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Basque Aerospace Sector

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General Picture

Area		7,234 Km^2
Population	(2003)	2,112,204 (5.4% of the population of the Spanish State)
Population density		287.9 Inhabitants / Km^2
Official Languages		Basque and Spanish
Capitals		Bilbao, Vitoria – Gasteiz and Donostia – San Sebastián
Airports		Loiu, Hondarribia and Foronda
Main ports		Bilbao and Pasaia
Technology parks		Bizkaia (Zamudio), Gipuzkoa (Miramón) and Araba (Miñano)
Doctors		456 for every one hundred thousand inhabitants
Sports facilities		3,058
Students/teacher		9.6 Ratio (for secondary education)
Schooling rate	(15-19 years) (20-29 years)	83.5% 23.5%

Source: Eustat and Author´s own

The Basque Country: A Growing Industrial Reality

1.-

The Basque country provides the perfect natural and industrial environment for the development of the Aerospace Sector. With an industrial tradition that goes back more than 300 years, the Basque Country boasts some of the most prestigious teaching institutions in Spain, producing large numbers of well-trained professionals.

Its geographical location and modern communications infrastructures facilitate the necessary mobility of materials and people. R&D activities and the dissemination of new technologies are supported by a large number of institutions. Located in the north-eastern corner of the Iberian Peninsula and one of the largest industrial areas in the Spanish state, the Basque Country is characterised for its ability to adapt to the continuous changes associated with the development of an advanced society and for **the conditions, attitudes and aptitudes** required to develop a highly active and competitive Aerospace Sector.

Strategic Location

The Basque Country, one of the major geographical communications centres located along the Atlantic axis in Western Europe, has several seaports, national and international airports, a large, well-connected railway network and first-rate motorways and roads.

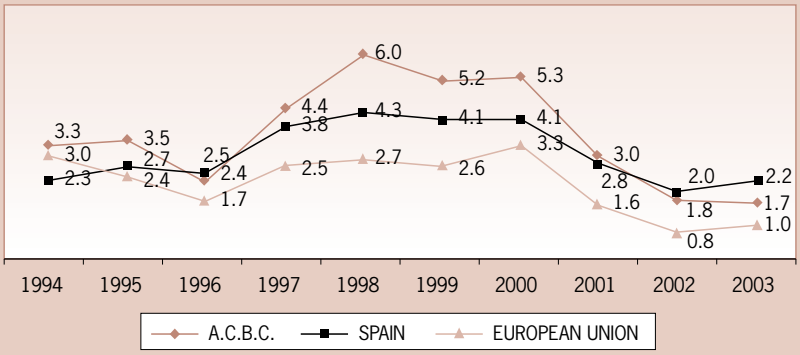
Likewise, the logistics centres of the Port of Bilbao and Vitoria airport cater for goods being transported to and from major international destinations.

Industrial and Subcontracting Network

Companies (2003):	(Total No.)	171,988
Employed population *	(Persons)	912,500
Unemployment Rate		7.0%
Agriculture *	(% population)	1.73
Industry *	(% population)	26.90
Construction *	(% population)	9.19
Services *	(% population)	62.18
Industrial sectors with greater presence:		Steel and special steels. Aeronautics and Aerospace industry. Automotive sector. Capital goods Electrical household appliances. Electronics, computing and telecommunications. Machine Tools.
Gross Domestic Product - GDP	(Mill. Euros)	44,881
GDP per inhabitant	(Euros)	24,552
Gross added value distribution		
Agriculture	(%)	1.36
Industry	(%)	32.23
Construction	(%)	7.93
Services	(%)	58.48
Imports	(Mill. Euros)	12,474
Exports	(Mill. Euros)	13,521
Research and Development	(%/GDP)	1.48

Source: Basque Government and Eustat.

GDP EVOLUTION (%)



Source: Revenue Department. Basque Government

Exports – Non energetic imports 2004

	BASQUE COUNTRY	SPANISH STATE
EXPORTS (Millions of Euros)	12,793	145,619
IMPORTS (Millions of Euros)	9,538	206,980
COVERAGE/ BALANCE OF PAYMENTS (%)	133.56	70.4

Source: Eustat and Ministry of Economy

Implantaciones en el exterior de Empresas Vascas

Productivas	184
Comerciales	920

Fuente: Catálogo de Exportadores Vascos 2003

Technological Level of Exported Products

		1995	2004
HIGH	(%)	1.11	2.87
MEDIUM HIGH	(%)	39.95	48.54
MEDIUM LOW	(%)	49.56	40.43
LOW	(%)	9.34	8.16
		100	100

Source: EUSTAT

External trade. Export tendency. (%).

	Export tendency*
A. R. Basque Country	30.65
Spain	30.50
France	22.97
United Kingdom	19.3
Germany	33.00
Japan	10.2
Italy	26.00

Source: EUSTAT. 2003.
* Exports/GDP

Quality

ISO 9000 Certified Companies	(No.)	4,016
ISO 14001 Certified Companies	(No.)	675
Awarded entities (EFQM Model of Excellence)	(No.)	5
Q Oro Premio Vasco Calidad de Gestión		15
Q Plata		65
No. of quality certificates/1000 mill. Euros of GDP		11.5 (Third highest rate in Europe)

Source: Department of Industry, Commerce and Tourism. 2004

Industrial Fabric and Subcontracting

The Basque country has a long industrial tradition that began with the dawning of the iron and steel industry and which led to the creation of major industries such as shipbuilding and heavy engineering. Over recent years, Basque industry has evolved towards more advanced technologies. The widely-recognised industriousness of the Basque people has given rise to a highly-specialised network of small and medium-sized companies, capable of providing a wide range of subcontracting services.

