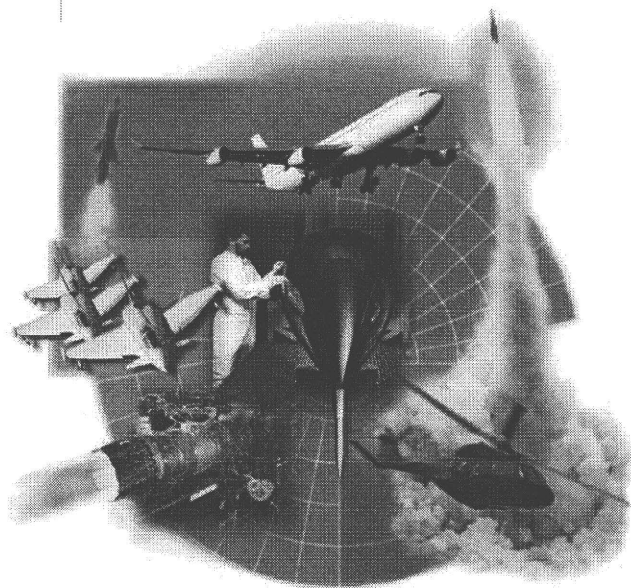


The European Aerospace Industry



1998 Statistical Survey

AECMA

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Introduction

The data and information provided in this booklet represent the results of the statistical survey among the European Aerospace Industry (EAI) for 1998.

Data has been collected not only from the AECMA-member companies, but also from other aerospace companies (such as EU-Consortia like Airbus Industrie and airline maintenance companies) across all EU Member States. It, thus, truly reflects an EU-picture of the EAI.

However, the EAI statistics as presented here do not include the thousands of supplier companies to the EAI throughout the EU, whose principle interest is not in aerospace.

Since the publication of the results of the survey for 1997, a number of revisions of aerospace statistics in some of the EU Member States has taken place. Wherever data for 1997 and before is presented or referred to, this revision has been taken into account.

Key characteristics of the European Aerospace Industry for 1998 are:

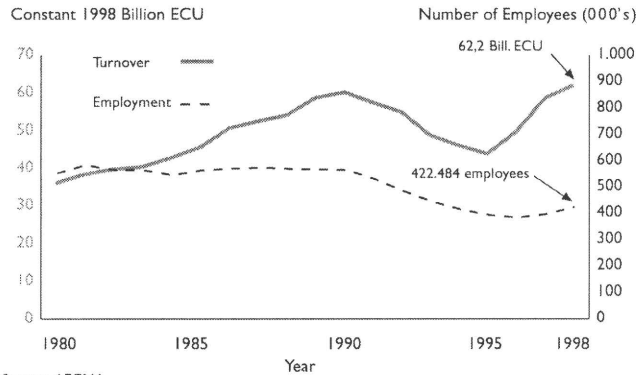
Employment	422.484 employees
Turnover	62,2 Billion ECU
Operating Profit	6,6% of turnover
Order Intake	160% of turnover
R&D Expenditure	16,1% of turnover
Export Percentage	54,1% of turnover
Industry Trade Balance	+24,1 Billion ECU

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Trends

The growth of the EAI business which - after a number of years of declining sales - had been regained in 1996, continued in 1998. Compared to 1997, sales grew by 6% in 1998, see figure 1. There is expected to be some growth in 1999, inspite of a levelling out of sales for civil aircraft. Long term market forecasts indicate a sustained overall growth of the aerospace business with individual segments ranging from stable demand to strong increases, all segments being subject to cyclical developments.

Fig. 1: EU Aerospace Industry Turnover*+ and Employment+

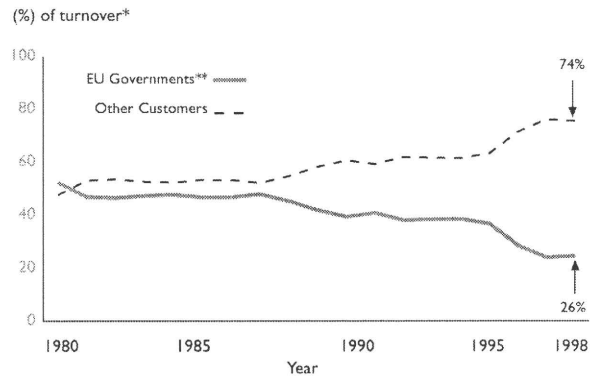


Source: AECMA

(*) consolidated turnover

(+) incl estimations for Sweden until 1992 and non-AECMA companies until 1995

Fig. 2: EU Aerospace Industry Turnover* by EU Governments / Other Customers

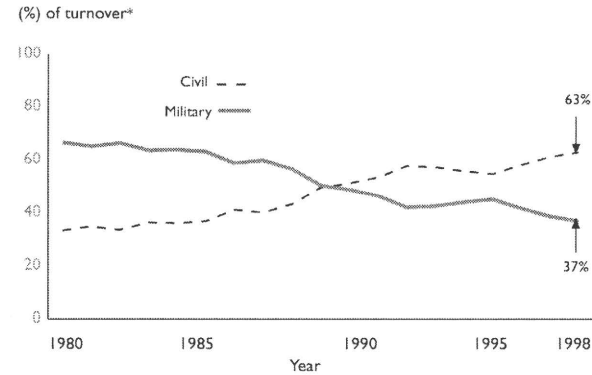


Source: AECMA

(*) based on consolidated turnover in constant 1998 prices, incl. estimations for Sweden until 1992 and non-AECMA companies until 1995

(**) incl. ESA, national aerospace research establishments and agencies

Fig. 3: EU Aerospace Industry Turnover by Civil / Military



Source: AECMA

(*) based on consolidated turnover in constant 1998 prices, incl. estimations for Sweden until 1992 and non-AECMA companies until 1995

Compared to 1997, the number of employees of the EAI has increased by almost 7%, comparing year-end figures. Due to the stable employment level in 1997, the mid-year average increase would be closer to 3-4%. In the long term perspective, the number of employees is expected to remain relatively stable, with some growth following the increase in turnover, however not at the same pace, since the trend to higher productivity is assumed to continue due to further rationalisation and restructuring necessary to ensure the continued competitiveness of the industry.

One has to bear in mind, that there is substantial additional aerospace-dependent employment within the supply chain outside the actual Aerospace Industry presented here. This additional employment is estimated at approximately another 800,000 jobs. A substantial amount of this has been transferred to the supply chain by outsourcing as part of the rationalisation process.

From 1987 the respective share of sales to EU Governments (incl. ESA, national aerospace research establishments and agencies) and other customers declined from a 50:50 ratio to current levels of around 25:75, see figure 2. This can be explained by the combined effects of considerable demand for civil aircraft and a certain shift from military domestic sales to military exports.

