

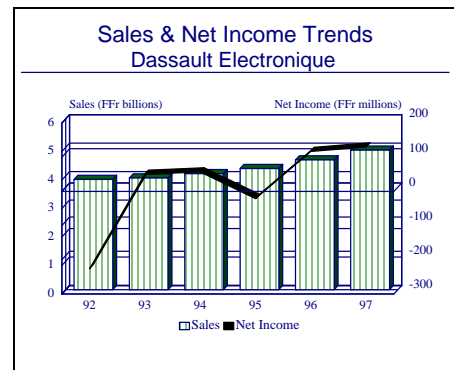
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Dassault Electronique - Archived 4/2000

Outlook

- With its absorption into Thomson-CSF, Dassault Electronique has ceased to exist as an independent agency
- Instead, the company now forms the foundation of Thomson-CSF Detexis
- Thomson-CSF Detexis possesses a leadership position in defense and aerospace electronics technology in Europe



Headquarters

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Dassault Electronique was created as an independent company in 1963 as an extension and expansion of the military aircraft operations of what was then known as Avions Marcel Dassault. Since then, the firm has become a leading supplier of electronic systems and components for military platforms, especially combat aircraft, missiles, ships and combat vehicles, to France and numerous other nations. The firm has also become a player in the aviation-related civil electronics market, supplying avionics and airport equipment. More

recently, Dassault Electronique has become involved in the space market, supplying electronic components to a number of programs.

In 1999, Dassault Electronique was folded into its new parent company, Thomson-CSF. Thomson-CSF then merged Dassault Electronique, Thomson-CSF Radars et Contre-Mesures and Thomson-CSF Missile Electronics into a new wholly owned subsidiary, **Thomson-CSF Detexis**.

The new Thomson-CSF Detexis is a major producer of electronic warfare systems, airborne detection systems and missile electronics. Thomson-CSF Detexis employs an estimated 7,200 personnel.

Structure and Personnel

General Management

Jean-Robert Martin
Chairman and CEO, Thomson-CSF Detexis

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Product Area

Prior to the formation of Thomson-CSF Detexis, the principal military products of Dassault Electronique were radars and detection systems for aircraft; ground- and sea-based applications; the design, manufacture and integration of command and control systems; computers and bus-components for aircraft, missiles and combat vehicles; target detection and tracking systems for tactical missile systems; transponders; automation components for telecommunications systems; automated telecommunication network development; antenna and radar cross-section measurement services; airborne and naval countermeasures systems; space systems and platform transmission equipment; and operating software for all these applications. The company operated through the following divisions:

1. Seekers Division
2. Digital Systems Division
3. Detection Division
4. Space Division
5. Electronic Warfare Division
6. Technology Services
7. Software and Information Systems

Seekers Division. Target detection and tracking systems for tactical missiles.

Digital Systems Division. Computers for aircraft and missiles, equipment embedded "real time" software,

computer networking, systems integration, CAD/CAM, software quality assurance, avionics software, artificial intelligence, and systems security. The division's assets supporting development of civil products and services largely support, or have been transferred to, the DE3I Informatique and Dassault Electronic Développement subsidiaries.

Detection Division. Airborne interception and related radar systems, ground-based radar systems, transponders, battlefield surveillance, and testing of radars, antennas and radar cross-sections.

Space Division. Remote sensing components, including reception and data down and up-link, data processing equipment and power supplies.

Electronic Warfare Division. Airborne, seaborne, and ground-based electronic detection, jammers, decoys, and electronic support measures (ESM) systems.

Technology Services. This sector handles most of the company's research and development activities.

Software and Information Systems. This segment develops infrastructure networks and produces battle tactics simulators for the French armed forces.

Facilities

Thomson-CSF Detexis is headquartered in former headquarters of Dassault Electronique which are located in Saint-Cloud, a suburb of Paris.

Dassault AT, 9, rue Elsa Triolet - Z.I. Les Gâtines, BP 13, F-78373 Plaisir Cedex, France. This subsidiary produces telecommunications systems.

