

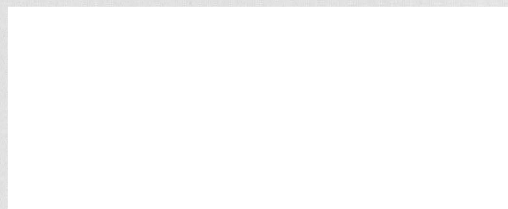
# The European Aerospace Industry



## Facts & Figures 2000

AECMA

# Facts & Figures 2000





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## Data and Information

The data and information provided in this brochure represent the results of the statistical survey carried out on the European Aerospace Industry (EAI) for 2000.

Data covers the aerospace industry of the 15 Member States of the European Union. It has been collected primarily through the National Aerospace Industries Associations forming the membership of AECMA and thereby from the indirect member companies. In addition data was also retrieved from all other accessible sources outside the AECMA membership, including EU consortia such as Airbus Industrie and airline maintenance companies, thereby providing for full cover of all activities.

## Preface of the President

The financial and economic figures for European aerospace in 2000 showed an industry in very good shape. Our industry and its strong exports in 2000 made a major contribution to the



European economy as a whole and the performance of key indicators, such as turnover, employment and order intake, pointed to growth.

But after the terrorist attacks in the US on 11 September 2001 the situation in our markets has changed. In consequence of this catastrophe, new items of research and development in the fields of aircraft safety and Air Traffic Management

systems will necessarily be generated. The coming months will reveal the full extent of the impact that the events will have on our industry.

During 2000, the industry has undergone further substantial restructuring and consolidation. This has further enhanced its competitiveness and has led to the creation of several European industry leaders that have now reached a scale that makes them partners of equal weight with the US majors in the world market.

The consolidation process is likely to continue. At an operational level, we just completed a big step: the creation of the Airbus Integrated Company. This truly European company is based in 4 Member States. Its new flagship, the A380, will be the biggest passenger airplane ever. It is a programme with suppliers from all over Europe and with significant involvement from the US and elsewhere. Good progress is also being made on the A400M, the European military transport aircraft, for which 8 EU States have announced their participation.

Furthermore, the production contract for the NH90 helicopter, the start of the final assembly of the Eurofighter, and the Ariane 5, which has stepped up its operations pace in 2000, demonstrate the success of trans-national co-operations in Europe.

However, the scale and technical complexity of such programmes

require trans-national efforts in order to manage them competitively. High investments in R&D, for example, are essential for our industry to achieve and maintain success in the long-term. However, the gap in terms of public investment between Europe and the US, where our main competitors are, is still widening. In 2000, only one quarter of civil R&D expenditure has been financed by EU governments, whereas US companies received around 50% government support for that in past years.

Significant steps in this field have taken place recently. The European Commission recognised aerospace as a strategic industry and supports it as one of seven priority areas in the 6th EU Framework Programme for Research. Furthermore it has set up ACARE, the Advisory Council for Aerospace Research in Europe, with the task to develop and implement a strategic research agenda for aerospace in Europe. ACARE marks an essential step in the right direction and we fully support its work. But it will only be of value if a competitive level of research budget is allocated.

Doing business means both competition and co-operation. The aerospace companies in Europe are looking to operate globally, in particular expanding their partnerships with US companies. Transatlantic teams are becoming increasingly important in the global competition. In addition, AECMA is pursuing a policy of actively intensifying and deepening its contacts with the aerospace associations in the US (AIA), in Canada (AIAC), in Japan (SJAC) and in Brazil (AIAB). The aerospace companies in Europe have now reached a position from which they can aim at taking leading roles in global competition.

A handwritten signature in black ink that reads "Rainer Hertrich". The signature is fluid and cursive, written in a professional style.

Rainer Hertrich  
AECMA President 2000-2001  
Chief Executive Officer EADS

October 2001



## Key Characteristics

2000 was quite a successful year for the European Aerospace Industry (EAI) with growth in turnover by almost 11% to 72 bn Euro, a profit rate of 5% and an order intake of almost 1.5 times the turnover.

The increase of turnover in real terms (i.e. excluding exchange rate and inflation effects) amounted to 7.2% and contributed to an overall growth of 53% from 1995 to 2000.

In the same period, employment has grown by 11% to almost 429 100 employees.

The Research & Development (R&D) investment in 2000 amounted to 10.5 bn Euro, almost 15% of the turnover. This confirms once again the EAI's position as a high technology industry.

Order Books climbed to record levels. The order backlog reached almost 300 bn Euro, a four times turnover.

## European Aerospace Industry Key Characteristics of the Year 2000

<b>Employment</b>	<b>429 100 employees</b>
<b>Turnover</b>	<b>72 billion Euro</b>
<b>Operating Profit</b>	<b>5% of turnover</b>
<b>R&amp;D Expenditure</b>	<b>15% of turnover</b>
<b>Exports</b>	<b>52% of turnover</b>
<b>Order Intake</b>	<b>150% of turnover</b>
<b>Order Book</b>	<b>4 years workload</b>



# Trends

After a peak performance in 1990 and about five years of declining sales, the EAI business has been in a period of growth from 1996 to 2000. The upturn more than compensates for the decrease encountered at the beginning of the decade, and industry has successfully exceeded the peak performance recorded for the year 1990.

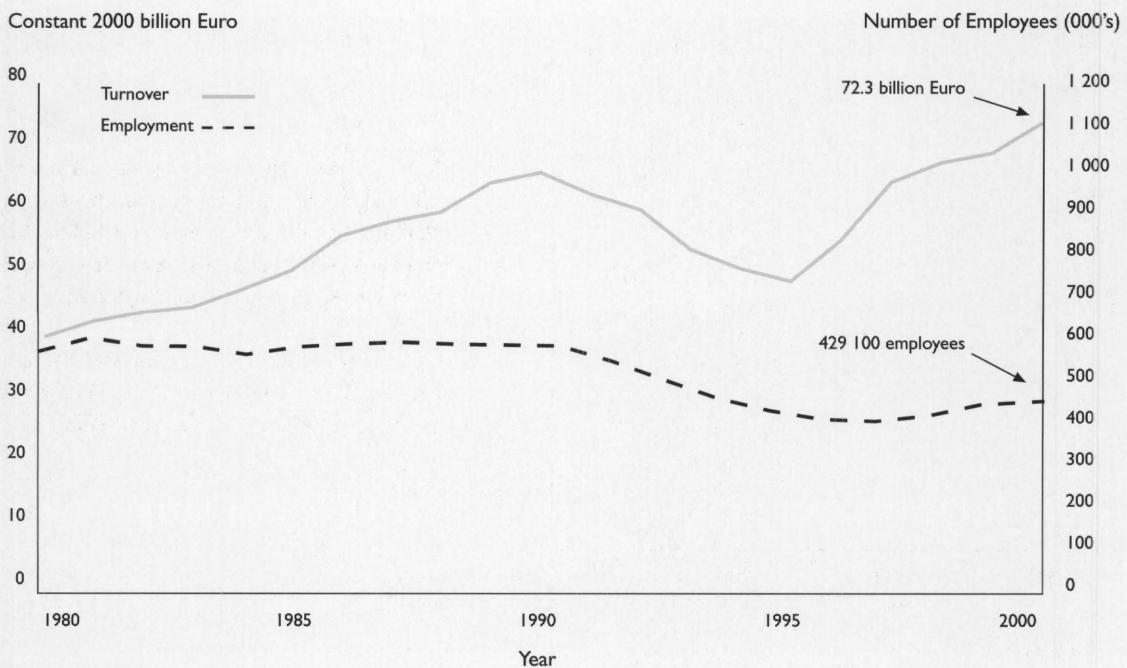
Compared to 1999, sales grew 10.8% in 2000, equivalent to 7.2% in real terms. Long-term market forecasts indicate overall growth for the aerospace business, but subject to cyclical developments.

Also compared to 1999, the number of direct employees in the EAI has increased by 0.6%, comparing end year figures. 2400 new jobs have been created.

Since 1995 the growth in volume of sales and in employment has been 53% and 11% respectively. This trend to higher productivity is likely to continue due to the further rationalisation and restructuring which is necessary to ensure the continued competitiveness of the industry.

It should be remembered that there is substantial additional aerospace-dependent employment within a wider supply chain, external to the actual aerospace industry presented here. This additional employment is estimated at approximately 800 000 jobs. A substantial amount of this business has been transferred to the wider supply chain by outsourcing as part of the rationalisation process.