In the US, the corresponding figures for 1998 are around the 45:55 ratio. This demonstrates that the EAI depends to a much lesser extent on government contracts.

Historically, the EAI evolved from a military-oriented industry but has changed over the years to an increasingly civil-oriented industry, see figure 3. By 1998, the civil share reached 63% while the military share decreased to 37%.

Turnover

Total turnover of the EAI in 1998 was 62,2 Billion ECU. Of this, 90% was generated by the major European aerospace countries, France, Germany, Italy and the United Kingdom, and 99% by countries represented by AECMA.

There is an additional 4,5 Billion ECU of turnover generated by EAI subsidiaries located in the US and other countries outside the EU. This additional turnover is not further analysed here.

Compared to the total turnover in 1997 (58,7 Billion ECU), sales grew by 3,5 Billion ECU or 6%. The total turnover for 1997 published by AECMA in 1998 at 55,3 Billion ECU was revised to 58,7 Billion ECU in line with the routine change from economic conditions from 1997 to 1998 and due to revisions of aerospace statistics in some of the EU Member States.

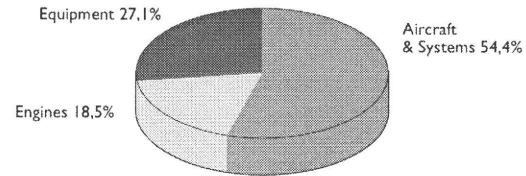
The aerospace industry is generally subdivided into the industrial sectors *Aircraft & Systems*, *Engines* and *Equipment* and the product segments *Aircraft* (including helicopters), *Missiles* and *Space* (for further explanations see Annex). Turnover (and employment) information is detailed for these sectors and segments.

Figure 4 shows the individual industry sector contribution to the 1998 total turnover. (For explanation of industry sector contribution see Annex.)

Figure 5 outlines the breakdown of the EAI's turnover by product segment. As can be seen, aircraft production dominates the product range with civil aircraft being the single largest contributor.

Fig. 4: Breakdown of Industry Sector Contribution to 1998 EU Aerospace Industry Turnover*

Total: 62,2 Billion ECU



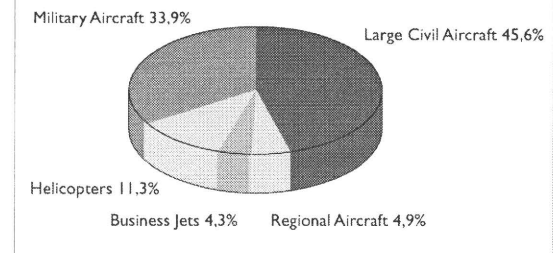
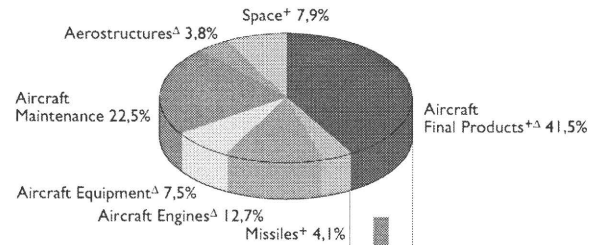
Source: AECMA, estimated

The figures reallocate internal turnover within the industry; i.e. Aircraft & Systems figures exclude EU-supplied Engines and Equipment; Engines figures exclude EU-supplied Equipment but include Engines supplied to European Aircraft & Systems manufactures; Equipment figures include Equipment supplied to European Aircraft & Systems and Engines manufactures.

(*) based on consolidated turnover.

Fig. 5: Breakdown of 1998 EU Aerospace Industry Turnover* by Product Segment

Total: 62,2 Billion ECU



Source: AECMA, Aircraft breakdown estimated

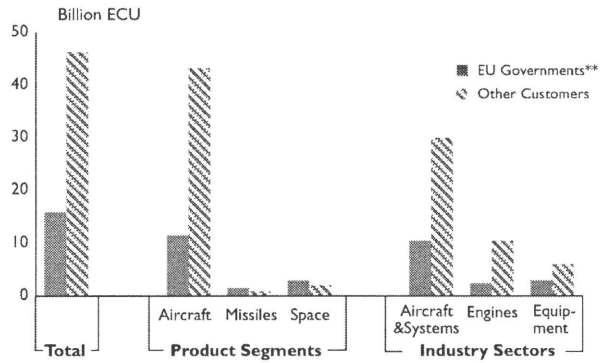
(*) based on consolidated turnover

(†) data comprises EU and non-EU supplied aerostructures, engines and equipment

(‡) excl. maintenance

Fig. 6: Breakdown of 1998 EU Aerospace Industry Turnover* by EU Governments / Other Customers

Total: 62,2 Billion ECU



Source: AECMA

(*) based on consolidated turnover

(**) incl. ESA, national aerospace research establishments and agencies

Figure 6 demonstrates the particularly low dependence of the overall sector on contracts acquired from EU Governments, due to the aircraft product segment. The sector *Aircraft & Systems* represents the average level, while that share is 1/5 for the *Engine* sector and 1/3 for the *Equipment* sector.

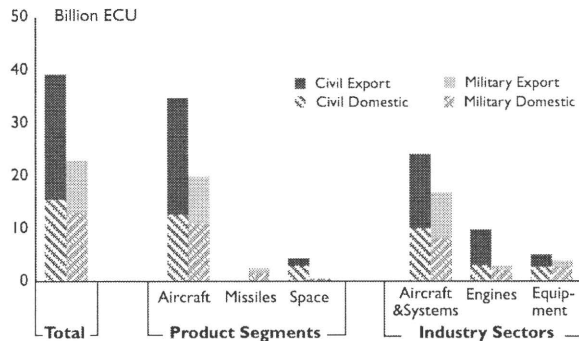
The split between civil and military turnover for the product segments and industry sectors can be seen in figure 7. It should be noted, that the *Aircraft* business reflects the overall ratio of civil to military business, as the exclusively military business of *Missiles* is compensated by *Space* being predominantly civil.

The export split by product segments and industry sectors is also given in figure 7. Civil Aircraft continue to be the single largest contributor to the total exports. The overall aerospace sector export percentage by turnover is 54,1%.

The relevance of the EAI internal trade as well as its role as supplier to aerospace companies outside the EU is described in figure 8. For the *Engine* sector it is particularly noticeable that there is a higher ratio of sales to aerospace companies outside the EU than to the EAI, and underlining the competitiveness of the *Engine* sector outside the EAI community.