International Vocation

Basque companies are extremely active on international markets with facilities and/or strategic alliances in a large number of countries throughout the world, especially in the other member states of the European Community, Latin America and the Far East.

Administrative Structure

As an Autonomous Community, the Basque Country enjoys a wide range of administrative powers including: industrial policy, education and public investment. Traditionally, local authorities have provided companies with a great deal of institutional support to enable them to take the initial steps towards creating a business, to develop new technological products and companies and implement new information and communications technologies in already-existing business infrastructures. “Sociedad para la Promoción y la Reconversión Industrial, S.A.” (SPRI - Association for the Promotion of Industry) is the Basque Country development agency.

Its main undertakings include promoting the Basque Country as an attractive location for inward investment and forging business relations between foreign and Basque companies.

Over the last 20 years, SPRI has accumulated a great deal of experience in this field and its advanced system of industrial promotion has provided public and private financial support for a wide variety of activities. The Basque Public Administration has created a number of entities that provide basic support for industry in areas such as: Quality (Euskalit), the Environment (Ihobe), Technology (Eite), etc.

This is the main reason why the Basque Country has one of the highest densities of ISO 9000 certificates in Europe with a major implementation of the EFQM European excellence model. There is also a high level of awareness of environmental issues, which contributes to reducing environmental impact and provides high-quality surroundings, in spite of the high degree of industrialisation.

The Basque Public Administration boasts one of the best public health services in the Spanish State, Osakidetza, and pays a great deal of attention to modernising and automating its administrative functions, with a specific programme for the development of electronic government.

Training Infraestructure

Universities		- University of the Basque Country/Euskal Herriko Unibertsitatea (UPV/EHU) (public)
		- University of Deusto/Deustuko Unibertsitatea (private)
		- University of Navarre (San Sebastian campus) (private)
		- University of Mondragon (private)
University students (2003)	(No.)	91,000
No. of workers who are studying continuous training courses in the Basque Country	(No.)	100,987

Sources: FORCEM, HOBETUZ, Basque Government (Education) and AFM.

R&D Infrastructure

R&D Spending	(% GDP)	1.49
R&D Spending	(Mill. Euros)	619
R&D Spending distribution	(%)	· 80 Private sector Technology Centres: 16 Companies: 64
		· 17 Universities
		· 3 Public Research Organisms
Projects of companies in the machine tools sector (Basque Country) in the 5th and 6th Framework programmes of the European Union		43

Sources: EUSTAT y AFM.

	BASQUE COUNTRY A.R.	SPANISH STATE	EUROPEAN UNION
Spending % GDP	1.49	0.96	1.90
Business spending % GDP	1.2	0.53	1.14*
Personal FTE/Active population ‰	11.5	7.1	9.5
Personal FTE/Active population ‰	6.1	4.4	5

Source: Eustat 2001, INE 2001 and Eurostat 1999
2000*

Industrial and Economic Infrastructure

Driving clusters		ACEDE (Electrical Household Appliances)
		ACICAE (Automotive Sector)
		ACLIMA (Environment)
		ADINDE (Basque Maritime Forum)
		AFM (Machine Tools)
		CLUSPAP (Paper Cluster)
		Energy Cluster
		Knowledge Cluster
		GAIA (Electronics, Computing and Telecommunications)
		HEGAN (Aeronautic and Aerospace Industry)
		UNIPORT (Cluster of the Port of Bilbao)
Companies located in Technology Parks	(No.)	260
Industrial Estates	(No.)	72
Companies using the Internet in their daily management	(>10 employees) (%) (<10 employees) (%)	88.1 42.6

Source: Eustat and Basque Government

Training Infrastructure

The Basque Country has 4 prestigious universities with more than 91,000 students and 4000 lecturers. Of all the technical areas offered, Industrial Engineering attracts the largest number of students and has been taught for more than 100 years.

R&D Infrastructure

The Basque Science, Technology and Innovation Network (STIN) embraces 45 institutions including:

10 Technology Centres of international renown, university research departments, 4 research laboratories, etc., one of the highest concentrations in Europe of research and development activities as a support for industry.

Industrial and Economic Infrastructure

The Basque Country has an extensive network of structures that provide support for a number of different industrial sectors. The Basque Network of Business Parks includes three large Technology Parks (Bilbao, San Sebastián and Vitoria), among which the Technology Part of Zamudio is of special interest as it was the first to be created in the Spanish State.

Due to their constant efforts to promote the companies in their respective sectors, provide incentives and advice, the network of Sector Associations of the Basque Country represents a major source of support for more than 1000 associated companies, articulating an efficient system of industrial development based on collaboration. All these centres and most of the Basque Country have access to broadband telecommunications networks, provided by two main operators and large number of specialist Internet service providers (ISP). The Basque financial system is well known for its capacity and influence, being the origin of international entities such as BBVA, the Savings Banks Confederation, the Cooperative System, etc. All major international financial institutions have a presence in the Basque Country.