SOREP, Zone Industrielle de Bellevue, BP 5, F-35220 Chateaubourg, France. This unit designs and produces electronic circuit boards for military and civilian applications.

Dassault Sercel Navigation Positionnement (DSP), 16 rue de Bel Air, BP 433, F-44474 Carquefor Cedex. This unit produces navigation positioning systems.

Corporate Overview

On January 1, 1999, Dassault Electronique, Thomson-CSF Radars et Contre-Mesures and Thomson-CSF Missile Electronics, which made up Thomson-CSF's Airborne Systems Business Group, were merged into Thomson-CSF Detexis. The new company is the

European leader in electronic warfare, airborne radar and missile electronics systems.

Although Dassault Electronique was originally to have maintained its identity under the merger with Thomson-CSF, this plan was later changed and the name Dassault

Electronique has been abandoned. According to company officials, it was just easier to absorb all the companies into a single entity.

New Products and Services

DARDS. Demonstrateur Autonome a Rapidite De Deplacement Pour la Surveillance. DARDS is an experimental tele-operated tracked robotic ground vehicle. Dassault Electronique is prime contractor and system integrator. This unmanned ground vehicle could be used for a variety of missions, including reconnaissance/surveillance and weapon system designation/targeting. Demonstrations of DARD are currently ongoing.

Plant Expansion/Organization Update

French Companies Announce Cooperation Agreement. In April 1998, Aerospatiale, Alcatel Alsthom, Dassault Industries, Thomson S.A. and Thomson-CSF signed a cooperation agreement aimed at forming a large defense and professional electronics group. The plan intends to bring together, within Thomson-CSF, the activities of Dassault Electronique and the defense and professional electronics activities of Alcatel Alsthom, and separately pool the satellite businesses of Alcatel, Aerospatiale, and Thomson-CSF in a satellites joint venture which will be 51 percent owned by Alcatel and 49 percent owned by Thomson-CSF.

The agreement also sets out the terms of a strategic technology partnership between Alcatel Alsthom and Thomson-CSF. This partnership involves broad-reaching cooperation in R&D and reciprocal access to industrial property rights, and is designed to enhance synergies in civil and military electronics applications.

Once the asset consolidation operations are finalized, Alcatel Alsthom and Dassault Industries, acting together as Thomson-CSF's industrial partner, will hold 16.36 percent and 6 percent of the increased capital stock of Thomson-CSF, respectively. The French State will own 42.94 percent via Thomson S.A., and 4 percent via Aerospatiale.

In addition, Aerospatiale will sell its minority holdings in several companies involved in the space sector to the satellites joint venture for FFr1.25 million. To finance this operation, the satellites venture will increase its capital stock by an equivalent amount, subscribed by Thomson-CSF.

Mergers/Acquisitions/Divestitures

Thomson-CSF Detexis Formed. In December 1998, Thomson-CSF announced that the key units in its Airborne Systems Business Group – Dassault

Electronique, Thomson-CSF Radars et Contre-Mesures and Thomson-CSF Missile Electronics – would merge into a new company, Thomson-CSF Detexis. The new operations will be a European leader in electronic warfare, airborne radar and missile electronics systems.

The catalyst for the formation for Thomson-CSF Detexis is the merger of Dassault Electronique (which joined the Thomson-CSF Group in June 1998), Thomson-CSF Radars et Contre-Mesures and Thomson-CSF Missile Electronics which was agreed to in November 1998. This merger became effective January 1, 1999. As a natural consolidation following these mergers, Thomson-CSF Detexis became operational on the same date. The company will develop its international leadership with its European partners in the fields of electronic warfare, airborne radars, and missile electronics, as well as information technology and systems.

Thomson-CSF Detexis is a public limited company with a capital of FFr1,152,782. It is 100 percent held by Thomson-CSF. The head office is located at 55 quai Marcel Dassault in Saint-Cloud, France. Its Chairman and Chief Executive Officer is Jean-Robert Martin.

