106	182	234	319
Backlog	8800	9200	10000	12600	13800	18823

Sagem's 2003 sales dropped to EUR6.4 billion from sales of EUR6.5 billion in 2002. The company posted net income (excluding minority interests) of EUR182 million in 2003, up from EUR106 million in 2002. The drop in sales for 2001 was due to the divestiture of the company's automotive operations.

Y/E December 31	2000	2001	2002	2003	2004	2004
(EUR millions)						<b>USD</b>
Net Sales	4270	2634	2763	3180	3570	4869
Net Income	152	-14	77	120	134	183

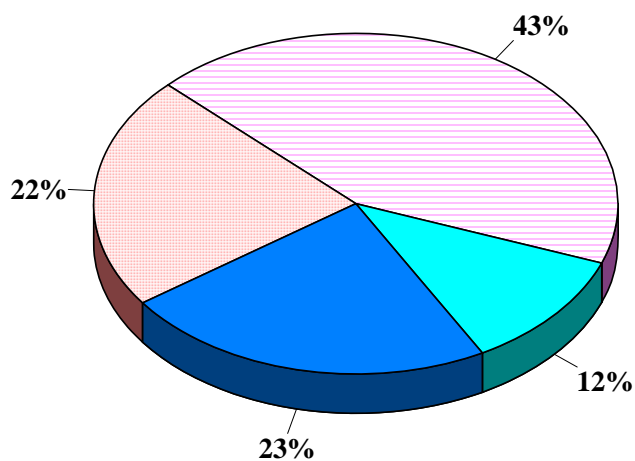
### Industry Segments

Safran's pro forma sales by business segment for 2004 were reported as follows.

SALES	2004

(EUR millions)	
Propulsion	4500
Equipment	2300
Communication	2400
Defense Security	1200
<b>TOTAL</b>	<b>10400</b>

## 2004 Sales by Segment Safran



Propulsion
  Equipment
  Communication
  Defense

The Snecma Group's sales and income by broad business segment were reported as follows. Figures for 2000 are pro forma results and do not add the above totals.

<b>SALES</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
(EUR millions)					
Propulsion	4299	4629	4362	4162	4523
Equipment	2373	2465	2427	2520	2628
Intersegment	-199	-201	-285	-251	-339
<b>TOTAL</b>	<b>6473</b>	<b>6893</b>	<b>6504</b>	<b>6431</b>	<b>6812</b>

<b>OPERATING INCOME</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
(EUR millions)					
Propulsion	425	467	310	278	344
Equipment	215	253	156	198	167
<b>TOTAL</b>	<b>640</b>	<b>720</b>	<b>466</b>	<b>476</b>	<b>511</b>

Sagem's sales and income by business segment were reported as follows. Totals may not add due to rounding. Data for 2001 was unavailable.

<b>SALES</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
(EUR millions)					
Communications	-	1703	1765	2097	2409
Defense and Security	-	930	998	1083	1162
<b>TOTAL</b>	<b>-</b>	<b>2633</b>	<b>2763</b>	<b>3180</b>	<b>3571</b>

<b>OPERATING INCOME</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
(EUR millions)					
Communications	-	-191	52	90	114
Defense and Security	-	73	78	79	92
<b>TOTAL</b>	<b>-</b>	<b>-118</b>	<b>130</b>	<b>169</b>	<b>206</b>

Snecma Group's 2003 sales dropped to EUR6.4 billion from sales of EUR6.5 billion in 2002. The company posted net income (excluding minority interests) of EUR182 million in 2003, up from EUR106 million in 2002. The anemic state of the world aviation markets was attributed to the declines. U.S. dollar figures translated as of December 31, 2003, at the rate of EUR1 = USD1.2552

## Strategic Outlook

Despite the battered commercial aviation market, Snecma has for most part withstood the situation well, and although sales and profits have remained a bit depressed, the company has stayed in the black. One of the major factors aiding the company's performance has been its efforts to cut costs and improve profit margins through consolidating and reshaping its holdings.