Quality of Life

The renowned quality of life of the Basque Country can be attributed to its exceptional landscapes and geographical conditions (sea, mountains, climate, etc.) as well as its cultural ambience (international festivals and conferences, film festivals, jazz festivals etc.), its internationally famous museums (Guggenheim Bilbao, Artium, Chillidaleku, etc.) and celebrated cuisine. The pursuit of all kinds of sports has been a popular pastime in Basque society for many years.

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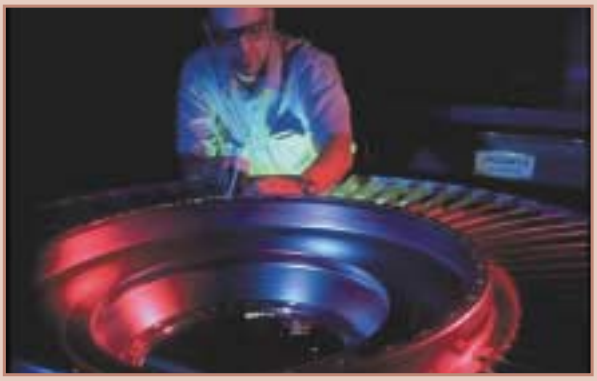


1.- Fatigue Tests
2.- ERJ 170-190
3.- Assembly of S 92 interiors
4.- Engine maintenance

Basque Technology in a Highly Demanding Industry

2.-

5.

6.

7.

8.

5.- EMBRAER ERJ 135-145 assembly workshop
6.- X-38 Space Rescue Vehicle
7.- Eurofighter Typhoon
8.- Assembly of the EJ 200.

Current Scenario of the Basque Aerospace Sector

3.-

The young Basque aerospace sector continues to grow steadily and has maintained its competitive edge in an ever-more demanding sector, for which it designs, develops and manufactures components for aircraft, engines and space vehicles. Over recent years, the Basque aerospace sector has extended its involvement with the successful incorporation of the systems and equipment subsector and has also been able to consolidate its activities in space and engine maintenance.

Having emerged in the mid-1980s, the aerospace industry of the Basque Country currently represents about 25% of the total turnover of the Spanish aerospace sector.

The Basque aerospace industry is the result of co-operation between a number of different companies that began to work in this sector in the mid-1980s and the efforts of the Department of Industry of the Basque Country which took the form of sector associations created in accordance with the "Cluster" model. This cooperation led to the creation of the Cluster Association of Aeronautics and Space of the Basque Country, HEGAN, which aspires to represent the Basque sector as a whole.

The HEGAN Cluster was created in order to promote, foster and stimulate the development of an industrial, professional, technological and research fabric in order to supply goods, products and services for the aerospace market. The high degree of coordination which has been achieved as well as the search for synergies among the different social and institutional agents involved, has enabled the strategic Basque aerospace sector to gain recognition on international markets, thereby contributing to the strengthening of our economy, favouring the creation of highly specialised jobs, the scientific and technical development of our society and the re-orientation of our industry towards activities that promise a better future and higher added value.

Thanks to the professionalism and the enterprising spirit of its members, and as well as the investments they have made in technology, HEGAN has developed a long-term project, the major features of which include the large number of quality certifications obtained by its members, the participation of the Association in major sector forums, its efforts to secure international agreements with other associations of European Aeronautics companies and the fostering of collaborations between the University and companies for the specialised training of their engineers.

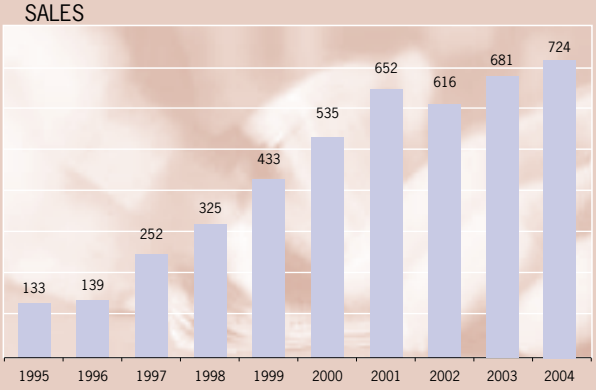
Basque companies are specialised in the aircraft, engines, space and testing subsectors. The main programmes and customers in which HEGAN's members have taken part are set out in the following table which provides eloquent proof of the extent of their activities.