Thomson-CSF Detexis and its subsidiaries will gather approximately 7,200 employees, with over 75 percent engineers and technicians. Its turnover will exceed FFr8 billion.

Teaming/Competition/Joint Ventures

CNS Avionics. In June 1998, Dassault Electronique and Sextant Avionique established a new joint venture, CNS Avionics GIE. CNS Avionics offers airlines and aircraft manufacturers a line of communication, navigation and surveillance products. This offer gathers the products already marketed by the two companies (MMR - Multi-Mode Receiver, VHF VDR radio, radioaltimeter, EQAR flight data recorder and airborne printer), as well as the products currently being launched (GCAS - Ground Collision Avoidance System, SATCOM Aero-I satellite telecommunications system, Mode S transponder and flight management system). CNS Avionics is in charge of marketing and product launches, as well as the development and certification process. Sales and support are handled by Sextant Avionique.

Collins. In August 1995, Collins Avionics and Dassault Electronique signed a Memorandum of Understanding (MoU) to jointly develop a line of ground collision avoidance systems (GCAS).

AEG Aktiengesellschaft. Dassault Electronique and AEG AG of Germany are teamed for the seeker assembly for the Anti-Navires Supersonique anti-ship missile.

Aerospatiale. Dassault Electronique and Aerospatiale are engaged in joint research, development and integration of the Orchidée battlefield surveillance radar system, in addition to codevelopment of missile detection and tracking technology.

Alenia. Alenia and Dassault Electronique are undertaking joint research and development of the target detection and tracking assembly for the ASTER surface-to-air missile.

Bendix/King. Dassault Electronique has recently signed an agreement with Bendix/King Air Transport Avionics Division (a subsidiary of Allied Signal Aerospace) covering the joint production, marketing and service support of satellite communications antenna systems for commercial aircraft.

BICES Consortium. The BICES consortium, which includes Dassault Electronique, Alenia, Ferranti International, Messerschmitt-Bölkow-Blohm and General Electric, is developing a system using artificial intelligence in the collection and analysis of military data.

Dassault Aviation. Since it was created from Dassault Aviation, Dassault Electronique has obvious close ties to the larger firm. In fact, essentially all the aircraft programs of Dassault Aviation contain a significant proportion of electronic systems from Dassault Electronique. Other teaming arrangements are listed below in alphabetical order.

Deutsche Aerospace/BGT GmbH/SAT. In cooperation with these three companies, Dassault Electronique has continued with research associated with the development of a new generation of dual-mode seekers.

Hewlett-Packard. HP and Dassault are in joint development and operation of radar test ranges, including radar cross-section testing.

Laboratoire Central de Telecommunications. Dassault Electronique and LCT undertake joint research, development and integration of the Orchidée radar system.

LITEF. LITEF of Germany and Dassault are cooperating in the development of the HERALD radar/laser warning system, and navigation and countermeasures equipment,

including the RDN80B radar on the Tiger/Tigre helicopter.

Marconi Defence Systems. The LAD decoy system, under development with Marconi Defense Systems (MDS), is a shipborne active electronic decoy system intended to counter the threat of radar-guided anti-ship missiles. MDS and Dassault are also involved in the development of joint active and passive seekers for anti-aircraft missiles, including the Matra MICA.

Matra. Matra and Dassault Electronique are cooperating on target detection and tracking technology for the MICA missile, and on the Spectra electronic countermeasures system for the Rafale combat aircraft.

SAT. A cooperation agreement has been signed between SAT and Dassault Electronique to conduct research into new imaging seekers for air-to-ground missiles.

Teldix. Teldix of Germany is involved with Dassault Electronique on the developing the computers used on the PAH-2 Tiger/HAP-HAC Tigre helicopter.