Fig. 7: Breakdown of 1998 EU Aerospace Industry Turnover* by Civil / Military and by Domestic / Export

Total: 62,2 Billion ECU

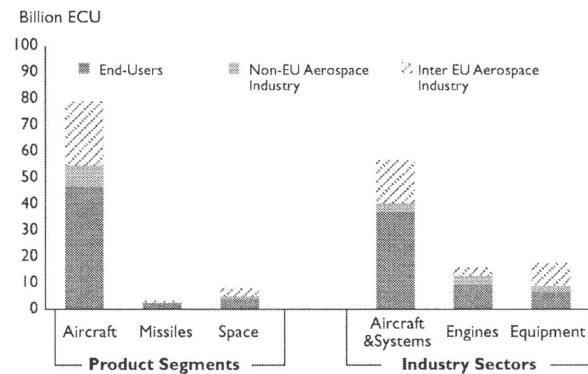


Source: AECMA

(*) based on consolidated turnover

Fig. 8: Breakdown of 1998 EU Aerospace Industry Turnover by Customer

Total: 90,5 Bill ECU unconsolidated
28,3 Bill ECU Inter EU Aerospace Industry Sales
62,2 Bill ECU consolidated,
i.e. excl. Inter EU Aerospace Industry Sales

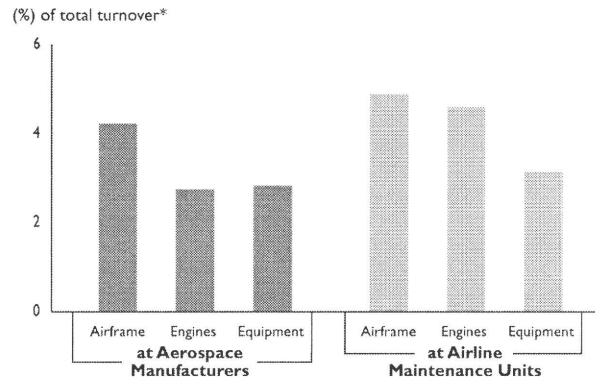


Source: AECMA

A significant part of many aerospace manufacturers' business relates to maintenance activities, but aerospace maintenance is also performed by other companies. The large maintenance units at EU airlines are particularly important. Total turnover resulting from sales of maintenance services reached about 14 Billion ECU in the EU which corresponds to 22,5% of total turnover, see figure 9.

Fig. 9: 1998 EU Aerospace Industry Turnover* resulting from Sales of Aircraft Maintenance

Total: 14,0 Billion ECU = 22,5% of total turnover*



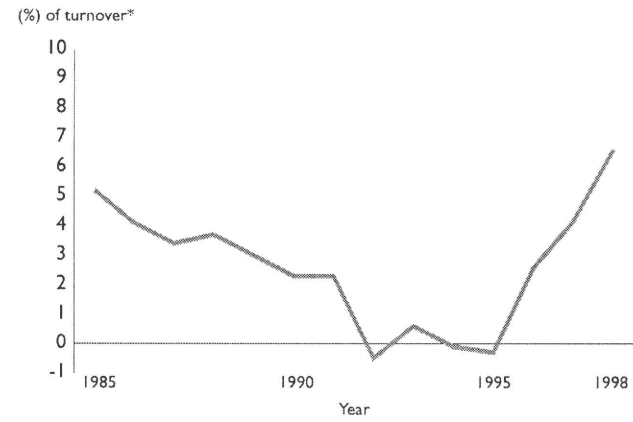
Source: AECMA

(*) based on consolidated turnover of 62,2 Billion ECU incl. maintenance

Profitability and Order Intake

The EAI profitability expressed in operating profit margin, see figure 10, had decreased over the period 1985 until 1995. Until 1991 this decrease was mainly due to a very low value of the US\$ against the ECU affecting both revenues and expenditures (for provisions against potential risks resulting from exchange rate instabilities).

Fig. 10: EU Aerospace Industry Operating Profit Margin*



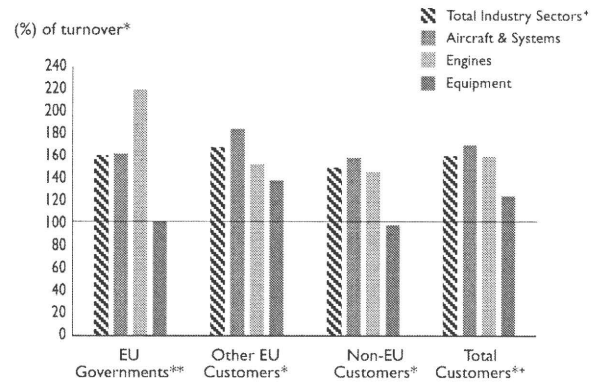
Source: AECMA

(*) operating profit over turnover

For the years 1992 through 1995 the results of the EAI were in addition marked by costly rationalisation efforts to adapt to the decreasing turnover and to ensure future competitiveness. Since 1996, the effects of these efforts in combination with an increased value of the US\$ in relation to the ECU have brought back the EAI to profitability. In comparison to 1997 the EAI shows improved profitability, now back to the level achieved in 1985.

The order intake as shown in figure 11, being noticeably higher than turnover, indicates a continuation of the current growth trend. With a level of 160% compared to 122% in 1997, order intake in 1998 was particularly strong. High demand by customers other than EU-Governments tends to maintain their share of increase of the business, as previously shown in figure 2.

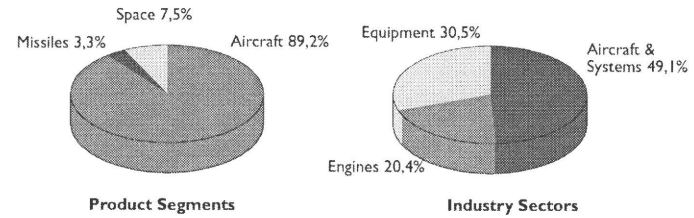
Fig. 11: Breakdown of 1998 EU Aerospace Industry Order Intake* by Customer



Source: AECMA

(*) based on unconsolidated order intake in percent of unconsolidated turnover (excl. EU-Consortia)
 (**) incl. ESA, national aerospace research establishments and agencies
 (*) weighted average

Fig. 12: Breakdown of 1998 Direct EU Aerospace Industry Employment by Product Segment and Industry Sector
 Total: 422.484 employees



Source: AECMA

Employment / Industry Structure

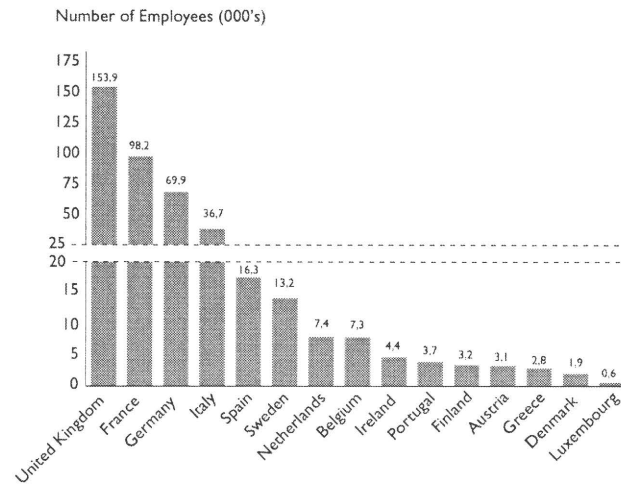
Total direct employment in the EAI in 1998 was 422.484 employees. The increase compared to the published figure for 1997 (377.510) is mainly due to a number of revisions of aerospace statistics in some of the EU member states as well as to the fact that more companies responded to the survey. Real growth of employment was about 7%, corresponding to about 27.000 jobs generated by the EAI in 1998.