The sector in figures

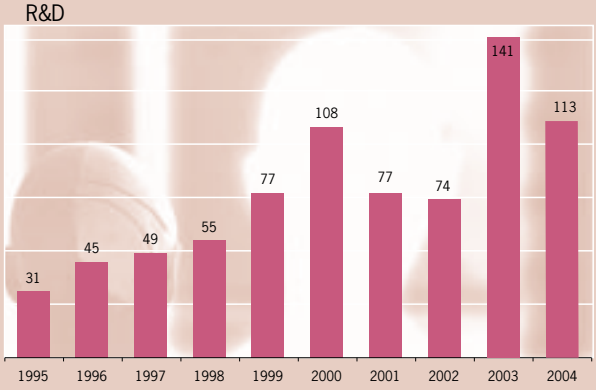
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Sales (Millions of Euros)	116	113	111	133	139	252	325	433	535	652	616	681	724
R&D (Millions of Euros)	21	27	25	31	45	49	55	77	108	77	74	141	113
Exports (Millions of Euros)	66	75	73	91	103	183	244	359	469	552	537	551	544
Employment	1014	1298	1277	1449	1496	2006	2560	2922	3310	4234	4343	4769	5347
R&D (%)*	18.10	23.89	22.52	23.31	32.37	19.44	16,92	17.78	20.19	11.78	12.01	20.71	15.66
Export Tendency (%)	56.90	66.37	65.77	68.42	74.10	72.62	75.08	82.91	87.66	84.67	87.18	80.95	75.06

(*) % R&D / Sales

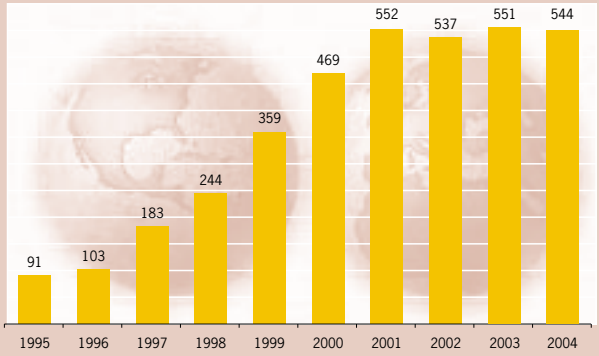
SALES



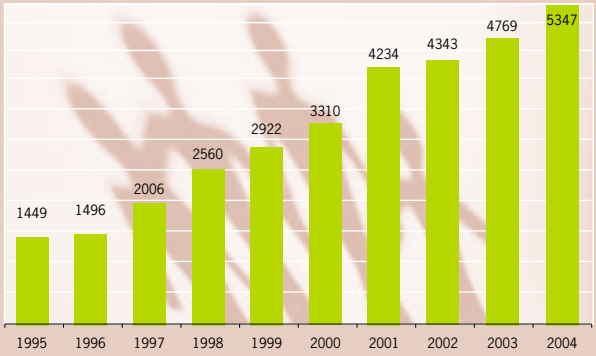
R&D



EXPORTS



EMPLOYMENT



Source: HEGAN

(%) Sector in the Basque Economy

	%
GDP	1.57
Exports	4.79
Employment	0.47
R&D	12.92

Source: HEGAN

(%) Basque Sector

	Spain	Europe
% turnover over sector	21.35	0.92
% employment	20.51	1.15

Source: HEGAN

Participation of HEGAN in international events	
ACE	2003
AERODAYS	2001, 2005
AEROLINK	2004
AEROMART	2002, 2004
AEROSOLUTIONS	2003
AEROTRENDS	2000, 2002, 2004
AIR CARGO FORUM	2002, 2004
FARNBOROUGH AIR SHOW	2000, 2002, 2004
FIDAE	2000
ILA AIR SHOW	2002, 2004
MET-Bilbao	2003
PARIS AIR SHOW	1999, 2001, 2003, 2005
SITEF	2002

Source: HEGAN

3.2 Aerospace activity in Basque companies

Aircraft

In the structures area, the Basque Aeronautics industry is engaged in projects both for civilian aircraft, regional aircraft and business jets, as well as in several defence and helicopter programmes.

With regard to long-haul civilian aircraft, it is especially interesting to note the work being done by Basque companies for the largest commercial aircraft ever designed, the AIRBUS A380, which is the result of the joint technological development of European Aeronautics manufacturers. For this giant of the aerospace sector, Basque industry offers a range of services that cover all stages from design to the production of numerous components, including the metal structure of Section 19 of the fuselage, the leading and trailing edges and the joining elements of the horizontal stabiliser boxes.

That is not all the work that is being done for the A-380. The Basque aerospace sector has been responsible for designing panels in composite materials for the front and rear parts of the Belly Fairing, the development of the engineering for the manufacture of mechanical parts for the Landing Gear, tooling for curing carbon steel, aluminium and Invar, surface treatments, the management and cutting of raw materials by means of 2D and 3D water cutting, parts machined in titanium and other special alloys as well as the casting of aluminium and super-alloy parts.

On the other hand, relations between the European Airbus consortium and the Basque Aeronautics industry have also included a great amount of work for the A340, A310 and A320 families.

The work being done by HEGAN companies for Boeing is increasing year by year. Especially important are the agreements reached by Basque companies to join the 747 "Large Cargo Freighter" design team or to participate by providing tooling for the structure of this aircraft, a modified 747-400 passenger aircraft that will be used for transporting the large structures of the new BOEING 787 Dreamliner.

In the area of civil regional aircraft, it is interesting to note the relations with EMBRAER that began several years ago. Basque companies have taken part in the manufacture of the ERJ 145 family of aircraft. This Brazilian company has consolidated this relationship by entrusting them with the design, manufacture and

assembly of such critical elements as the wings, stabilisers and rudders of a long list of models. This is the case of projects undertaken for the 170 family, made up of models 170/175/190 and 195, due to which the level of collaboration has intensified.