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



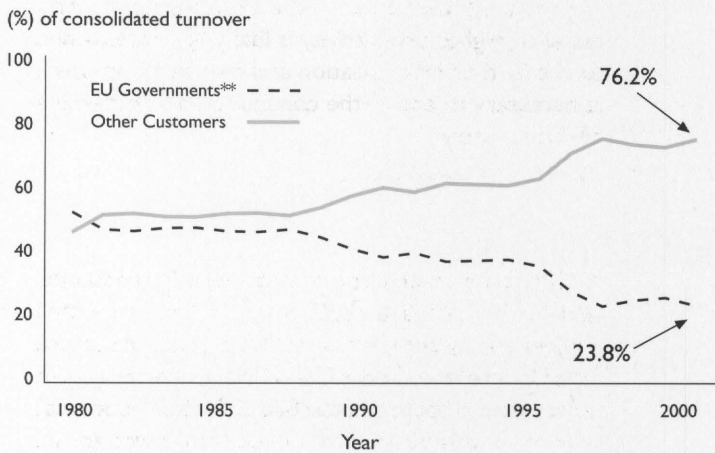
Source: AECMA

(\*) based on consolidated turnover

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

# Trends

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



Source: AECMA

(\*) based on EU consolidated turnover, incl. estimations for Sweden until 1992 and non-AECMA companies until 1995

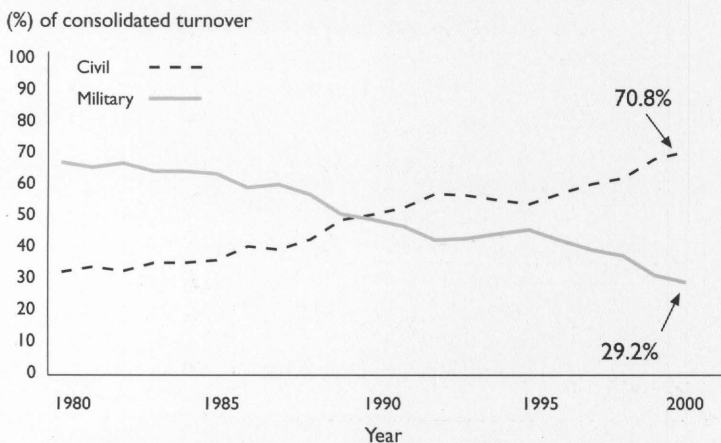
(\*\*) incl. ESA, national aerospace research establishments and agencies

Following a long period in which 65% to 75% of the business came from governments, the period from 1980 and 1988 (figure 2) was typified by parity of sales to EU governments (including ESA, national aerospace research establishments and agencies) and to other customers.

The EAI then successfully expanded its sales to non-public customers. Since 1997, the EU governments account for just about one quarter of the overall turnover, while commercial domestic customers and export customers now constitute three quarters of the business. The considerable global demand for civil aircraft has been the main contributor to that ratio.

In the US, the corresponding 2000 ratio is 38% for sales to the US government (including NASA and other agencies), against 62% for sales to other customers. Thus the EAI depends to a much lesser extent on government contracts but, on the other hand, enjoys a smaller home market base.

**Fig. 3** EU Aerospace Industry Turnover\* by Civil/Military



Source: AECMA

(\*) based on EU consolidated turnover

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

In the same context as above, the civil sector is now exceeding the 70% turnover boundary, while the military sector has reduced to below 30%, reversing the relationship prevailing until the middle of our two decades reporting period (figure 3).

The repartition observed for the EAI compares to a ratio of 60% civil sales to 40% military sales of the US aerospace industry in the year 2000.

# Turnover

Total consolidated turnover (for definition see Annex) of the EAI in 2000 was 72.3 billion Euro. There was a considerable additional turnover generated by EAI subsidiaries located in the US and other countries outside the EU. This additional turnover however is not part of this survey.

## Comparison of Turnover 2000 to 1999

Turnover of the EAI has grown by 10.8% in nominal terms from 1999 to 2000, which amounts to 7.1 billion Euro.

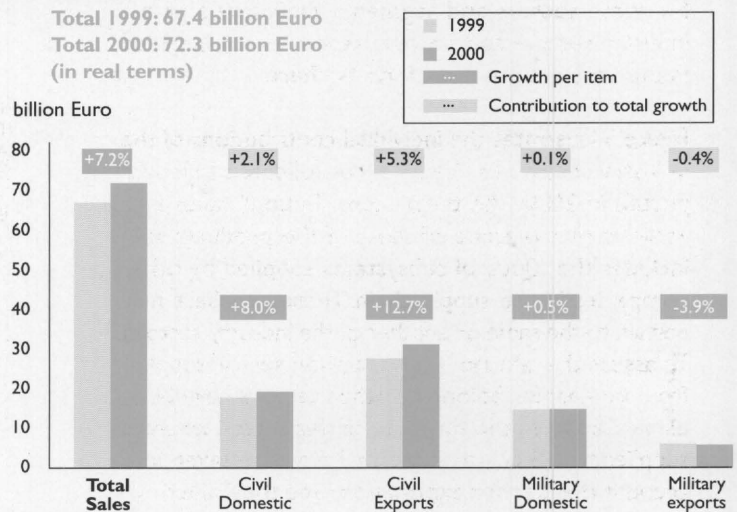
Compared to the turnover of 1999 in economic conditions of 2000 (67.4 billion Euro), sales have grown by 4.8 billion Euro or 7.2% in real terms. This growth from 1999 to 2000 significantly exceeds the long-term growth rate of the industry, which has been 3.2% between 1980 and 2000.

As already the year before, the increase in turnover from 1999 to 2000 was brought about by strong growth in the civil sector (both domestic and export). The growth in these areas was 8% and more than 12% respectively (figure 4). In the military business, the changes to the previous year have been small. However, some important domestic military programs have entered production and some sound growth may be expected in the near future. On the other hand, the military exports in 2000 were only slightly below 1999 (-3.9%) compared with a 40% reduction in 1999 compared with 1998.

On the civil side, the domestic and the export markets developed very well. The shift in growth for civil exports away from the US to the Rest of the World (RoW) as observed in 1999 was not confirmed in 2000. Apparently this was a unique effect caused by the Asian crises with some need to compensate for purchases deferred in 1998. It should be recalled that the 1998 decrease was more than offset by a growth of more than 20% in 1999. Sales to RoW went down 0.9 bn Euro in 2000, whereas sales to the US grew 4.5 bn Euro.

Fig. 4 Turnover\* Growth from 1999 to 2000

Total 1999: 67.4 billion Euro  
Total 2000: 72.3 billion Euro  
(in real terms)



Source: AECMA  
(\* based on consolidated turnover)

The slight reduction of military exports was exclusive to markets in RoW. Exports to these markets already showed a substantial decline of 1.8 billion Euro during 1998 and suffered from another severe drop of 4.8 billion Euro in 1999. In 2000, the reduction went down to 0.2 bn Euro, whereby increases in supplies to RoW primes might give reason for some hope for a certain turnaround. Military sales to the US remained stable at 1.6 bn Euro.

The domestic military business, i.e. sales to EU governments, has retained its 1999 nominal level after an increase of 10% in the year before. This improvement has started from a very low level and is the result of major government procurement programmes launched in 1998 and 1999.

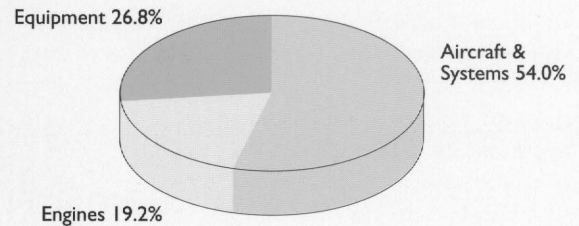
# Turnover

## Sector Contribution to Industry Turnover

The aerospace industry is generally broken down to three industry sectors "Aircraft & Systems", "Engines" and "Equipment" and in parallel to three product segments "Aircraft" (including helicopters), "Missiles" and "Space". Turnover information is further detailed for these sectors and segments. Definitions of the industry sectors and product segments are included in the annex at the end of this bochure.

Figure 5 illustrates the individual contributions of the industry sectors to the total consolidated turnover posted in 2000. The term „contribution“ takes into account that revenue of most of the products sold includes the value of subsystems supplied by other companies in the supply chain. These suppliers may pertain to the same or another of the industry sectors. To assess the contribution of a given sector, supplies from companies belonging other sectors have been eliminated from the turnover of this sector, whereas supplies to either other sector have been taken into account (for further explanations see the Annex).