These efforts have finally paid off, and Snecma began its long awaited privatization in June 2004.

The group, which has been on the French government's privatization list for almost 11 years, was set to go partially public in late 2001. However, the weak market that followed the terrorist attacks of 9/11 caused the French government to delay the effort until conditions improved.

While the mid-2004 date was not ideal for the IPO, officials proceeded. The sale received a mixed reception, going over well with private investors but meeting a reserved response from the big institutional buyers. All told, the sale generated EUR1.45 billion instead of the hoped for EUR2 billion.

With Snecma privatized, management is hoping that its newfound stature can help speed alliances and develop a broader European industrial strategy. The French view Snecma as a centerpiece to any European aviation engine industry consolidation. Until now, the key hindrance to this scenario was the French government's 97 percent stake in Snecma, which was attributed to Snecma's powerplant commitments to the French military. Now with a chunk of Snecma in private hands it is hoped that teamings and cross-border consolidation can occur more easily.

However, it may be a case of too little, too late. Plans for a consolidated European aeroengine industry centered on Snecma have pretty much come to a halt following the company's failed attempt to acquire Italian engine maker Avio from Fiat. Further, the company also lost out on its chance to acquire Germany's MTU Aero Engines. These two operations were considered key to Snecma's efforts to strengthen the Continent's aeroengine industry against its North American rivals.

Although the loss of Avio and MTU is disappointing, Snecma nonetheless remains strong. The company has

been proactive in its attempts to gain critical mass and remain a major player in the aero-engine market. The company has made several targeted acquisitions such as Labinal and Hurel-Dubois, which in turn have strengthened Snecma's position in the engine and engine services markets.

With privatization underway and an upturn beginning, Snecma's future is looking bright.

## Prime Award Summary

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Information regarding prime awards is unavailable.

## Program Activity

Some important aerospace and government programs currently under way at the Snecma Group are listed below. The following are the company's business interests:

- Gas Turbine Engines
- Spacecraft and Missile Propulsion Systems
- Landing Gears, Brakes and Hydraulic Systems
- Thrust Reversers, Engine Nacelles, Power Transmission Systems
- Engine Components and Parts
- Aircraft Engine Repair and Overhaul
- Rocket Engine Components

### Engine Programs

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#### CFE Company CFE738

This is a two-spool, axial-centrifugal, high-bypass-ratio aviation turbofan engine designed for corporate business jets and light-turbofan-powered transport aircraft. The CFE738 was developed privately by CFE Company. Manufacturing companies in CFE Company include General Electric and Honeywell Aircraft Engines (formerly AlliedSignal Engines). Hispano-Suiza produces the accessory gearbox for this engine.

#### CFM International CFM56

The CFM56 series, developed and manufactured in conjunction with GE Aircraft Engines, are commercial high-bypass turbofan engines. The military designation of the CFM56 is F108. Snecma manufactures the CFM56 fan, the low-pressure system, thrust reversers, core and engine frame, gearbox, and accessory drives. Applications for the CFM56 series include the Airbus A319/320/321 and A340, Boeing 737, and C-135 military variant aircraft. As of 2004, an estimated 14,497 CFM56 series engines (including military variants) had been built.

#### General Electric CF6-80C2/E1

This is a two-spool, axial-flow, high-bypass-ratio aviation turbofan engine designed for heavy commercial and military transport aircraft. Military designation of

the CF6-80C2 is F103-GE-102. Snecma produces this engine under license, and holds a 10- to 20-percent risk-sharing role in the CF6-80C2 and CF6-80E1. For the CF6-80C2, it manufactures some assemblies and major parts, such as the fan blade and combustion chamber. Snecma became a part of the CF6-80E1 effort, in charge of aerodynamic, aeromechanical, and mechanical design of the derivative booster, with the exception of the inlet guide vane's aerodynamic design and the spool mechanical design. In a revenue-sharing role, Snecma's share is approximately 20 percent of the CF6-80E1.