The additional employment within the supply chain (not represented here) is estimated at around twice the above number of jobs again. The overall employment generated by aerospace in the EU is therefore in the order of 1.2 million people.

In addition, there are some 33.000 employees working in EAI subsidiaries located in the US and other countries outside the EU. This additional employment is also not represented here.

About 50% of the EAI's activity in terms of employment is with prime contractors or overall system level companies, see figure 12. These companies are complemented by an *Engine* sector with a share of about 20% and *Equipment* sector with a share of 30% of the EAI's employment.

Fig. 13: Contribution to 1998 Direct EU Aerospace Industry Employment
 Total: 422.484 employees



Source: AECMA

It should be noted, that close to 90% of all direct aerospace employees in the EU are related to *Aircraft* as opposed to *Space* (7%) and *Missiles* (3%).

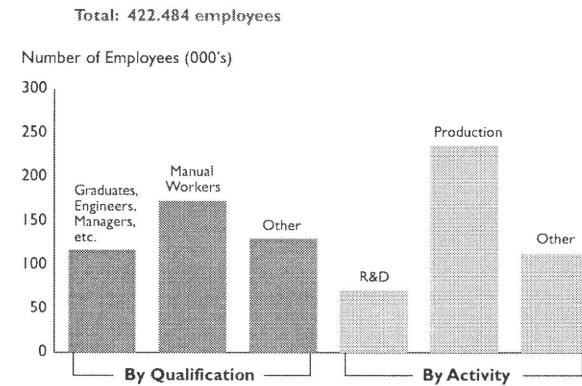
Aerospace companies are based in all EU Member States and therefore all EU Member States contribute to the European aerospace business. The core of the industry is located in the 4 member states with the largest economies (i.e. United Kingdom, France, Germany, Italy), followed by groups of countries which host structured aerospace industries with activities in most segments, comprising of Spain, Sweden, The Netherlands and Belgium. Figure 13 gives the EU Member States' contribution to the EU Aerospace Industry's employment.

The EAI provides highly skilled jobs. 28% of all employees have a university degree or equivalent, see figure 14. Most others, which account for 31% of all employees and include technicians, draughtsmen, craftsmen, secretaries, etc., have enjoyed an education at institutions at below-university level. And even most of the manual workers, which account for 41% of all employees, have been highly trained either within the EAI or externally to cope with the sophisticated nature of the aerospace technology.

Most employees work in the field of production, see figure 14. However, the fact that 17% work in the field of R&D demonstrates the relevance of R&D to the EAI.

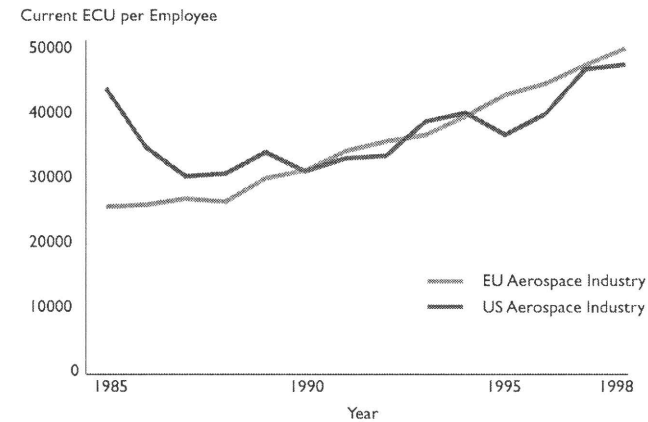
Average labour costs in the EAI are on a comparable level with those of the US Aerospace Industry, as can be seen in figure 15. The fluctuations in the development of the US labour costs are largely due to the influence of exchange rate variations.

Fig. 14: Breakdown of 1998 EU Direct Aerospace Industry Employment



Source: AECMA

Fig. 15: Comparative Aerospace Industry Average Annual Labour Cost per Employee EU/US*



Source: AECMA, AIA
(*) extrapolated from available data

Research & Development (R&D)

Various definitions of R&D exist and it is therefore difficult to achieve reasonably harmonised data throughout the EAI. For the purpose of this survey, R&D was defined to comprise:

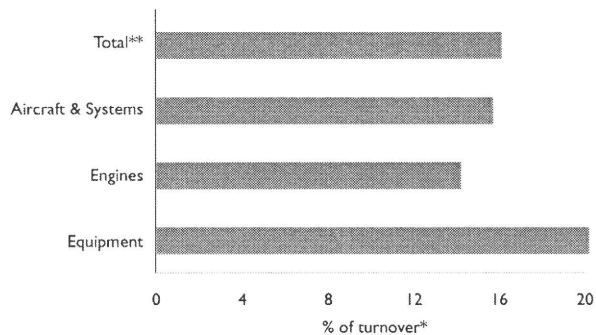
- Research and Technology activities which represent all those R&D activities which are not directly attributable to products. They can, thus, be regarded as generic technologies and are designed to maintain or expand the technological basis.
- Development activities leading to series production.

Average R&D expenditure of the EAI reached 16,1% of total turnover in 1998, see figure 16. The increase in R&D expenditure compared to 1997 (13,5% of total turnover) is mainly due to a certain recovery in EU-Government financed R&D expenditure following a substantial reduction in the preceding year.

The financing of the EAI's R&D expenditure is shown in figure 17. The level of company financing of R&D is comparable to that of financing by EU Governments. This demonstrates the EAI's strong contribution to technological advancement.