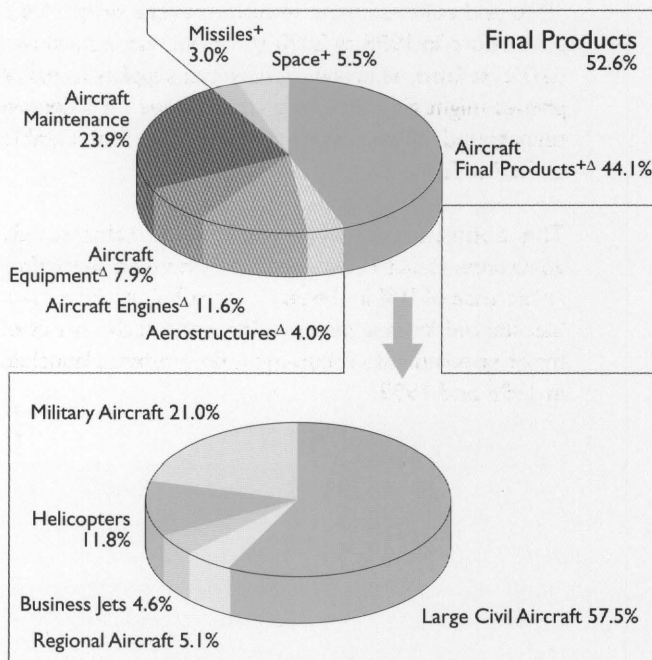
Fig. 5 Industry Sector Contribution to 2000 EU Aerospace Industry Turnover\*  
Total for Aerospace: 72.3 billion Euro



Source: AECMA, estimated  
These figures reallocate internal turnover within 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. 6 Breakdown of 2000 EU Aerospace Industry Turnover\* by Product Segment  
Total: 72.3 billion Euro



Source: AECMA, Aircraft breakdown estimated

(\*) based on consolidated turnover

(<sup>+</sup>) data comprises EU and non-EU supplied aerostructures, engines and equipment

(<sup>Δ</sup>) excl. maintenance

## Breakdown of Turnover by Product Segments

The public image of the industry is mainly determined by their final products. These include large commercial aircraft, combat aircraft, helicopters, regional aircraft, business jets, as well as missiles, satellites and space launchers. However, these final products account for only around one half of the overall consolidated turnover, with aircraft final products contributing over 44% or 32 bn Euro (figure 6). Within the aircraft final product range, large civil aircraft are the single largest contributor with a reported turnover of 18 bn Euro.

Accounting for sales of 17 bn Euro, aircraft maintenance is almost one quarter of the turnover, and has become an important pillar of the business.

The remaining 24% of the industry's turnover is made up from sales of engines, equipment and aerostructures to „final“ customers. These comprise primarily spares but also direct order equipment and supplies to aerospace companies outside the EU.

# Turnover

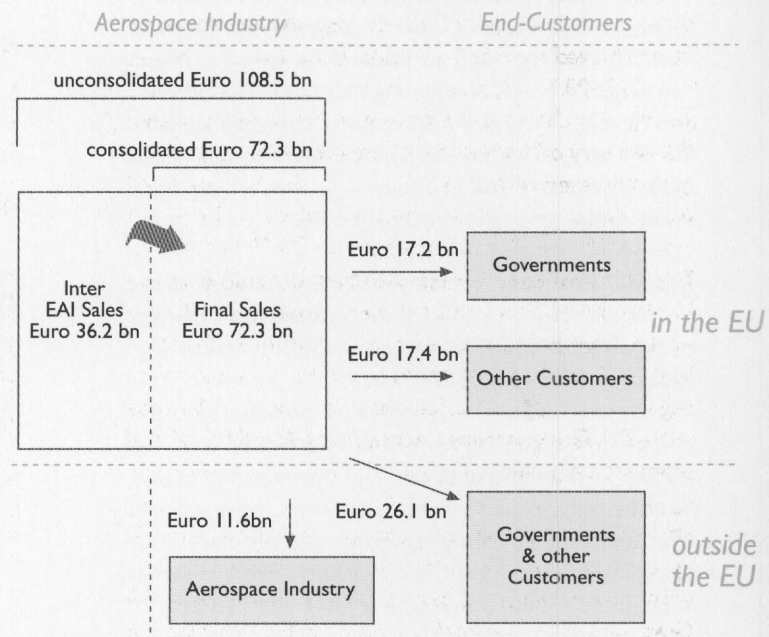
## Inter-Industry and End-Customer Turnover

An important part of the sales of the EU aerospace industry is not to end customers. The relevance of the EAI internal trade, as well as the role of the EAI as supplier to aerospace companies outside the EU, is briefly sketched in figure 7.

In examining EAI internal trade, one has to acknowledge the role of EU Consortia, such as Airbus Industrie and Eurofighter. Almost 50% of the EAI internal trade volume is with EU Consortia. These organisations operate as the interface with the customer on behalf of companies co-operating in multi-national European programmes. They have therefore taken over the programme management and marketing tasks from these companies in order to run the respective programmes. In 2000, 38% of the 61 billion Euro turnover with end customers has been accredited to EU Consortia. In the civil market, this proportion amounts to 47%.

**Fig. 7** Breakdown of 2000 EU Aerospace Industry Turnover by Customer considering Inter Aerospace Industry Sales

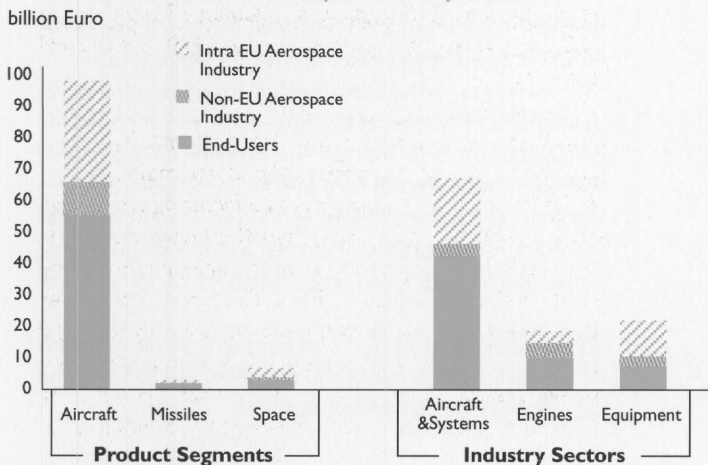
**Total: 108.5 billion Euro unconsolidated**  
**36.2 billion Euro Inter EU Aerospace Industry Sales**  
**72.3 billion Euro consolidated, i.e. excl. Inter EU Aerospace Industry Sales**



Source: AECMA

**Fig. 8** Breakdown of 2000 EU Aerospace Industry Turnover by Customer considering Inter Aerospace Industry Sales on Segment and Sector Level

**Total: 108.5 billion Euro unconsolidated**  
**36.2 billion Euro Inter EU Aerospace Industry Sales**  
**72.3 billion Euro consolidated, i.e. excl. Inter EU Aerospace Industry Sales**



Source: AECMA

At segment and sector level (figure 8), there is a wide variation in the respective customer bases.

In the aircraft segment, 56 % of the unconsolidated turnover is made with end customers. The balance of the aircraft turnover is made with aerospace industry companies, three quarters of which is EU internal trade. In the missiles segment, the supply chain is almost exclusively made up of EU suppliers. The space segment features the lowest ratio of consolidated to unconsolidated turnover, which in turn means that the involvement of the supply chain is strongest there.

Each of the three industry sectors shows a specific trade pattern. The "Aircraft & Systems" industry sector (representing end products like aircraft, helicopters, satellites, launchers, missiles and their frames) reflects the results of the "Aircraft" product segment, as aircraft contribute more than 90% to the turnover. In the Engine sector, sales to aerospace companies outside the EU are slightly higher than to the EAI, demonstrating the strong competitiveness of the Engine sector outside the EAI community. In the Equipment sector, two thirds of the sales accrued are to aerospace companies. More than 50% of these companies are European.

# Turnover

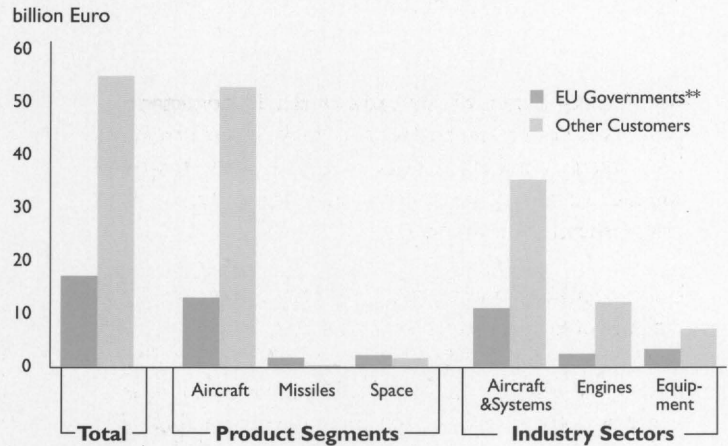
## Turnover Share of EU Governments

The overall low dependence of the industry on contracts acquired from EU Governments is demonstrated in figure 9. Of course, the extent varies for product segment and industry sector.