#### General Electric GE90

The General Electric Company USA GE90, an ultra-high-thrust turbofan designed to power future large commercial airliners, is currently in production under the direction of General Electric Aircraft Engines of Evendale, Ohio, USA. Snecma has a 25 percent share in the development and manufacture of this turbofan, while Avio has 7 percent, Volvo Aero 1 percent, and Ishikawajima Harima Heavy Industries (IHI) 8 percent. Snecma's responsibilities for the GE90 include the LP and HP compressors and booster, lubrication system, FADEC subassemblies (through Snecma subsidiary Techspace Aero), and starter (equal partner with GE on composite fan blades through C-Fan, Austin, Texas). Snecma also does development work on the backup titanium fan and 10-stage compressor. In 2001, Volvo Aero bought a 1 percent risk-share of the GE90-115 program from Snecma. Volvo is producing some high-pressure compressor blades and outsourcing a few other smaller parts jobs. As of the start of 2004, an estimated 372 engines had been produced for the Boeing 777 program, including 38 engines for development.

#### Snecma M53

The M53 is a single-spool, low-bypass-ratio augmented military turbofan engine used on interception, air superiority, and long-range penetration aircraft. The M53 series has long been a staple powerplant for France's Armée de l'Air, as well as numerous other air forces throughout the world. Follow-on orders from the UAE, India, and Greece extend production past end of

production for France. Selection of Mirage 2000 by Brazil will extend M53-P2 production beyond 2013.

### **Snecma M88**

The M88 is a two-shaft, low-bypass-ratio advanced-technology turbofan engine designed for fighter aircraft. The Snecma M88-2 is one of the new wave of European fighter engines designed to fit the exacting requirements of the new generation of combat aircraft. Snecma's efforts in the military propulsion market for the next two decades are focused squarely on the M88's sole application to date, the Rafale. As of 2004, an estimated 75 M88s had been produced, including 16 engines for development and testing.

### **Turbomeca Arbizon**

This is a single-shaft, axial-centrifugal-flow, turbojet engine series used on missiles and remotely piloted vehicles. The Arbizon engine is approaching the final phase of its production run as the requirements for OTOMAT Mk 3 missiles and MILAS anti-submarine weapons near fulfillment.

### **Turbomeca Arriel**

This is a twin-spool axial-centrifugal-flow free turbine turboshaft engine. The Arriel is in production for Eurocopter/Harbin and Sikorsky medium civil and military helicopters. Turbomeca is preparing a new variant of its Arriel 2S turboshaft for Sikorsky's planned improved S-76 civil helicopter.

### **Turbomeca Arrius**

This is a twin-spool centrifugal-flow free turbine turboshaft engine designed for light/medium-class

single- and twin-engine helicopters. As of 2004, an estimated 1,521 engines had been built, including 16 developmental and test units.

### **Turbomeca Makila**

This is a two-shaft axial-centrifugal-flow free turbine aviation turboshaft designed for medium- and heavy-weight commercial and military helicopters. The Makila's fortunes remain tied to the Eurocopter Super Puma/Cougar program, which continues to attract double-digit sales figures, particularly in Europe.

### **Turbomeca Makila TI**

The Turbomeca Makila TI is a two-shaft, axial-centrifugal-flow, aero-derivative industrial and marine gas turbine machine in the 1.0- to 1.5-MW class. The Makila TI is used in electrical generation, mechanical load drive and marine propulsion applications.

### **Turbomeca TM333**

This is a twin-spool, axial-centrifugal-flow-free turbine turboshaft designed for light- and intermediate-weight commercial and military helicopters. As of 2004, an estimated 128 engines had been assembled for testing and prototype applications, as well as for the Hindustan Advanced Light Helicopter (ALH) program.

### **Rolls-Royce RB211/Trent**

RB211/Trents are three-spool, high-bypass-ratio aviation turbofan engines used on large commercial transport aircraft. The Trent 900 is under development for the A380. Hispano-Suiza, which supplies the gearbox for the Trent models, is a manufacturing participant in this program and holds a 3 percent share.

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