Fig. 16: 1998 R&D Expenditure* of EU Aerospace Industry

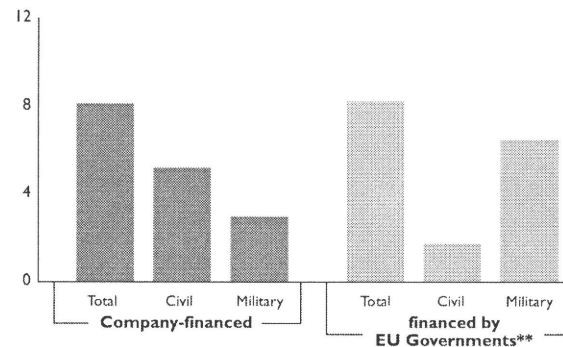
Total: 10,0 Bill ECU = 16,1% of turnover*



Source: AECMA
 (*) based on consolidated turnover
 (**) weighted average

Fig. 17: 1998 R&D Expenditure* of EU Aerospace Industry

Total: 10 Bill. ECU = 16,1% of turnover*
 % of turnover*



Source: AECMA

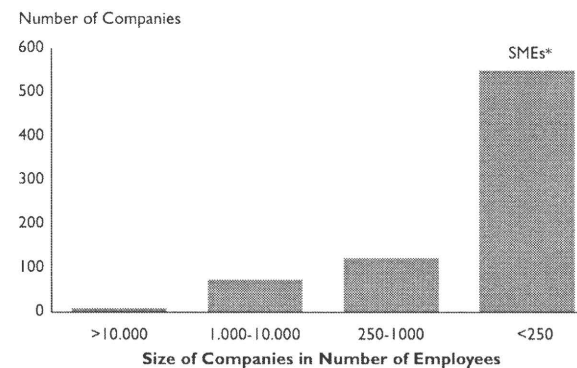
(*) based on consolidated turnover

(**) incl. ESA, national aerospace research establishments and agencies

Small and Medium-Sized Enterprises (SMEs)

The EAI is characterised by a small number of very large firms, a larger number of medium sized companies, and a very large number of small enterprises, see figure 18. About 550 companies, or 73% of all companies belonging to the EAI in 1998, comply with the employment criteria of the definition of SMEs outlined by the European Commission.

Fig. 18: Structure of the EU Aerospace Industry in 1998



Source: AECMA

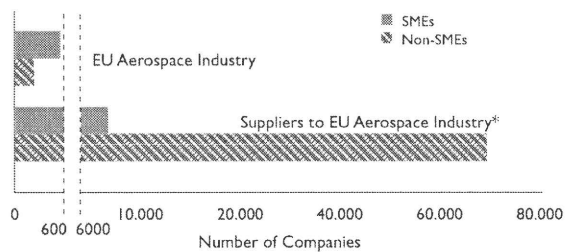
(*) Small and Medium-sized Enterprises

In addition, there are an estimated 78.000 European suppliers of goods and services to the EAI of which about 10% are estimated to be SMEs, see figure 19. Thus, not only among the classical aerospace manufacturers as represented by the EAI, but also down the supply chain, aerospace provides impetus to a large number of SMEs within the EU.

The EU Aerospace Industry SMEs' turnover and employment for the various product segments and industry sectors can be seen in figure 20. In line with the overall industry, SMEs are predominantly supplying to the Aircraft product segment (87%). In contrary to the overall industry, however, concerning SMEs the major employer is the Equipment sector.

Company financed R&D expenditure in percentage of turnover for SMEs was somewhat lower than for non-SMEs in 1998, see figure 21 and 17. R&D expenditure in former years has been only slightly lower than for non-SMEs, demonstrating that high R&D expenditure not only a characteristic of larger aerospace companies but also of the EU Aerospace Industry SMEs.

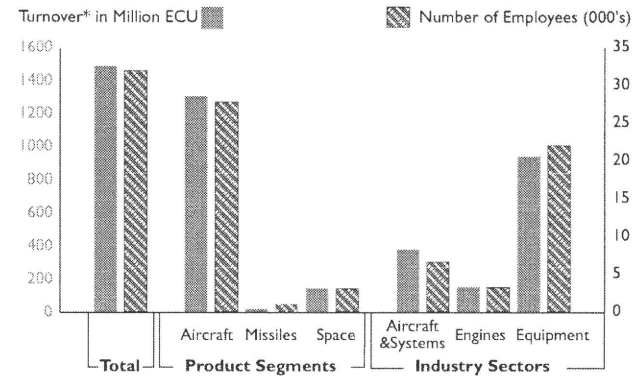
Fig. 19: SMEs in the EU Aerospace Industry



Source: AECMA
 (*) Number of supplier companies estimated by extrapolation of available data

Fig. 20: 1998 Turnover* and Employment of EU Aerospace Industry SMEs**

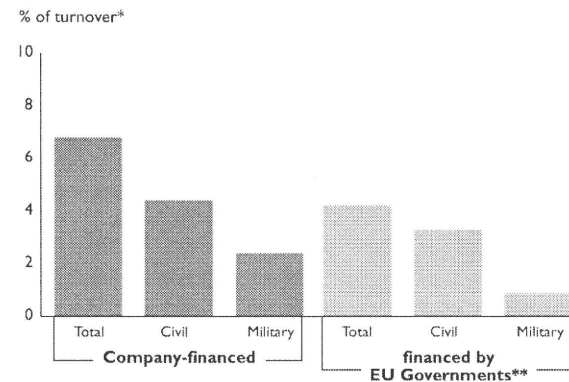
Total Turnover*: 1,5 Billion ECU Total Employment: 31.904



Source: AECMA
 (*) based on consolidated turnover
 (**) excl. suppliers to EU Aerospace Industry as mentioned in Figure 19

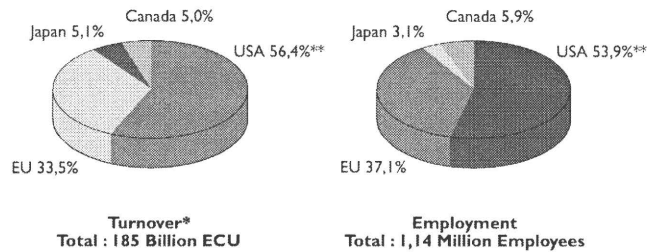
Fig. 21: 1998 R&D Expenditure* of EU Aerospace Industry SMEs

Total: 164 Mio ECU = 11,0% of SME turnover*



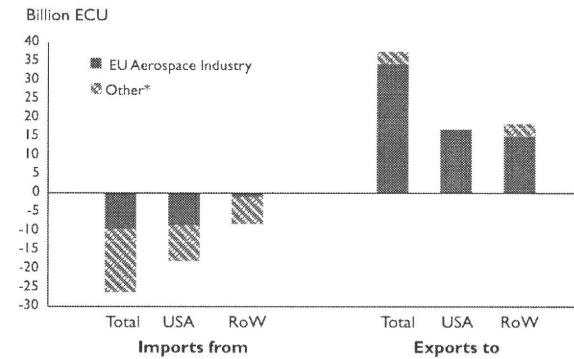
Source: AECMA
 (*) based on consolidated turnover
 (**) incl. ESA, national aerospace research establishments and agencies

Fig. 22: 1998 Comparative Aerospace Industry Turnover* and Employment



Source: AECMA, AIA, AIAC, SJAC
 (*) based on consolidated turnover
 (**) excluding products and services which are only aerospace related

Fig. 23: 1998 Aerospace Import and Export of EU



Source: AECMA, Eurostat
 (*) estimated, incl. Governments, Airlines, etc.