Also in the area of regional civil aircraft, a large number of Basque aerospace companies provide BOMBARDIER with an array of different services ranging from engineering to mass production of the complete horizontal stabiliser tail section, vertical stabiliser, elevators and assembly for the CRJ 700/900 model.

As for business jets, Basque companies are already working on the new Dassault Falcon 7X, which is expected to come into service by the end of 2006, and for EADS-SOCATA.

Basque companies also take part in defence projects and contracts, including the development of tooling and the production components for the AIRBUS A400M, in addition to the complete assembly of the C-212 aircraft and the manufacture and assembly of engine housings for the C-295 transport aircraft, both of which are being developed by EADS-CASA.

Basque engineering companies are working jointly with EADS to transform the AIRBUS-310 commercial aircraft into an in-flight refuelling aircraft, and to modernise the NIMROD aircraft of BAe Systems

Other defence programmes in which the Basque sector is working include the EF2000, the MRTT, the P3B Orion, the BOEING AWACS and other defence aircraft built by DASSAULT AVIATION.

Basque companies are also engaged in the manufacture of helicopter structures and are involved in the S-92 programme of the American manufacturer, SIKORSKY, through the design, certification and manufacture of a large number of structures as well as numerous parts for BOEING's helicopter programmes.

Several Engineering projects have also been undertaken for the BO-10S, EC-120 Colibrí, Gran Chinook and AB-212 helicopters and the DART programme (development of the future European Tiltrotor) and the flight simulator housing for the Chinook helicopter.

Engines

Over the last ten years, the participation of the Basque Country in aeronautics engines and turbines projects has increased at a spectacular rate. Work has been done for some of the most well-established engine manufacturing companies and Basque companies have played a major role in some of the most important technological breakthroughs in the European sector.

Rolls Royce was the first world-class manufacturer of aircraft engines to take advantage of the potential of Basque companies. Basque companies have participated in the manufacture of the TRENT 700, 500 and 1000 engines, and their workload in this area will increase over the coming years. In fact, in 2004, the market share of one Basque company was in excess of 10

percent of this market segment. In other words, 10.6 of every 100 turbines sold in the world will be manufactured by this company.

In the civil aircraft engines sector, Basque companies have a 10 percent participation in the TRENT 500 project, for which they will manufacture the low-pressure turbine module. This engine is fitted to the AIRBUS A340-500 and 600 and allows for improved fuel consumption.

Basque participation in the TRENT 900 engine, which will power the AIRBUS A380, will reach 16.7 percent with responsibility for the design, manufacture and assembly of the low-pressure turbine and the radial structure which supports its bearings.

With regard to the TRENT 1000, which is to be fitted to the BOEING 787 aircraft, Basque participation will reach 11 percent, with responsibility for the design, manufacture and assembly of the low-pressure turbine. The coming into service of this aircraft in 2008 will also involve a Total Care Agreement for the maintenance of its engines.

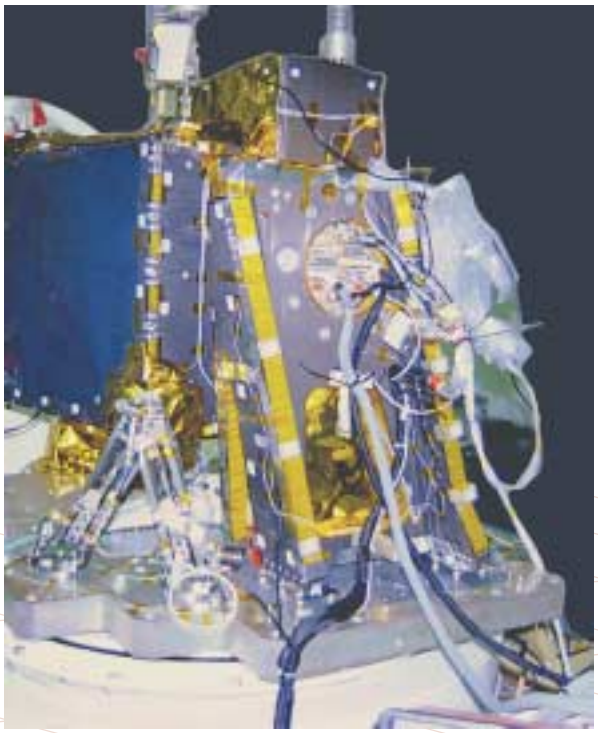
Basque companies are also responsible for the manufacture of elements for the ROLLS ROYCE DEUTSCHLAND BR715 engine which powers the BOEING 717 aircraft, the design of the low-pressure turbine for the HONEYWELL AS900 engine which powers regional transport aircraft, and the turbine for the VIP BOMBARDIER-CHALLENGER 300. In addition, we should mention the GENERAL ELECTRIC GE90, which powers the BOEING 777 aircraft, a project in which several Basque companies are taking part.

Within the defence sector, the Eurojet EJ200 which propels the Typhoon aircraft (Eurofighter) is one of the key projects of the European aerospace industry, and Basque companies have played a major role in its development. For this engine, Basque companies manufacture products and carry out the final assembly and maintenance of Spanish-made units. One of the major novelties of this engine, the vectoring thrust nozzle, was completely designed and manufactured by Basque companies, and was the first and until now the only one of its kind manufactured in Western Europe.