Taking a product segment perspective, it can be stated that aircraft is the segment least dependent upon EU governments, with 80% of the sales stemming from other customers. For missiles without a civil market, industry has to rely predominantly on EU Governments. Some 85% of the missiles turnover is made with EU Governments. Space activities have always largely been government oriented or sponsored, but the civil market has been of growing importance for the EU space segment. Today, the market share is almost in balance with EU Governments accounting for 57% of the segment turnover.

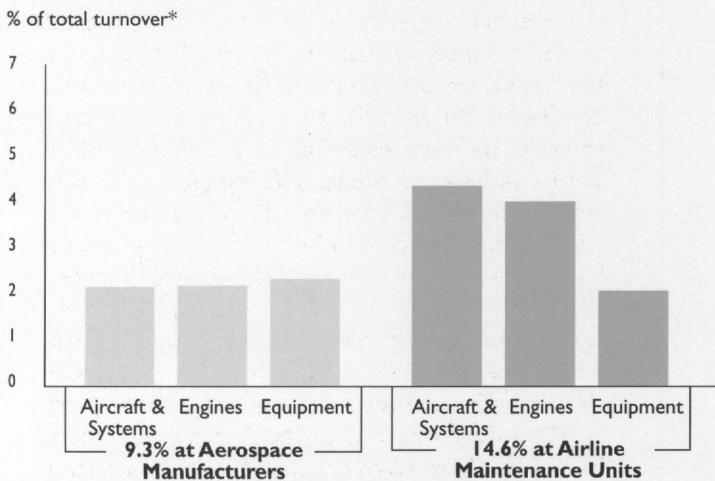
From an industry sector point of view, the Aircraft & Systems sector dominates the total industry's result, with one quarter of the turnover made with EU Governments. In the Engine sector, the EU Government share is 17%, whereas the Equipment sector depends to about one third on the public customer.

**Fig. 9** Breakdown of 2000 EU Aerospace Industry Turnover\* by EU Governments\*\* / Other Customers  
Total: 72.3 billion Euro



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

**Fig. 10** Breakdown of 2000 EU Aerospace Industry Turnover\* resulting from Sales of Aircraft Maintenance  
Total: 17.3 billion Euro = 23.9% of total turnover\*



Source: AECMA  
 (\*) based on consolidated turnover of 72.3 billion Euro incl. maintenance

## Turnover in Maintenance

Total turnover resulting from sales of maintenance services in the EU reached more than 17 billion Euro in 2000, which corresponds to about 24% of the total turnover.

While a significant part of the business for most aerospace manufacturers relates to maintenance activities, it is noted that non-manufacturing companies also provide such services, and they have done this successfully to a growing extent. Large maintenance units originally founded by EU airlines to maintain their own fleet are particularly important, not only for their parent company airlines but also as maintenance providers for third party airlines. They account for 60% of the EU turnover from aircraft maintenance (figure 10).

# Turnover

## Domestic and Export Turnover

The relative contributions of the home market sales and exports on the and civil and the military side of total turnover are shown in figure 11. The figures demonstrate the high level of engagement in civil markets, which account for 71% of the turnover. Of this, 62% (1999: 61%) has been sales to customers outside the community, giving testimony to the global competitiveness of the EAI's civil products and services.

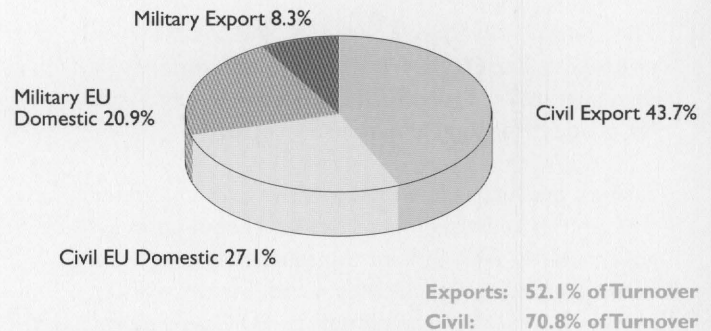
On the military side, the domestic market has maintained its importance for the EAI and now accounts for 71% (1999: 70%) of the turnover from military products and services.

The aerospace industry serves a truly global market. Exports now account for more than 52% (1999: 51%) of the European aerospace business. Export success is mainly driven by civil products, which contribute 84% to the overall export volume of all product segments.

In the US, 60% of the aerospace industry companies' sales are for the civil market. The export share of the US aerospace industry amounts to 56% of the overall sales.

Fig. 11 Breakdown of 2000 Aerospace Industry Turnover\* by Export/Domestic and Civil/Military

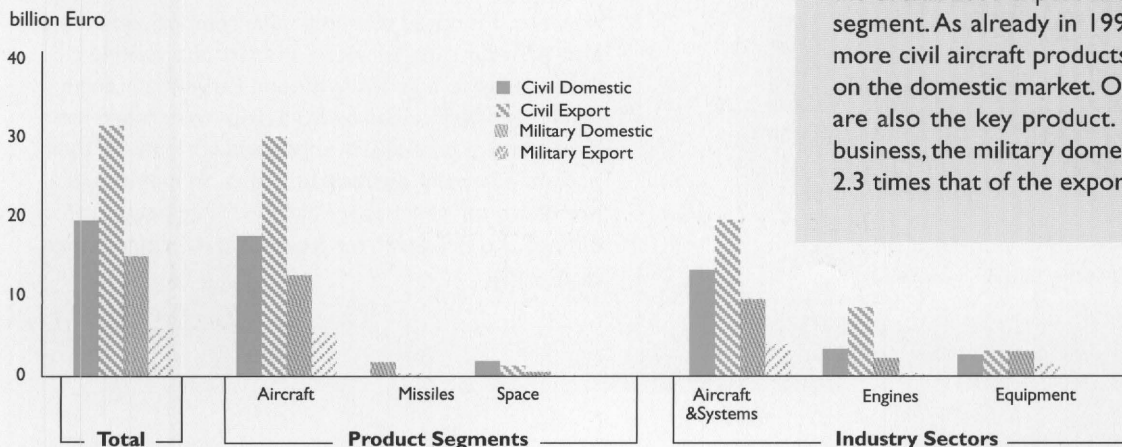
Total: 72.3 billion Euro



Source: AECMA  
(\* based on consolidated turnover.)

Fig. 12 Breakdown of 2000 EU Aerospace Industry Turnover\* by Domestic / Export and by Civil / Military on Segment and Sector level

Total: 72.3 billion Euro



In order to give a more detailed insight in the market structure of the EAI, a further breakdown by product segment and industry sector is given in figure 12. As previously mentioned, the overall breakdown of the business by civil and military is well reflected in the pattern of the business of the Aircraft segment. The exclusively military market for Missiles is balanced by Space being a predominantly civil market.

Civil aircraft continue to be the single largest contributors to the industry's exports, with 80% of the overall 2000 export sales being provided from this segment. As already in 1999, the EAI exported 70% more civil aircraft products and services than it sells on the domestic market. On the military side, aircraft are also the key product. In contrast with the civil business, the military domestic turnover is more than 2.3 times that of the export turnover.

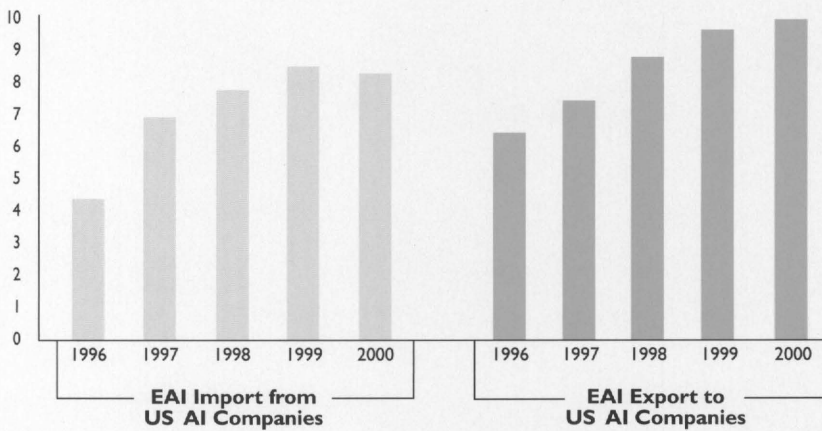
Source: AECMA (\* based on consolidated turnover)

The intra-aerospace industry business exhibits a strong link between the EU and the US industries, with a rapidly growing inter-dependence between these industries (figure 13). Exports from Europe to the US aerospace industry have doubled from 1996 to 1999, followed by a slight reduction in real terms in 2000.

While in 1996 the EAI imported almost 50% more from the US aerospace industry than vice versa, this ratio was reduced to 20% in 2000.