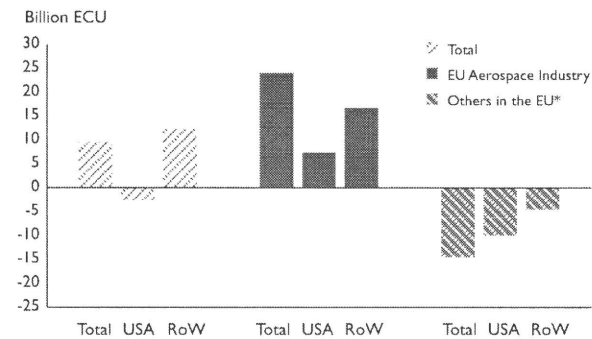
International Aspects

In 1998, the largest aerospace producing nations of the world (except Russia and China, where data is difficult to obtain) achieved a combined sales volume of 185 Billion ECU. The EAI contributed 34% or 62.2 Billion ECU to this amount, see figure 22. The US Aerospace Industry, with 50% more employees than the European Industry, remains the dominant player on the global market place. However, the EAI is - in rough terms - about 4 times bigger than the aerospace industries of Japan and Canada together.

Aerospace trade balances shown in figures 23 and 24 are based on aerospace relevant products and services. For the EAI, figure 23, this represents all exports minus all imports necessary to support production. For the overall aerospace trade balance of the EU, this takes all exports and imports into account, which would for example include imports of airplanes by EU airlines as well as exports of second-hand military aerospace equipment by EU Governments.

The European Aerospace Industry achieved a high positive trade balance of 24,1 Billion ECU in 1998 with countries outside the EU, maintaining the level of 1997. The overall European aerospace trade balance is still positive and considerable at 9,5 Billion ECU, in spite of the high imports of aerospace products from the US by EU Governments and EU airlines.

Fig. 24: 1998 Aerospace Trade Balance of EU



Source: AECMA
 (*) estimated, incl. Governments, Airlines, etc.

Annex

Total unconsolidated turnover is the sum of all turnover data provided by the companies. Consolidated turnover at EU level is calculated as the total unconsolidated turnover minus the turnover resulting from sales between EAI companies. This consolidated turnover therefore represents all sales to end-user customers as well as to aerospace companies outside the EU.

However, the appropriate weight of the industry sectors in the development and manufacturing process cannot be expressed by their share of consolidated turnover since the *Engine* and *Equipment* sectors also supply a substantial part of their output to the EAI's *Aircraft & Systems* companies. To calculate the individual contribution of the industry sectors to the total turnover one must rather

- exclude from the consolidated *Aircraft & Systems*' sales the *Engines* and *Equipment* supplied by the EAI to *Aircraft & Systems* manufacturers,
- add the engines supplied by the EAI to the European *Aircraft & Systems* manufacturers to and subtract the equipment supplied by the EAI to the European *Engine* manufacturers from the consolidated *Engines* sales, and
- include the equipment supplied by the EAI to the European *Aircraft & Systems* and *Engines* manufacturers in the consolidated *Equipment* sales.

Fig. 25: Breakdown of EU Aerospace Industry Turnover

		Industry Sectors			
		Aircraft & Systems	Engines	Equipment	Total
Product Segments	Aircraft	a	b	c	Aircraft = a + b + c
	Missiles	d	e	f	Missiles = d + e + f
	Space	g	h	i	Space = g + h + i
	Total	Aircraft & Systems = a + d + g	Engines = b + e + h	Equipment = c + f + i	

■ Total unconsolidated turnover

One peculiarity of the EAI are EU-Consortia such as Airbus Industrie, Euromissile, Arianespace. For the time being, they are still sales organisations without any production capabilities and are controlled by other EAI companies which usually also serve as suppliers to these EU-Consortia at the same time. Data provided by the EU-Consortia is generally taken into account here, whereby sales by the EU-Consortia's shareholders to the EU-Consortia have been eliminated.

List of Abbreviations

AECMA	European Association of Aerospace Industries
AIA	Aerospace Industries Association (of the US)
AIAC	Aerospace Industries Association of Canada
DAC	Data Analysis Committee
EAI	European Aerospace Industry
ECU	European Currency Unit
ESA	European Space Agency
EU	European Union
R&D	Research & Development
SJAC	Society of Japanese Aerospace Companies
SMEs	Small and Medium-Sized Enterprises
US	United States

Acknowledgements

This booklet has been prepared on the basis of the results of the 1998 statistical survey of the European Aerospace Industry, which has been prepared and performed by AECMA's Data Analysis Committee (DAC) with the participation of experts from the national aerospace associations and companies of the EAI.

However, without the cooperative and most appreciated contributions from all the companies of the EAI who responded voluntarily to the questions raised by the survey, the results would never have reached this level of detail and sophistication.

Special thanks is therefore to be expressed to both the contributing companies, the national aerospace industry associations and to the members of the DAC.

The European Association of Aerospace Industries (AECMA) has the objective of promoting the competitive development of the European Aerospace Industry, and representing the Industry on a European level in all matters of common interest.

Members of the Association are the national aerospace associations of Austria, Belgium, Denmark, France, Germany, Italy, The Netherlands, Spain, Sweden and the United Kingdom as well as the largest European aerospace companies. It thereby represents the European Aerospace Industry almost in its entirety on the level of aircraft/systems, engines, equipment and components.