With regard to the rest of defence sector engines, it is interesting to note the role of Basque companies in the TP400 engine, manufactured by the EPI consortium (whose presidency is currently in the hands of a Basque company) and which propel this European transport and rapid reaction aircraft, the A400M, ensuring the continuance of this industry in the defence market. We should also highlight the presence of Basque companies in the American F135 project which will equip the JOINT STRIKE FIGHTER (JSF), and in the GEM, RTM322 and MTR390 turboshaft engines, for the EUROCOPTER TIGRE and in the SPEY 807, ADOUR and PEGASUS turbofans.

Space

The Basque Aerospace industry has played a major role in a number of important scientific projects. For example, Basque companies have taken part in major scientific projects such as NETLANDER, within the MARS SAMPLE RETURN project, that will send scientific stations to Mars in September 2007. Having completed the project design, this project is now at the development stage.



Basque companies have collaborated in the INTEGRAL mission launched by the ESA in October 2002 with the PROTON rocket, the largest rocket currently made by Russia. For this mission, Basque companies have been responsible for developing the platform separation devices and have also worked for the PRU (Pyrotechnics Release Unit) which starts up the control system and releases the mechanism used to deploy the panels and other relevant parts.

Projects of the magnitude of the X 38/ CRV rescue vehicle, which NASA is developing in order to rescue astronauts from the international space station, have seen Basque participation in the development and manufacture of landing gear components. Also for the international space station, specifically for the European COLUMBUS module, Basque companies have taken part in the design, development and manufacture of three of its modules.

And for the ARIANE family of the European Space Agency (ESA), including ARIANE 5 plus, Basque companies are taking part in the engineering and design as well as several assembly kits for its Vulcano engine and for the

EGNOS programme (Geostationary Navigation Overlay Service). The work performed for EGNOS has centred both on completing the EETES (EGNOS End To End Simulator), and on most of the development of the real-time computer systems that manage the different calculus processes (CPF) in the Control Centre (MCC).

The Basque space sector is also involved in the important commercial satellite market. Some examples of this participation are described below: Thermal blinds and arms for deploying experiments in orbit for the ROSETTA satellite; devices for securing the SILEX terminal of the communications satellite ARTEMIS to launch; equipment on the weather satellites METOP, HISPASAT (1C, 1D; 1E), SYRACUSE III (French satellites responsible for guaranteeing the confidentiality of the communications of the French government), YAMAL 200 (second generation of the geostationary satellites developed by the Russian company RKK Energiya); GE 1i, GE 2i (by GE American Communications, USA); and satellite equipment CLUSTER (ESA), NEWBIRD, and HOTBIRD 6

After completing their contribution to the HELIOS 2 defence satellite and the second generation of European meteorological satellites METEOSAT, several tasks were undertaken for the PLEIADES programme, which consists of two satellites that will form the constellation in synchronous orbit with the sun and will guarantee the continuance of the service of terrestrial images provided by the SPOT series, the main contractor for which is the French company ALCATEL ESPACE.

Basque companies are taking part in the GAIA astrometric mission with the development of an 11-m diameter parasol and its corresponding equipment, which will deploy after the satellite has been placed in orbit, as well as the development of a fine positioning mechanism for the telescope's secondary mirror.

Also of special interest are the tasks commissioned by the ESA to develop a rotary actuator and the involvement in the ESA's AURORA programme, which attempts to relaunch the exploration of the solar system, both in manned flights and with automatic probes.

Also of special interest is the participation of Basque industry in the development of the Attitude and Orbit Control Subsystem of the ConeXpress Orbital Life Extensión (CX OLEV) space vehicle, whose mission is

Areas of research and technological development

- Optimisation of engine output flows
- Intelligent structures in composite materials for aeronautics components
- Virtual reality applied to the design of aerospace components
- Advanced joining technologies for aeronautics.
- Continuous fluid dynamic testing technologies with advanced instrumentation
- Advanced modelling, machining and inspection techniques
- Combustion of materials in microgravity.

Expressions of interest for the 6th European Framework

Integrated projects	Excellence Networks
Airframe Technologies for Environmentally Friendly Aircraft (ATEFA)	
Environmentally Friendly Aero Engine (VITAL)	
Advanced Cabin and Multimedia Services for Improved Comfort and Efficiency (ADCAB)	· NEAR: Red de Excelencia en Aeroacústica
Advanced and Low Cost Airframe Structures (ALCAS)	
Maintenance Free Airframe Structures	
Aero Engine for Affordable Air Travel (AffordTurb)	· SASMATECH: Smart Advanced Structures and Manufacturing Technologies
Novel Rotorcraft for Gate to Gate Passenger Transport (NICE TRIP)	of Composites
More Electrical Aircraft (MOET)	
Innovative technical and business concepts for the next generation of highly competitive european turbofans (Novafans)	
Aero Engine New Concepts (NEWAC)	· ENACTRAN: The future Use of Composites in Transport
Environmentally Friendly Helicopter (FRIENDCOPTER)	
Small Common Core Aero-Engine Integrated Project (COMCO)	
Airborne integrated systems for safety improvement, Flight hazard Protection and All-weather operation (FLYSAFE)	· MECHANET: Integrated analysis, simulation and design for aircraft
Safe and Benficial Approach/Landing and Ground Movement Procedures and technologies (ALGOS)	structures, mechanical equipment and engine components.
All composite Small Aircraft (ALLCOMP	
Supersonic cruise jets SSBJ and ESCT (SUPERSONIC)	
The Virtual Engine and Engine Enterprise (VERTIGO)	· Metallic Foam Excellence Network
The Virtual Product Within Engine Enterprise:	
Significant Lower Community Exposure to Aircraft Noise (SILENCER)	
Technologies And Techniques for nEw Maintenance concept (TATEM)	· UAVs Network
Increasing safety and MATerial exploitation of Composite airframe structures by accurate simulation of Collapse (COCOMAT)	
Aircraft Reliability Through Intelligent Materials Application (ARTIMA)	