Fig. 13 EU-US Aerospace Industry-to-Industry Turnover

(2000) billion Euro



Source: AECMA



# Trade Balance

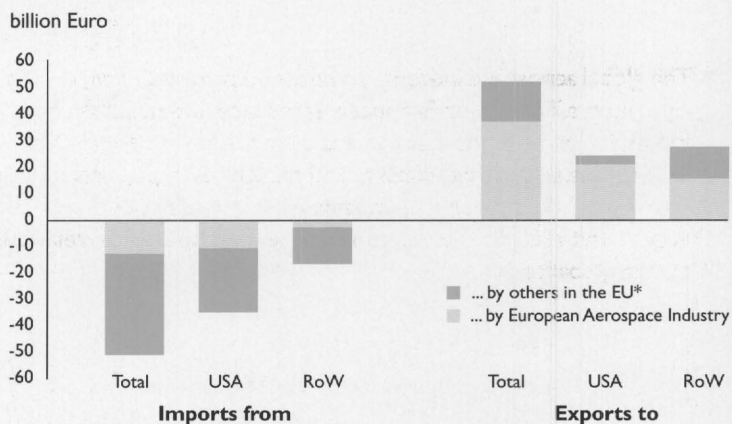
## Imports and Exports

The European Aerospace Industry imported components from outside the EU at a value of 12 bn Euro in 2000, 10 bn coming from the US. Exports of the EAI amounted to almost 38 bn Euro, again the US being the main customer region with sales of 21 bn Euro (figure 14).

Other market players in the EU Member States than the EAI (e.g. airlines) imported aerospace industry products worth some 39 bn Euro, almost 25 bn Euro of which from US manufacturers, according to Eurostat (figure 14).

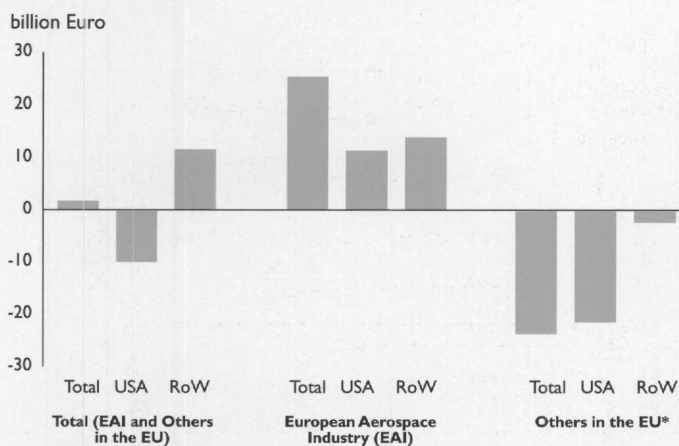
Trade among EU Aerospace Industry companies is traditionally extensive. In 2000, EAI companies have reported a total 23 bn Euro imports from partner companies located in other EU member states (not part of figure 14). This demonstrates that the aerospace supply chain is operating in a real European context, and that cross-border trade burdens among EU Member States need to be removed or at least minimized to grant efficiency of the supply chain.

Fig. 14 2000 Aerospace Import and Export of the EU



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

Fig. 15 Aerospace Trade Balance of the EU  
 2000 Trade Balance Total: 1.9 billion Euro



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

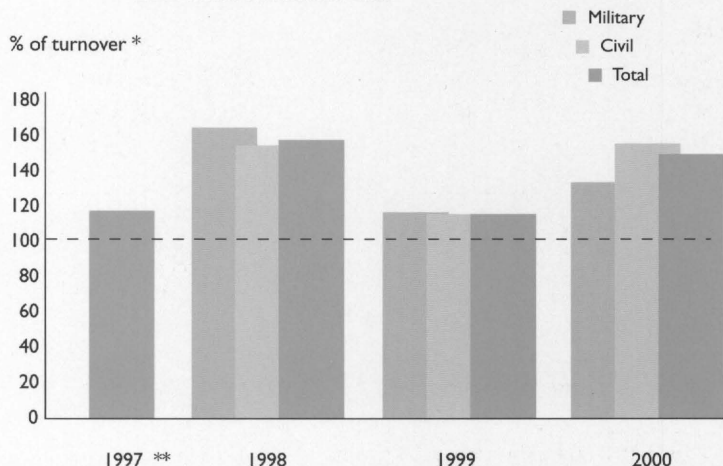
## EU Trade Balance Contribution

Based on import and export information provided above, the EAI achieved a 25.5 bn Euro surplus of exports over imports (22 billion Euro in 1999). Out of this amount, trade balance with the US accounts for 11.5 bn Euro. For other market players in the EU (e.g. airlines) the balance is -23.6 bn Euro, according to Eurostat. In total, a 1.9 bn Euro positive trade balance remains, roughly composed of a -10 bn balance with the US and a +12 bn balance with Rest of the World (figure 15).

This 1.9 bn Euro has to be viewed in the light of a 84 bn negative overall trade balance of the EU in 2000: Aerospace provides to the EU economy a solid contribution which could be achieved in the context of strong competition with the US and other players like Canada and Japan. According to Eurostat, it is only in pharmaceuticals, scientific instruments, chemicals and aerospace that the EU has high-technology products trade surpluses. This also demonstrates that aerospace is an industry sector worth further public attention and investment.

**Fig. 16** Breakdown of 2000 EU Aerospace Industry Order Intake\*

2000 Total: 162 billion Euro



Source: AECMA, Euostat

(\*) unconsolidated order intake in percentage of unconsolidated turnover

(\*\*) breakdown not available

## Order Intake Trend

The order intake is a good indicator for continued growth or at least a sustained level of business. In 2000, the overall order intake has nearly returned to the record level seen in 1998 (figure 16). Representing the turnover of almost 1.5 years of business, it propelled the industry's order book to almost 300 Euro bn, which corresponds to around 4 years of workload.

The civil aircraft market was particularly active with a 156% order intake related to turnover. On the military side, the order intake amounts to 134% of the reference turnover, with the NH90 helicopter programme playing an important role.

However, the order book will have to be reassessed in the aftermath of the 11 September 2001 events.

It should be noted that relative order book and order intake figures are weighted averages which may vary considerably from one company to another.

## Order Intake by Customer

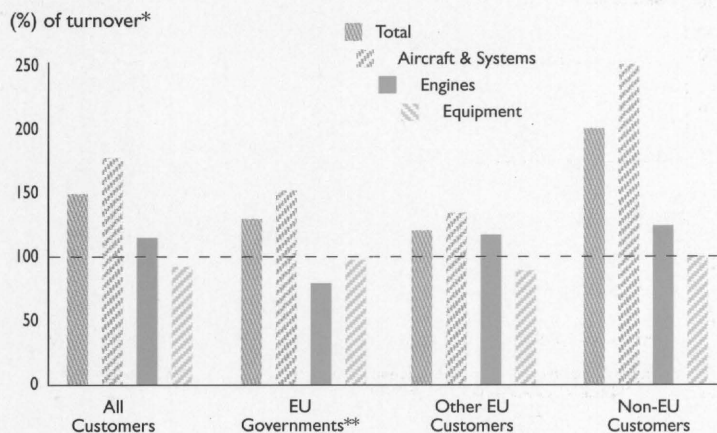
The breakdown of the 162 bn Euro order intake among customer groups shows non-EU customers i.e. export markets as the strongest customer segment with twice one year's turnover (figure 17).

EU governments strongly caught up compared to last year, placing orders worth 130% of the respective 2000 turnover. Apart from this, some programmes not reflected in the 2000 order intake have entered series production a few years ago and will contribute to turnover soon. This is an overall indication that the military market will gradually recover in the forthcoming years, induced by domestic demand for advanced products.

Other EU customers have placed orders worth 120% of the respective 2000 turnover. This means that on the civil side the export share may be expected to keep growing during the next few years.

**Fig. 17** Breakdown of 2000 EU Aerospace Industry Order Intake\*

2000 Total: 162 billion Euro



Source: AECMA

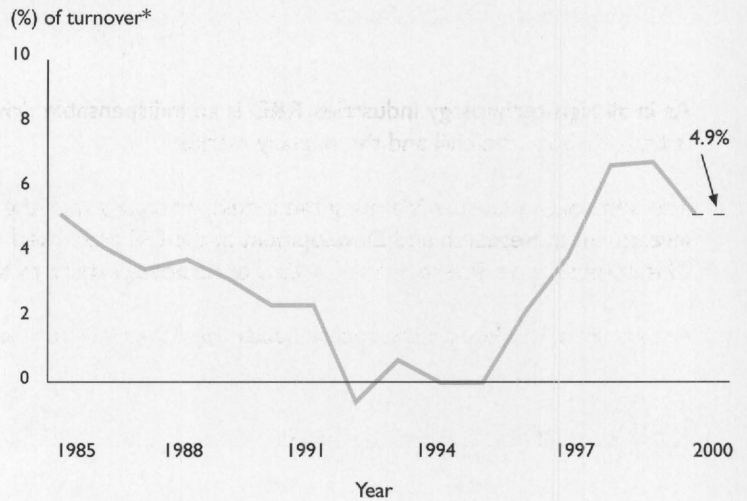
(\*) based on unconsolidated order intake in percentage of unconsolidated turnover

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

## Operating Profit Margin

After achieving a margin of 7% in 1999, the EAI shows a slightly reduced figure of 5% for the year 2000 (figure 18). The main reasons for this are all of temporary nature and mainly due to the status of certain government funded programmes.