Further Information

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July 1999

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Fig. 1: EU Aerospace Industry Turnover** and Employment*		
Year	Turnover: Constant 1998 Mio ECU	Employment: Number of Employees
1980	35.990	550.499
1981	38.366	582.732
1982	39.716	563.474
1983	40.421	562.765
1984	42.840	543.521
1985	46.650	561.742
1986	50.698	568.883
1987	52.516	572.751
1988	54.156	568.253
1989	58.797	566.365
1990	60.221	564.595
1991	57.465	528.636
1992	54.947	483.828
1993	48.838	443.770
1994	46.010	413.329
1995	43.922	392.041
1996	49.764	382.012
1997	58.692	395.487
1998	62.150	422.484

Source: AECMA
(*) consolidated turnover
(+) incl. estimations for Sweden until 1992 and non-AECMA companies until 1995

Fig. 2: EU Aerospace Industry Turnover* by EU Governments / Other Customers		
Year	EU Governments** in (%) of turnover*	Other Customers in (%) of turnover*
1980	52,43	47,57
1981	46,94	53,06
1982	46,45	53,55
1983	47,36	52,64
1984	47,71	52,29
1985	46,70	53,30
1986	46,73	53,27
1987	47,88	52,12
1988	45,29	54,71
1989	41,80	58,20
1990	39,42	60,58
1991	40,81	59,19
1992	38,07	61,93
1993	38,37	61,63
1994	38,55	61,45
1995	36,73	63,27
1996	28,55	71,45
1997	23,89	76,11
1998	25,64	74,36

Source: AECMA
(*) based on consolidated turnover in constant 1998 prices, incl. estimations for Sweden until 1992 and non-AECMA companies until 1995.
(**) incl. ESA, national research establishments and agencies

Fig. 3: EU Aerospace Industry Turnover by Civil / Military		
Year	Civil in (%) of turnover*	Military in (%) of turnover*
1980	33,42	66,58
1981	34,91	65,09
1982	33,63	66,37
1983	36,37	63,63
1984	36,17	63,83
1985	36,86	63,14
1986	41,17	58,83
1987	40,14	59,86
1988	43,34	56,66
1989	49,58	50,42
1990	51,25	48,75
1991	53,47	46,53
1992	57,82	42,18
1993	57,33	42,67
1994	55,87	44,13
1995	54,75	45,25
1996	58,23	41,77
1997	61,23	38,77
1998	63,03	36,97

Source: AECMA
(*) based on consolidated turnover in constant 1998 prices; incl. estimations for Sweden until 1992 and non-AECMA companies until 1995.

Fig. 4: Breakdown of Industry Sector Contribution to 1998 EU Aerospace Industry Turnover* Total: 62.150 Mio ECU	
	Turnover in Mio ECU
Aircraft & Systems	33.831
Engines	11.483
Equipment	16.836
Total	62.150

Source: AECMA, estimated
The figures reallocate internal turnover within the industry (i.e. Aircraft & Systems figures exclude EU-supplied Engines and Equipment. Engines supplied to European Aircraft & Systems manufacturers; Equipment figures include Equipment supplied to European Aircraft & Systems and Engines manufacturers.
(*) consolidated turnover

Fig. 5: Breakdown of 1998 EU Aerospace Industry Turnover* by Product Segment Total: 62.150 Mio ECU	
	Turnover in Mio ECU
Aircraft*	54.700
Aircraft Final Products [†]	25.784
Large Civil Aircraft	11.764
Regional Aircraft	1.268
Business Jets	1.098
Helicopter	2.922
Military Aircraft	8.731
Aerostructures [‡]	2.378
Aircraft Engines [‡]	7.905
Aircraft Equipment [‡]	4.638
Aircraft Maintenance	13.995
Missiles [†]	2.531
Space [†]	4.919
Total	62.150

Source: AECMA Aircraft breakdown estimated
(*) based on consolidated turnover
(†) data comprises EU and non-EU supplied Engines and Equipment
(‡) excl. maintenance

Fig. 6: Breakdown of 1998 EU Aerospace Industry Turnover* by EU Governments / Other Customers Total: 62.150 Mio ECU				
Product Segments		EU Governments**	Other Customers	Total
		Mio ECU	Mio ECU	Mio ECU
Product Segments	Aircraft	11.474	43.226	54.700
	Missiles	1.561	974	2.535
	Space	2.903	2.012	4.915
	Total	15.938	46.212	62.150
Industry Sectors	Aircraft & Systems	10.497	29.869	40.366
	Engines	2.447	10.376	12.823
	Equipment	2.994	5.967	8.961
	Total	15.938	46.212	62.150

Source: AECMA (*) based on consolidated turnover (**) incl. ESA, national aerospace research establishments and agencies

Fig. 7: Breakdown of 1998 EU Aerospace Industry Turnover* by Civil / Military and by Domestic / Export Total: 62.150 Mio ECU						
Product Segments		Civil EU Domestic	Civil Export	Military EU Domestic	Military export	Total
		Mio ECU	Mio ECU	Mio ECU	Mio ECU	Mio ECU
Product Segments	Aircraft	12.661	22.123	10.934	8.981	54.699
	Missiles	0	0	1.561	970	2.531
	Space	2.862	1.525	516	17	4.920
	Total	15.523	23.648	13.011	9.968	62.150
Industry Sectors	Aircraft & Systems	9.981	14.193	8.149	8.042	40.365
	Engines	2.905	6.992	2.182	745	12.824
	Equipment	2.637	2.463	2.680	1.181	8.961
	Total	15.523	23.648	13.011	9.968	62.150

Source: AECMA (*) based on consolidated turnover

Fig. 10: EU Aerospace Industry Operating Profit Margin*	
Year	EU Aerospace Industry Operating Profit in (%) of turnover
1985	5,2
1986	4,1
1987	3,4
1988	3,7
1989	3,0
1990	2,3
1991	2,3
1992	-0,5
1993	0,6
1994	-0,1
1995	-0,3
1996	2,1
1997	4,2
1998	6,6

Source: AECMA
(*) operating profit over turnover

Fig. 8: Breakdown of 1998 EU Aerospace Industry Turnover by Customer Total: 90.477 Mio ECU unconsolidated 62.150 Mio ECU consolidated, i.e. excl. Intra EU Aerospace Industry Sales					
Product Segments		End-Users	Non-EU Aerospace Industry	Intra EU Aerospace Industry	Total
		Mio ECU	Mio ECU	Mio ECU	Mio ECU
Product Segments	Aircraft	46.691	8.008	24.326	79.025
	Missiles	2.476	60	799	3.335
	Space	3.960	955	3.202	8.117
	Total	62.150	28.327	90.477	
Industry Sectors	Aircraft & Systems	37.083	3.282	16.382	56.747
	Engines	9.341	3.483	3.177	16.001
	Equipment	6.703	2.258	8.768	17.729
	Total	62.150	28.327	90.477	

Source: AECMA

Fig. 9: 1998 EU Aerospace Industry Turnover* resulting from Sales of Aircraft Maintenance Total: 13.995 Mio ECU = 22,5% of total turnover*			
	at Aerospace Manufacturers	at Airline Maintenance Units	Total
	Mio ECU	Mio ECU	Mio ECU
Airframe	2.638	3.043	5.681
Engines	1.710	2.867	4.577
Equipment	1.764	1.973	3.737
Total Maintenance Turnover	6.112	7.883	13.995