Thomson-CSF. Dassault Electronique and Thomson-CSF are involved in several programs together, including the RDI, Orchidée, RBE-2, and Antelope 5 radars, as well as the mass memory system and the Spectra electronic countermeasures system for the Rafale combat aircraft. Currently, the two companies are teamed on the electronic warfare system of the *Horizon* frigate.

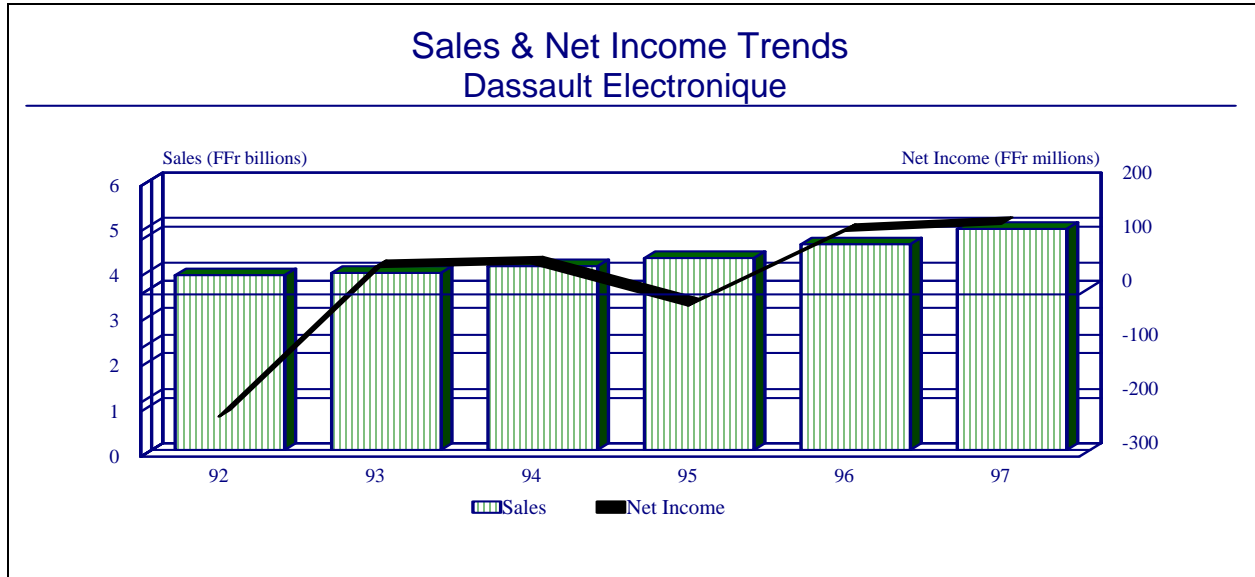
Vickers plc. A team established by the UK company Vickers and Dassault Electronique has been awarded a contract by the UK Royal Navy to develop a Fiber Distributed Data Interface (FDDI).

Westinghouse. Westinghouse and Dassault Electronique are involved in joint avionics programs, including computers, processors and standard databuses, and macrohybrid circuitry.

Financial Results/Corporate Statistics

The Dassault Electronique group's 1997 sales increased to FF4.9 billion, up from FF4.5 billion posted in 1996. The company posted net income of FF130 million for 1997 compared to FF117 million in 1996. The loss for 1995 was due to restructuring costs at Dassault. Latest year statistics are provided below. US dollar figure translated as a 1997 average at the rate of US\$1=FF5.8367.

| Y/E December 31 | 1993 | 1994 | 1995 | 1996 | 1997 | 1997 |
|-----------------|------|------|------|------|------|-------|
| (FFr millions) | | | | | | US\$ |
| Net Sales | 3924 | 4073 | 4254 | 4559 | 4916 | 839.5 |
| Net Income | 50 | 57 | -21 | 117 | 130 | 22.2 |



Strategic Outlook

With its absorption into Thomson-CSF, Dassault Electronique has ceased to exist as an independent agency. Instead, the company now forms the foundation of Thomson-CSF Detexis – a subsidiary focused on the airborne weapons and electronic countermeasures (ECM) markets.