Algunos proyectos actuales del Programa Marco Europeo
Proyectos integrados

FRIENCOPTER	ANTLE	VITAL	AISHA
TATEM	MMCFS	IMPRESS	NEWTIRAL
COCOMAT	MANHIRP	AEROSTALKI	
ARTIMA	SILENCER	OMUX	

to prolong the operating life of telecommunications satellites in geostationary orbit once the fuel they carry on board has been exhausted.

Other programmes of special relevance in which Basque companies are involved include ELMER, located in the Gran Telescopio de Canarias (GTC), designed for the observation of display with different modes of operation, and the following projects and programmes: ANTENA PHOENIX, ENTRY BAFFLE COVER –MODELO FM4-, OPTICAL BENCH ASSEMBLY, XEUS, FSL SS and THEOS, for which the Launch Vehicle Adaptor and the Coupole MVS has been manufactured.

For the Arabsat programme of EADS ASTRIUM, Basque industry is working on the fourth-generation satellites A-4 and B, which will be used to expand and optimise the direct broadcasting capacity of television, telephony and data transmission by the telecommunications organisation of the Arab League, covering North Africa, the Middle East and a part of Western Europe.

Other major projects include the a range of different equipment and components for the new satellites of the American operator PanAmSat, called Galaxy 17, which is to become the first satellite constructed by Europeans to extend the fleet of one of the largest suppliers of satellite communications services of the United States, which will cover areas of the United States, Latin America, Africa, Europe, the Middle East and Asia, as well as the Koreasat 5 for the company KT Corporation in the Korean Agency for Defence and Development (ADD), which will be included in the first civil communications satellite in South Korea.

On the African continent, we should mention the participation in the pan-African satellite RascomStar, promoted by the RASCOM consortium, which groups 44 operators from different countries, and proposes to become 2006 the first African telecommunications satellite to cover the entire African continent.

Among the most ambitious scientific programmes of the ESA with a Basque presence are the Herschel and Planck satellites, which will allow astronomers to study the formation and development of galaxies and stars from the creation of the universe and to understand the development of large structures in the universe.

Special mention should be made of the Basque participation in the GALILEO programme, the European satellite navigation system with a constellation of 30 global, civilian-owned satellites interoperable with GPS. Basque companies have taken part in their development and future operation within the national consortium created for this purpose. After defining the type of service and the development of testbeds, in 2004, Basque companies initiated the development stage with a number of different designs, developments, BreadBoards and mechanisms.

Systems and Equipment

Over recent years, the involvement of HEGAN companies in the area of systems and equipment has increased

markedly. The exponents of this area include the participation in the "Flare Dispenser" of the EUROFIGHTER, as well as the preparation of systems for sections 19.1 and HTP of the AIRBUS A380, as well as for the A310 MRTT aircraft and the conceptual design of the wings for the A400M.

To these projects we must add the supply of pipes for the TRENT 900 and V2500 civil engines, the design of systems connected to the "Belly Fairing" of the A380, the integration of ejector seat launching rings for the international aerospace programmes EUROFIGHTER, NACES and JSF, participation in the In-flight Fuel Supply Systems for the MRTT refuelling aircraft and cargo compartment door mechanisms.

Other programmes in which Basque manufacturers have anticipated include the EUROCOPTER TIGRE helicopter as well as flying, steering systems, and landing gear for LATECOERE, MESSIER DOWTY, CESA, EADS-CASA, GOODRICH and LIEBHERR.

Maintenance

In the area of maintenance, in which it is interesting to note of the existence of the 24-hour spare part distribution centre for airlines and aircraft manufacturers from all over the world, there has been considerable increase in activity. Basque industry offers maintenance directly to airlines for products designed in the Basque Country, although the aim is to extend this offer to other products and services.

In the engine maintenance subsector, there are 10-year maintenance contracts for the PW100 family of the customer AIR NOSTRUM, as well as the Iran Aseman airline, for the Pratt & Withney PW127 and HONEYWELL TPE331 turboprops. Moreover, Basque companies have obtained certification by Pratt & Whitney Canada as the authorised general overhaul centre for the PW200 family of engines and the recognition of ROLLS ROYCE Paris as Authorised Maintenance Centre for its RR250 engine.