Source: AECMA (*) based on consolidated turnover of 62.150 Mio ECU incl. maintenance

Fig. 11: Breakdown of 1998 EU Aerospace Industry Order Intake* by Customer

	EU Governments** (%)	Other EU Customers (%)	Non-EU Customers (%)	Total* (%)
Aircraft & Systems	162,4	185,0	159,0	170,8
Engines	219,9	153,3	146,6	159,8
Equipment	102,0	138,6	99,3	124,9
Total*	160,4	167,9	149,7	159,9

Source: AECMA
 (*) based on unconsolidated order intake in percentage of unconsolidated turnover (excl. EU Consortia)
 (**) incl. ESA, national aerospace research establishments and agencies
 (*) weighted average

Fig. 16: 1998 R&D Expenditure* of EU Aerospace Industry
 Total: 9.984 Mio ECU = 16,1% of turnover*

	R&D Expenditure in (%) of turnover*
Aircraft & Systems	15,7
Engines	14,2
Equipment	20,2
Total**	16,1

Source: AECMA
 (*) consolidated
 (**) weighted average

Fig. 19: SMEs in the EU Aerospace Industry

	Number of Companies	
	SMEs	Non-SMEs
EU Aerospace Industry	550	206
Suppliers to EU Aerospace Industry*	8.100	69.500

Source: AECMA
 (*) number of supplier companies estimated by extrapolation of available data

Fig. 12: Breakdown of 1998 Direct EU Aerospace Industry Employment by Segments and Sectors
 Total: 422.484 employees

	Product Segments Nr. of Employees	Industry Sectors Nr. of Employees
Aircraft	376.919	
Missiles	14.088	
Space	31.477	
Aircraft & Systems		207.498
Engines		86.217
Equipment		128.769
Total	422.484	422.484

Source: AECMA

Fig. 17: 1998 R&D Expenditure* of EU Aerospace Industry
 Total: 9.984 Mio ECU = 16,1% of turnover*

	R&D Expenditure in (%) of turnover*	
Company-financed	Civil	5,1
	Military	2,9
	Total	8,0
financed by EU Governments**	Civil	1,7
	Military	6,4
	Total	8,1

Source: AECMA
 (*) based on consolidated turnover
 (**) incl. ESA, national aerospace research establishments and agencies

Fig. 20: 1998 Turnover* and Employment of EU Aerospace Industry SMEs**
 Total Turnover*: 1.493 Mio ECU
 Total Employment: 31.904

	Turnover* in Mio ECU		Number of Employees
Product Segments	Aircraft	1.312	27.789
	Missiles	28	1.042
	Space	153	3.073
	Total	1.493	31.904
Industry Sectors	Aircraft & Systems	387	6.617
	Engines	159	3.296
	Equipment	947	21.991
	Total	1.493	31.904

Source: AECMA
 (*) based on consolidated turnover
 (**) excl. suppliers to EU Aerospace Industry as mentioned in Fig. 19

Fig. 13: Contribution to 1998 Direct EU Aerospace Industry Employment
 Total: 422.484 employees

Country	Number of Employees
United Kingdom	153.870
France	98.196
Germany	69.904
Italy	36.676
Spain	16.308
Sweden	13.162
Netherlands	7.444
Belgium	7.338
Ireland	4.398
Portugal	3.650
Finland	3.201
Austria	3.089
Greece	2.758
Denmark	1.904
Luxemburg	586
Total	422.484

Source: AECMA

Fig. 14: Breakdown of 1998 Direct EU Aerospace Industry Employment
 Total: 422.484 employees

		Number of Employees
By Qualification	Graduates, Engineers, Managers, etc.	118.318
	Manual Workers	173.617
	Other	130.549
	Total	422.484
By Activity	R&D	71.669
	Production	237.001
	Other	113.814
	Total	422.484

Source: AECMA

Fig. 18: Structure of the EU Aerospace Industry in 1998

Size of Companies in Number of Employees	Number of Companies
>10.000	9
1.000 - 10.000	74
250 - 1.000	123
<250 (SMEs)	550
Total	756

Source: AECMA

Fig. 15: Comparative Aerospace Industry Average Annual Labour Cost per Employee EU/US*

Year	EU Aerospace Industry Labour Cost Current ECU per Employee	US Aerospace Ind. Labour Cost Current ECU per Employee
1985	25.964	44.258
1986	26.232	35.148
1987	27.206	30.634
1988	26.716	31.055
1989	30.330	34.384
1990	31.537	31.396
1991	34.565	33.444
1992	36.054	33.799
1993	37.062	39.170
1994	39.970	40.496
1995	43.281	37.068
1996	44.984	40.308
1997	47.897	47.246
1998	50.492	47.973

Source: AECMA, AIA
 (*) extrapolated from available data

Fig. 21: 1998 R&D Expenditure* of EU Aerospace Industry SMEs
 Total: 161 Mio ECU = 11,0% turnover*

	R&D Expenditure in (%) of turnover*	
Company-financed	Civil	4,4
	Military	2,4
	Total	6,8
financed by EU Governments**	Civil	3,3
	Military	0,9
	Total	4,2

Source: AECMA
 (*) based on consolidated turnover
 (**) incl. ESA, national aerospace research establishments and agencies

Fig. 22: 1998 Comparative Aerospace Industry Turnover* and Employment

	Turnover* Mio ECU	Employment
USA**	104.444	612.000
EU	62.150	422.484
Japan	9.489	34.761
Canada	9.204	66.870
Total	185.287	1.136.115

Source: AECMA, AIA, AIAC, SJAC
 (*) based on consolidated turnover
 (**) excluding products and services which are only aerospace related

Fig. 23: 1998 Aerospace Import and Export of EU

	by European Aerospace Industry Mio ECU	by Other* Mio ECU	Total Mio ECU
Imports from	USA	-8.440	-10.040
	RoW	-1.058	-7.474
	Total	-9.498	-17.514
Exports to	US Aerospace Industry	7.284	
	US Other Customers	8.526	
	USA Total	15.810	0
	RoW Aerospace Industry	1.740	
	RoW Other Customers	16.067	2.833
	RoW Total	17.807	2.833
Total	33.617	2.833	

Source: AECMA, Eurostat
 (*) estimated, incl. Governments, Airlines, etc.

Fig. 24: 1998 Aerospace Trade Balance of EU

	EU Aerospace Industry Mio ECU	Others in the EU Mio ECU	Total Mio ECU
USA	7.370	-10.040	-2.670
RoW	16.749	-4.591	12.158
Total	24.119	-14.631	9.488

Source: AECMA
 (*) estimated, incl. Governments, Airlines, etc.