Thanks to its combined might, Thomson-CSF Detexis possesses a leadership position in defense and aerospace electronics technology in Europe. This position is expected to make the unit an attractive partner for possible cross-border consolidation in the future.

One potential partner, GEC-Marconi, may be out of the bidding. In early 1999, British Aerospace announced that it would acquire GEC-Marconi in a stock deal valued at \$12.7 billion. The move creates the world's third largest aerospace and defense company, behind US giants, Boeing and Lockheed Martin. The new company, tentatively called New British Aerospace, will be Europe's largest, will employ almost 100,000 worldwide and is valued at \$25.7 billion.

The move angered Thomson-CSF, which had been looking at collaborating with GEC-Marconi in a cross-border venture. According to Thomson, "The plans proposed by Thomson-CSF to merge with Marconi

Electronic Systems would have led to the creation of a company with a truly European dimension generating substantial industrial, commercial and financial synergies. By contrast, British Aerospace's planned merger with Marconi Electronic Systems will lead to the formation of a national bloc which is inconsistent with the European dimension of aerospace and defense industry restructuring."

Whether or not this actually turns out to be the case remains to be seen. With European restructuring and consolidation slowing over the past year, thanks to France's slow pace in organizing its own industry, companies such as British Aerospace, DaimlerChrysler, and Finmeccanica have initiated several plans without French participation. Prior to the BAe/GEC-Marconi link-up, DASA and BAe were in talks on a possible merger between their respective companies. These talks were begun in no small part because of France's footdragging in privatizing its state-owned industries.

Ironically, what the French had wanted in this consolidation process is a unified European aerospace and defense concern that spoke French. Now thanks to the French government's inaction, market forces have placed the British in a potentially preminent position in the European aerospace and defense landscape.

However, while the merger has given the British an advantageous position, it could quite likely destroy the possibility for the creation of a unified European aerospace and defense organization. Angered by the merger move of BAe/GEC-Marconi, both

DaimlerChrysler and Thomson-CSF have announced their intentions of pursuing other opportunities without the British conglomerate. Interestingly, the BAe/GEC-Marconi merger may likely join Germany and France together in some type of cooperative venture.

Prime Award Summary

Information unavailable.

Program Activity

Business Interests. Some important aerospace and defense programs currently under way at Dassault Electronique are listed below. The briefs are intended to provide a listing of programs that are of major importance to the company. For detailed information or analysis of specific aerospace and defense programs or equipment, please refer to the appropriate FORECAST INTERNATIONAL binder (for example, AIRCRAFT, MILITARY VEHICLES, WARSHIPS, MISSILES, ELECTRONICS, and GAS TURBINES). The following is an outline of the company's business interests:

- Defense Electronics
- Avionics
- C³I Systems
- Electronic Warfare
- Radar
- Sensors
- Missiles
- Space Systems
- Systems Integration
- Training Systems

Electronics Programs

Carapace

This is an airborne radar warning and jamming system designed to provide EW protection for F-16 aircraft. A total of 135 systems are on order. Only 90 are to be installed on Belgian F-16 aircraft, leaving a surplus of 45 systems.

RBE-2

RBE-2 is an I/J-band multifunction/multimode electronically scanned radar with second-generation VHSIC PSP and high, medium and low PRF. RBE-2 is to equip the Rafale fighter aircraft. The program is in development.

ABD-2000

This is an airborne broadband defense detector-jammer system tasked with protecting the carrier aircraft against surface-to-air and air-to-air threats, including fire-control radars, target designators and radar homing systems. It is an internally mounted system designed primarily for all versions of the Dassault Mirage 2000. Dassault Electronique claimed it is also suitable for the Jaguar, Alphajet, F-16, Mirage F-1 and AMX.

Anemone

This is a multimode airborne radar for naval strike fighter application. A total of 56 radars have been ordered to upgrade 50 of the French navy's inventory of 67 Super Etendard strike fighters. Dassault Electronique is the prime contractor for Anemone, with Thomson-CSF acting as the main subcontractor. Dassault Aviation is responsible for system integration.