Fig. 18 EU Aerospace Industry Operating Profit Margin

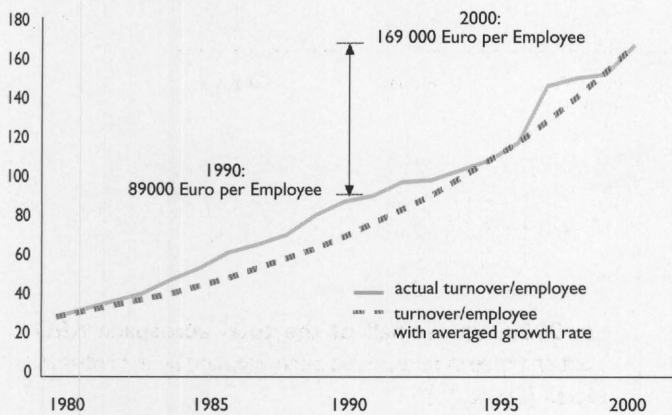


Source: AECMA  
 (\*) operating profit over turnover

Fig. 19 EU Aerospace Industry Turnover per Employee\*\*+

Average Growth Rate 1980 - 2000: 9.0%\*

Turnover/Employee  
 ('000 Then Year Euro)



Source: AECMA  
 (\*) based on consolidated turnover (current Euro) and annual average no. of employees  
 (+) including estimations for Sweden until 1992 and non-AECMA companies until 1995

## Turnover per Employee

As a result of productivity improvement, the turnover per employee shows an overall long-term growth of 9% per year (figure 19). This equates to almost doubling the turnover per employee during the 1990-2000 decade. In real terms, i.e. excluding inflation in prices of the year 2000, this is still equivalent to a growth in specific output of 55%.

This productivity increase results from a number of factors. Consolidation of the industry reduces administration and support departments. Moreover, these factors include larger share of materials and bought-out items benefitting from economies of scale, as production throughput has grown due to successful market penetration with EAI products. Rationalisation of manufacturing has been achieved through outsourcing of services and investment in automation. Further cost efficiency was possible by means of increased utilisation of information technology. The industry today is fundamentally different from that of the early Nineties, with a focus on global competition and profitability.

## Trend and Breakdown of R&D

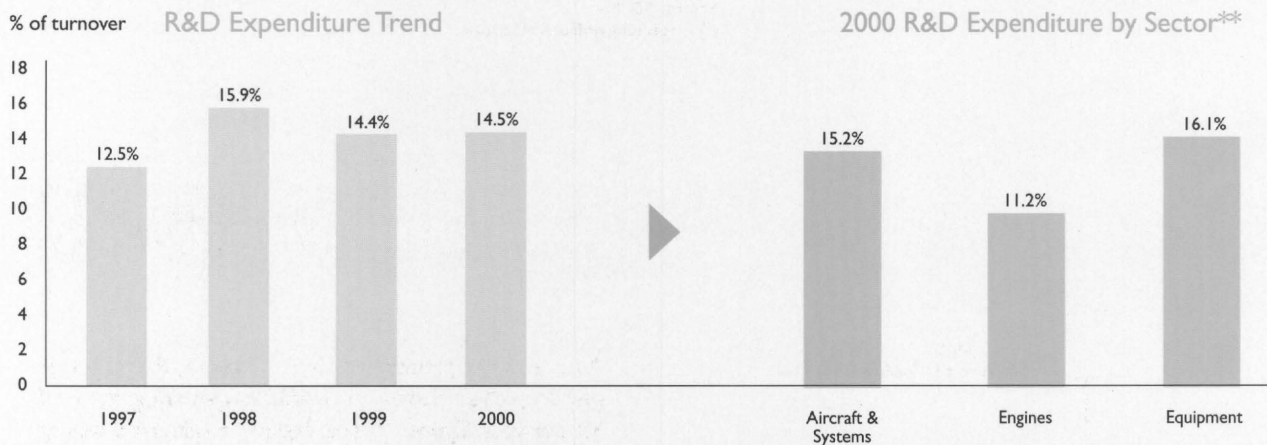
As in all high-technology industries, R&D is an indispensable driver for future success of the European Aerospace Industry. This is true for both the civil and the military market.

The aerospace industry is among the industry sectors with the highest share of R&D expenditure in relation to turnover. The investment in Research and Development in the EAI amounted to 10.5 billion Euro in 2000, 1.0 billion Euro more than in 1999. This equates to an investment of 14.5% of turnover, similar to last year's proportion (figure 20).

As last year, the Equipment sector heads the other industry sectors, its R&D investment being 16% of the turnover in 2000.

**Fig. 20** 2000 R&D Expenditure\* of EU Aerospace Industry

2000 Total: 10.5 billion Euro = 14.5% of turnover\*

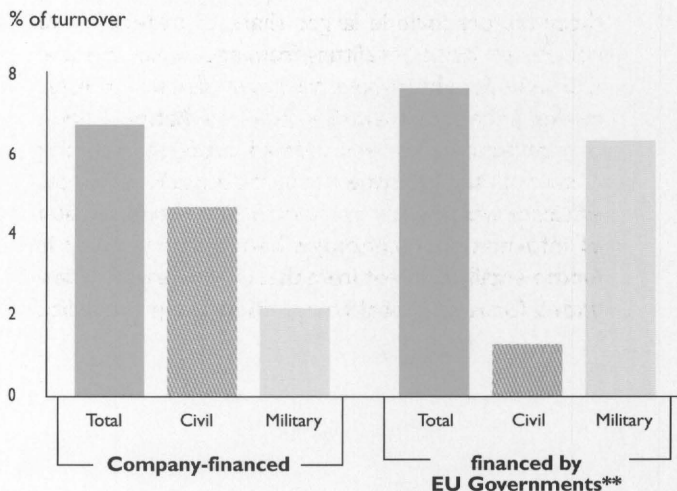


Source: AECMA  
 (\*) consolidated  
 (\*\*) related to sectoral turnover

## Financing of R&D

**Fig. 21** 2000 R&D Expenditure\* of EU Aerospace Industry

2000 Total: 10.5 billion Euro = 14.5% of turnover\*



Source: AECMA  
 (\*) each consolidated  
 (\*\*) incl. ESA, national aerospace research establishments and agencies

In 2000, almost half of the total aerospace R&D expenditure in Europe has been financed by the industry itself (figure 21).

On the civil side, 80% of the funding is provided by industry, with only 20% being derived from governments. In the military field, which traditionally features development to order, close to 25% of expenditure was financed by industry in 2000.

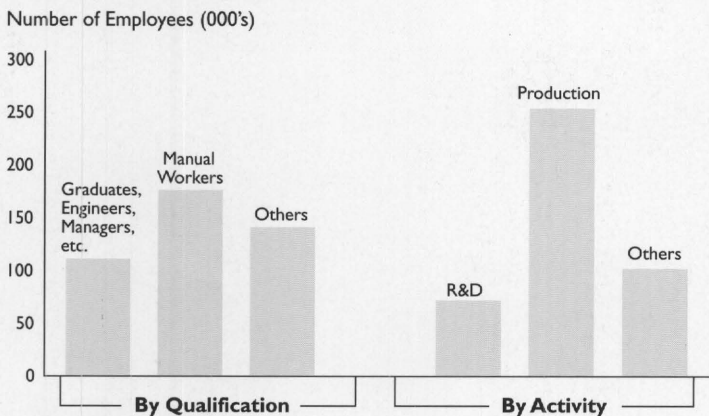
# Employment

Total direct employment in the EAI at the end of the year 2000 was about 429 100 employees. Some 2 400 new jobs have been generated by the EAI during 1999, increasing employment by 0.6%.

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

In addition, there are some 50 000 employees working in EAI subsidiaries located in the US and other countries outside the EU. This additional employment is also not represented here.

**Fig. 22** Breakdown of 2000 Direct EU Aerospace Industry by Qualification and Activity  
Total: 429 100 employees



Source: AECMA

## Employment by Qualification and Activity

The EAI provides a large number of highly skilled jobs, with 26% of all employees having a university degree or equivalent (figure 22). Another 33% which include technicians, draughtsmen, craftsmen, secretaries etc. have received an education at institutions at below-university level. Even in the case of manual workers, who account for 41% of all employees, most have been highly trained either within the EAI or externally to cope with the sophisticated nature of aerospace technology.