Also in 2004, a contract was signed with the US ARMY for the maintenance of its T63-A-20 engines, which equip their Kiowa helicopters and the maintenance of the EJ200 engine has begun, as well as a preliminary agreement to maintain the engines currently maintained by SNECMA and others with Argentina, Columbia, Mexico, Chile, Morocco, Holland, Belgium and the United States.

Finally, companies specialised in coil spares and maintenance and the repair of Stators, Rotors, Armatures and Fields work for SABENA TECHNICS, SAS, LUFTHANSA TECHNICS, IBERIA, FOKKER, KLM, etc.

Tests and certifications

The infrastructures of the Basque Country in the aerospace sector are well equipped for trials and certifications. These include laboratories for structural and nondestructive fire tests of all kinds of components, fluid dynamic tests of low-pressure turbines, with which aeroacoustic tests are carried out on the new materials and vibro-environmental tests, which offer complete

dynamic tests, from simulation and analysis to HALT and HASS tests.

With regard to this area, it is interesting to note the contracts signed with AIRBUS FRANCE, AIRBUS SPAIN, SOCATA, SOGEMASA, GAMESA AERONÁUTICA and CESA.

3.3 R&DT Activity

In the R&D sector, we should highlight the amount of resources Basque companies dedicate to investment, which has remained at an average of 20 percent over turnover of all the companies involved in the sector. This figure is well above the European average.

The Basque Country has a first-rate network of Technology Centres that represent the leading group of private applied research establishments in Spain, created with the aim of promoting technological innovation in companies, to improve their competitiveness and to exploit the potential of its technological infrastructures in order to contribute to the wealth of the Basque Country.

Their well-equipped research facilities have led them to take part in a large number of R&D projects over recent years as well as a number of ongoing programmes. Without attempting to provide an exhaustive list, some of the lines of research in which work has been done over recent years and other, ongoing projects, are indicated below.

3.4. A Quality Reference Model

Shortly after the creation of the Association, HEGAN set up a Quality Committee in order to provide companies belonging to the Cluster Association with guidance on issues relating to the quality of their products, services and management systems. With this aim in mind, in 1999, the development of the association's own quality standards was promoted, merging the criteria of the ISO 9000:94 standards and the European and American aerospace industry. The HEGAN 9000 standard has been used as a reference for the certification of the Basque aeronautics industry and has placed the sector in an advantageous position for the adoption by the international aeronautics industry of the EN 9100 standard.

The great importance given to quality has led to a situation whereby, today, 98 percent of our companies have the EN9100 certification and 100 percent expect to obtain this over the coming months. Moreover, at this time, work is being done to implement the NADCAP special process certification procedure.

As a result of the great importance HEGAN attaches to quality, today it is the only regional association member of EAQG (European Aerospace Quality Group), a factor which contributed to the regular committee meeting of this group being held in Bilbao in February 2005.

Activities Matrix

4.-

COMPANIES / ACTIVITIES	Machining	Training	Control and electronics systems	Sheet metal working	Tooling	Repairs and Maintenance	Composites	Assembly	Engineering	Manufacture of Engine Components	Manufacture of Aircraft Components	Manufacture of Components for SpaceHeat	Thermal and Surface Treatments	Thermal Sprays	Non destructive tests	Tests and certifications	Design and Development	Special cutting and drilling	Materials supply and management	Feasibility studies	Integration of systems and components
AEROMEC	●				●			●	●	●	●										
AEROSPACE ENG. GR.						●															
ALFA				●						●	●	●	●	●		●	●				
ALLUS																					
ARATZ	●				●			●	●		●	●									
ASTORKIA	●				●			●	●		●	●									
BURDIN BERRI	●				●			●	●		●	●									
BURULAN	●				●			●	●		●	●									
DMP	●				●			●	●	●	●	●			●	●	●				
DOIKI					●			●	●	●	●						●				
EUROUTIL	●				●			●	●	●							●				
GAMESA		●			●	●	●	●	●		●	●			●	●	●		●		●
GOI ALDE	●				●											●		●			
IMESAZA													●				●				
IONTECH													●	●	●						
ITP	●	●		●		●		●	●	●			●	●	●	●	●		●		●
LANDU																					
LAZPIUR	●				●				●	●							●				
MATRINOR	●				●			●	●		●	●				●	●				
MECANIZADOS KANTER	●				●			●	●	●	●	●									
MESIMA BILBAO				●									●					●	●		
METRALTEC	●			●				●	●		●		●								
NOVALTI	●	●			●			●	●	●	●	●	●		●	●	●				
NUTER	●				●				●	●	●	●									
PCB									●		●										
PRECICAL			●						●							●	●				
SENER		●	●		●	●	●	●	●			●			●	●	●		●	●	●
SIEGEL	●				●			●	●	●	●	●									
SISFLE	●				●			●	●								●				
SK-10		●		●	●		●	●	●		●	●	●		●						
SPASA	●				●			●	●	●	●	●			●		●				
TALLERES AIBE																					
TAUCON																					
TECNASA									●		●										
TECNICHAPA				●				●	●	●					●						
TEGRAF		●		●	●		●	●	●	●	●						●				
TEY													●		●						
TRAT.TÉRMICOS T.T.T.													●		●						
TROQUELES Y UTILLAJES AYALA	●			●	●					●					●	●	●				

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