Antilope

Antilope is a J-band TWT airborne radar for low-level penetration attack aircraft. The Antilope V equips the Dassault Breguet Mirage 2000N, a two-seat, low-altitude penetration nuclear strike aircraft designed for the French air force. The primary mission of Antilope V is the accurate and effective delivery of the French ASMP nuclear missile. To this end, it provides a terrain following function at a platform speed of typically 600 knots and a altitude of 60 meters. Complementary to this primary mission, Antelope V provides manually selected or automatic updating of navigational data by surface correlation. A number of secondary capabilities complementary to the delivery mission exist, including air-to-air search, air-to-air tracking, air-to-air combat, air-to-surface search, air-to-surface tracking, and air-to-surface ranging.

BICES

BICES (Battlefield Information Collection and Exploitation System) is an information collection, collation and distribution system designed to provide an umbrella system under which the current national C³I systems work together. Data collected by the sensors of

different national systems will be sent to BICES and thus transferred to NATO command centers. Dassault Electronique is part of the ABC Consortium that is working on the prefeasibility stage of this program.

Horizon

Horizon is an I/J-band pulse Doppler radar designed for airborne standoff battlefield surveillance. The Horizon radar is required to detect and localize moving ground and air targets from a position some 10-20 kilometers behind the forward line of troops. Mounted in a helicopter flying at an average altitude of 3,000 meters, it covers an envelope 100 kilometers deep and 80 kilometers wide. A single pre-prototype and a prototype radar have been produced. A single Horizon production-standard prototype has also been delivered.

Outfit DLH

This is an expendable radiating decoy system tasked with providing platform protection by seducing inbound radar homing missiles using a lightweight, low-power expendable jammer. GEC-Marconi and Dassault Electronique are teamed together on this program which is currently in its preproduction phase.

Salamandre

This is a naval H/I/J-band multimode jammer tasked with countering missile and acquisition radars. Designated the ARBB-33, it is designed to jam active seeker heads and surveillance radars working in the I, H or J bands. It is being installed on Cassard class destroyers, the Georges Leygues class frigates and the Charles de Gaulle class nuclear-powered aircraft carrier.

Missile Programs

ARMAT

This is an anti-radiation missile system designed for the destruction/suppression of land-based and shipborne radar emitters. Dassault Electronique provides the high-performance radiation-seeking homing head and guidance system. Production of the ARMAT is continuing; this missile is operational. However, little information has been released on ARMAT, with production and delivery figures remaining classified. The ARMAT is a combat-proven system, having been used in combat by Iraqi Mirage F1s during the Iran-Iraq Gulf War and possibly by French aircraft during the war to expel Iraq from Kuwait (1990-1991).

ASTER 15/ASTER 30

This is a multiplatform, surface-to-air missile system. The ASTER 15/SAAM is for the destruction of hostile aircraft at medium altitudes and ranges, as well as anti-radiation and anti-ship missiles, from ships. The ASTER 30/SAMP is for land-based air defense. The

ASTER 30/SAMP is expected to have a capability to intercept ballistic missiles. Overall, the systems are for use against saturation attacks by aircraft with low radar cross-sections and by highly maneuverable tactical missiles traveling at supersonic speeds. Dassault Electronique is supplying a sized-up AD 4A active homing head for the ASTER 15 missile, in cooperation with Alenia.

Exocet

The Exocet is a family of medium-range, air-to-surface and surface-to-surface anti-ship missiles compatible with variety of platforms. The MM38 and MM40 are shipboard-mounted or used in fixed/mobile coastal defense positions. The SM39 is launched from submarine torpedo tubes. The AM39 equips a variety of fixed-wing aircraft and helicopters. Dassault Electronique provides the missile with its ADAC seeker heads.