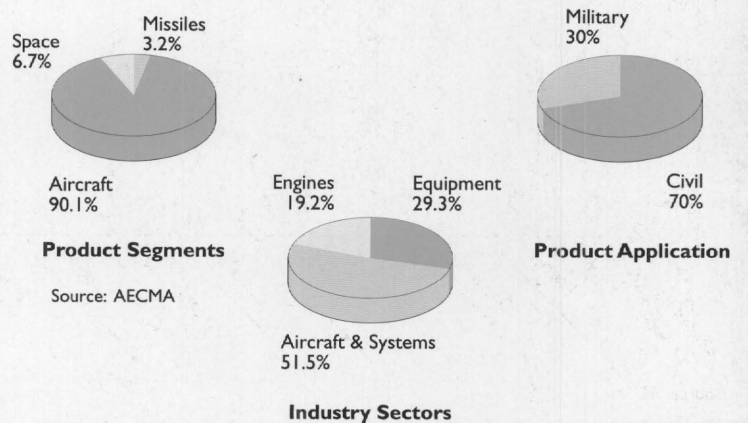
With a share of 59 percent of all employees, the production area (including maintenance) is the prominent one. However, the fact that 17% work in the field of R&D once more demonstrates the importance of R&D to the EAI.

## Employment by Product Segment and Industry Sector

If employment is analysed with respect to product segments, 90% of all direct aerospace employees in the EU were employed on Aircraft related activities at the end of the year 2000 (figure 23). This means some 386 700 employees, 4 800 more than in 1999. Workforce in space programmes was 28 800 (7%), 2000 employees less than 1999. Missile programmes employed 13 600 (3%) specialists which was slightly below 1999's workforce.

About 50% of the EAI's workforce is employed by (non-engine) prime contractors or overall system level companies (Segment "Aircraft & Systems"). Direct employment in their supply chain (direct employment only) is shared between the Engine sector (40%) and the Equipment sector (60%).

**Fig. 23** Breakdown of 2000 Direct EU Aerospace Industry Employment by Product Segment, Industry Sectors and Application  
Total: 429 100 employees



Source: AECMA

# Employment

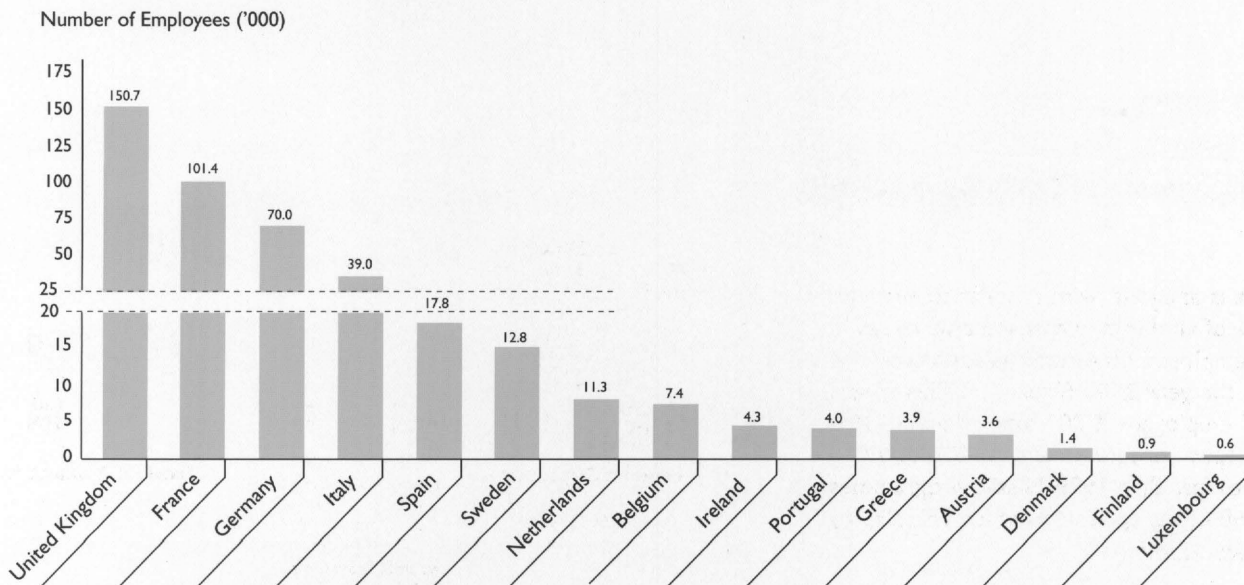
## Employment in the EU Member States

The industry features activities in all 15 Member States of the European Union, with no exceptions (figure 24).

The size of the aerospace industries in the individual countries correlates with the size of their overall economies and population. The largest aerospace industries are found in the states having the larger population and the highest GDP within the EU. As France, Germany, Italy and the United Kingdom comprise more than three quarters of the EU population and GDP, their aerospace industries account for more than three quarters of the EU aerospace industry's turnover and employment.

Fig. 24 Contribution to 2000 Direct EU Aerospace Industry Employment

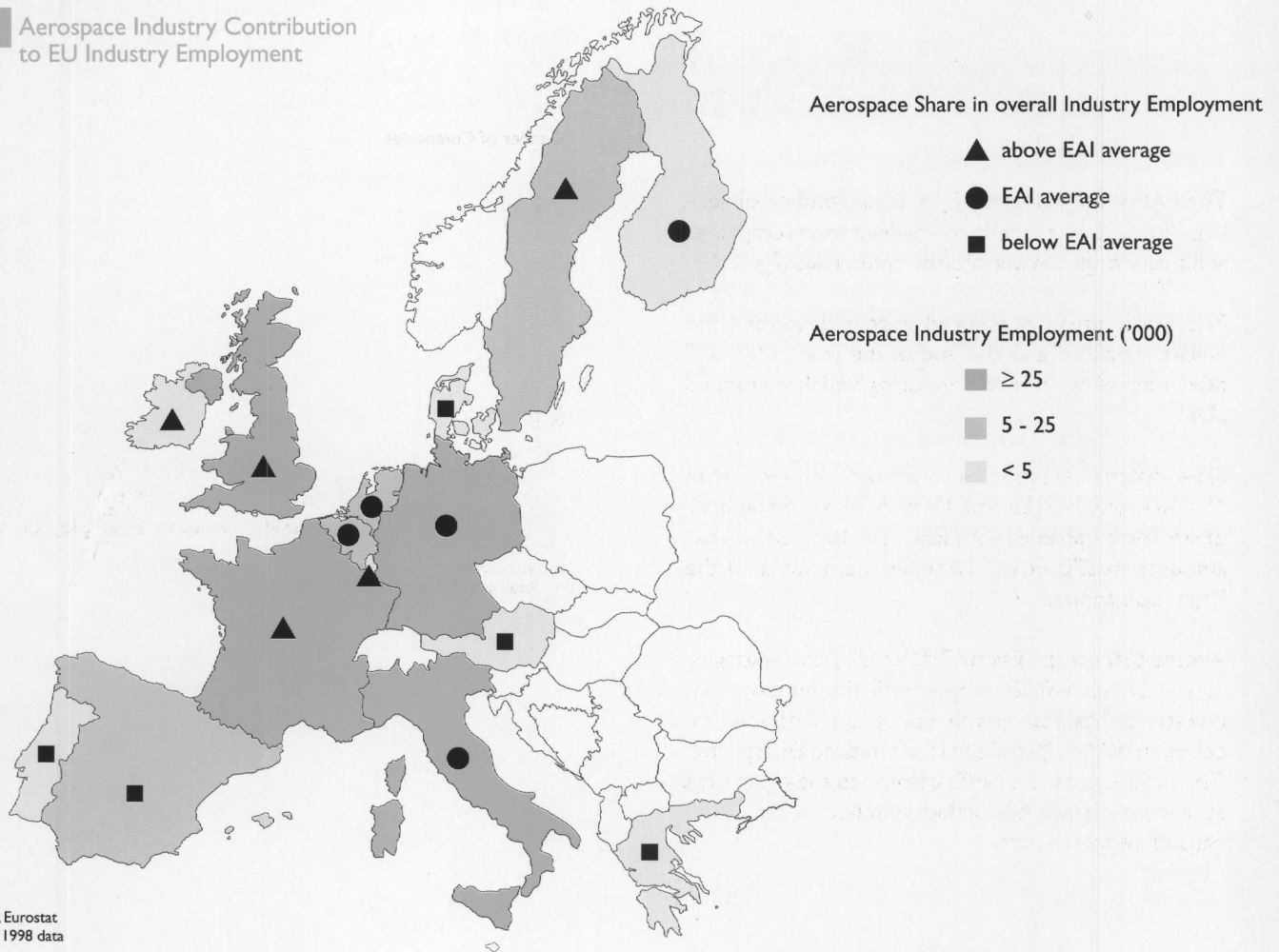
Total: 429 100 employees



Source: AECMA

# Employment

Fig. 25 Aerospace Industry Contribution to EU Industry Employment



Source: Aecma, Eurostat  
(\*) based on 1998 data

## Aerospace Industry Contribution to EU Industry Employment

In terms of direct employment, the EAI provides for about 1% of the jobs in all industries within the EU (based on 1998 figures). Including employment generated in the supply chain outside the EAI, the figure would amount to about 3%. The aerospace sector ranks in the 14th position out of 89 industry sectors, according to an analysis published in the "Panorama of the European Industry 1997" by the European Commission DGIII.