Hades

Hades is a land mobile tactical nuclear missile. Production halted, although the French government did decide to complete almost 20 missiles. Plans to dismantle the missiles and destroy their warheads have been postponed. The missiles will be placed in storage so that they can be reactivated if France were to become involved in a prolonged military crisis in Europe. The missile is equipped with an Dassault Electronique and SAGEM- designed inertial guidance system. This advanced, simplified inertial reference system provides a circle of equal probability approximately 150-200 meters at full range.

Mer-Sol Balistique Strategique (MSBS)

This is a submarine-launched strategic missile series which forms one of the legs of the French nuclear deterrent force triad. Dassault Electronique provides the missile's inertial guidance with a Sagittaire digital computer. Production and development are continuing. The original M4 model is no longer in production, and fabrication of the upgrade variant, the M4C, has been completed. The M4 is operational; development of the missile and warhead continues. All French nuclear submarines, with the exception of *Le Redoutable*, were retrofitted with the M4 missile through 1990. France was expected to introduce a new interim system, the M45, between 1994 and 1996 due to delays in the M5 development program. France may also soon commence development of a land-based M5 version, designated S5, to keep its options open for the replacement of the silo-launched S3 nuclear missiles.

MICA

MICA is a short-, medium- and long-range air-to-air missile. Dassault Electronique and GEC-Marconi

Defence Systems are jointly developing MICA's active radar seeker, which is in full-scale engineering development. The infrared MICA missile system is expected to be available after the active radar version. Production of the active radar-guided MICA is to precede that of the infrared-equipped missile by at least 14 months, if not more. The initial production may have been delayed or could be of an extended nature.

Mistral (SATCP)

Mistral is a short-range anti-aircraft missile portable by two men and operable by one. Dassault Electronique provides the Rodeo 2 pulse-Doppler surveillance radar for the system. The Mistral is currently in production.

R.530/Super 530F/Super 530D

These are all-weather, medium-range air-to-air missiles. Dassault Electronique provides the missile's AD26 semi-active radar seeker head and RDI radar in cooperation with Thomson-CSF. Fabrication of the R.530 has been concluded, while the Super 530F remains available for production orders. The Super 530F entered service with the French air force in December 1979 and was specifically designed for the Mirage F1s. However, the missile can be fitted to Mirage 2000s. The development of the Super 530D was complete in mid-1987. Full-scale production followed one year later. Initial deliveries were made to the French air force in mid-1988. Escadron de Chasse I/5, the first operational unit equipped with RDI-fitted Mirage 2000s and armed with the new missile, began working toward its initial operational capability in July 1988. This missile is designed with the Mirage 2000 specifically in mind.

Space System Programs

Dassault Electronique is steadily increasing its involvement in space programs. One of the newest products is the GIBUS satellite battery management system, which employs artificial intelligence to monitor and manage satellite battery cycling. The company is emphasizing research and product advancement in the live loads market for miniature and micro satellites, and has experience in this area with the Spot 2 imaging satellite program. The company has also performed several studies in the ground observation radar and electromagnetic listening systems fields for the defense market and has assembled working prototypes. Dassault Electronique expects to enter these fields in the military marketplace in this decade.

Cospas/Sarsat

Cospas/Sarsat (Search and Rescue Satellite-Aided Tracking) is a satellite-based search-and-rescue system designed to detect and locate distress signals from emergency transmitters during emergencies at sea or on land. Dassault Electronique is one of several contractors involved in this program.

Taos

Taos is a mobile satellite system (MSS) designed for deployment in low-Earth orbit (LEO). The Taos system would allow customers to relay short messages to receivers worldwide. The system would also support radio determination satellite services (RDSS) to within about one kilometer. A Taos market study was prepared by Aerospatiale. Matra Marconi Space produced the S-80T satellite, based on the Surrey Satellite Technology UoSat design, for testing the technology for the Taos satellite system. Dassault Electronique provided S-80T production support. One S-80T satellite is operational in LEO. CNES opted in March 1994 not to pursue the Taos project.

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