The relative importance of the aerospace industry compared to the overall EU industry varies within the EU. This variation is not correlated to the absolute size of the population, the GDP and the aerospace industry of a country, with for instance the smallest country of the EU, Luxembourg, ranking in the group with a share above average. The group of countries with an above average share in overall industry employment comprises France and the United Kingdom but also Ireland, Luxembourg and Sweden (figure 25).

For detailed data see the tables section.

# Structure of the European Aerospace Industry

## Size of the EAI Companies

The EAI is characterized by a small number of very large firms, a larger number of medium sized companies, and a very large number of small enterprises (figure 26).

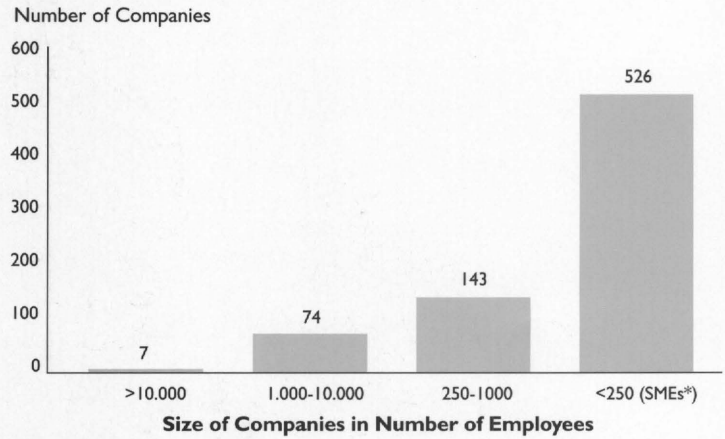
The information presented herein describes the industry structure at the end of the year 2000 and does not reflect the restructuring which continued after.

Seven companies have been reported with more than 10 000 employees, i.e. just 1% in number. The number of smaller companies with less than 1000 employees amounts to 670, nearly 10 times the number of the larger companies.

Almost 530 companies or 70% of all those belonging to the EAI in 2000 comply with the employment criteria contained in the European Commission definition of SMEs (Small and Medium-sized Enterprises). The majority of these SMEs belongs to the equipment sector, which will be further detailed in the SME's chapter of this report.

Fig. 26 Structure of the EU Aerospace Industry in 2000 by Company Size

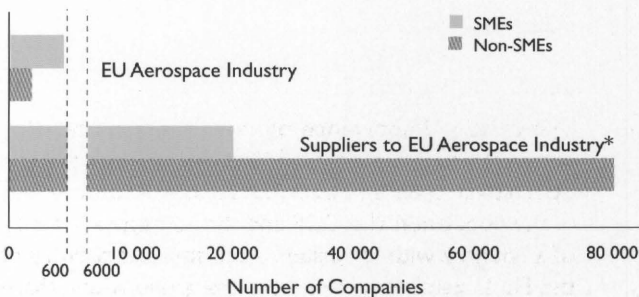
Total: 750 companies



Source: AECMA

(\*) Small and Medium-sized Enterprises

Fig. 27 The EU Aerospace Industry SMEs and Suppliers



Source: AECMA

(\*) Number of supplier companies estimated

## EAI SMEs and Suppliers

In addition to the companies directly pertaining to the EAI, there are an estimated 80 000 European suppliers of goods and services to the EAI, of which about 20 000 are estimated to be SMEs (figure 27). Thus, aerospace provides impetus to a large number of SMEs within the EU, not only among the classical aerospace manufacturers represented by the EAI, but also through the supply chain.

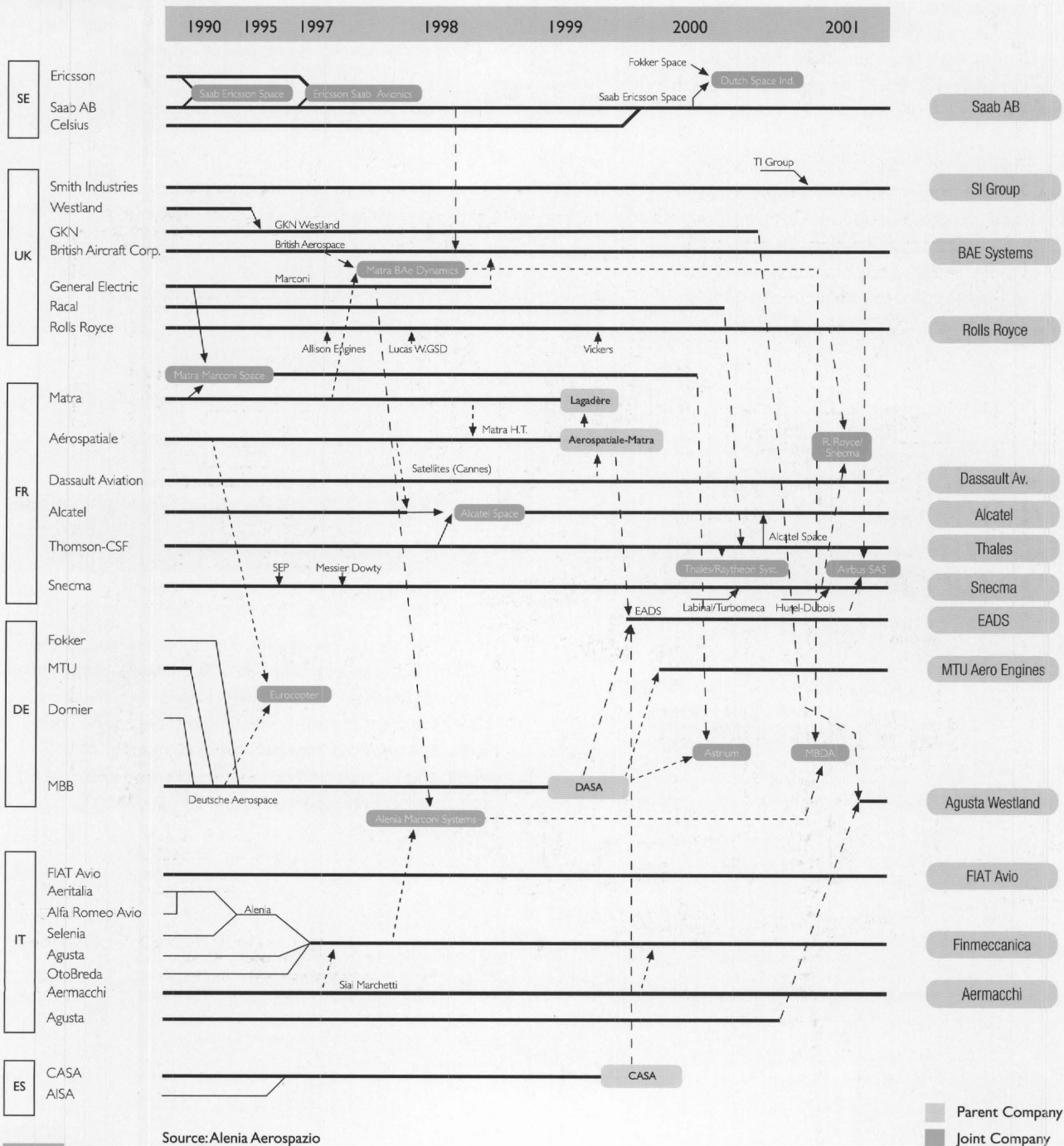


# Structure of the European Aerospace Industry

The structure of the European aerospace industry has undergone profound changes in the last decade, and this has continued in the course of the year 2000 (figure 28). A process of mergers and rationalisation has taken place to enable the EAI primes to cope with US competition and reduced customer budgets. This has in particular led to the formation of global players such as BAE SYSTEMS in 1999 and EADS in 2000, each of which generates a turnover in the region of \$20 billion, thus ranking alongside with US based Lockheed Martin behind Boeing.

This situation should further improve as some more consolidation steps are on the agenda. Today European companies have approached a status equivalent to the US groupings, giving European industry the ability to face the challenges present in all parts of the global aerospace market.

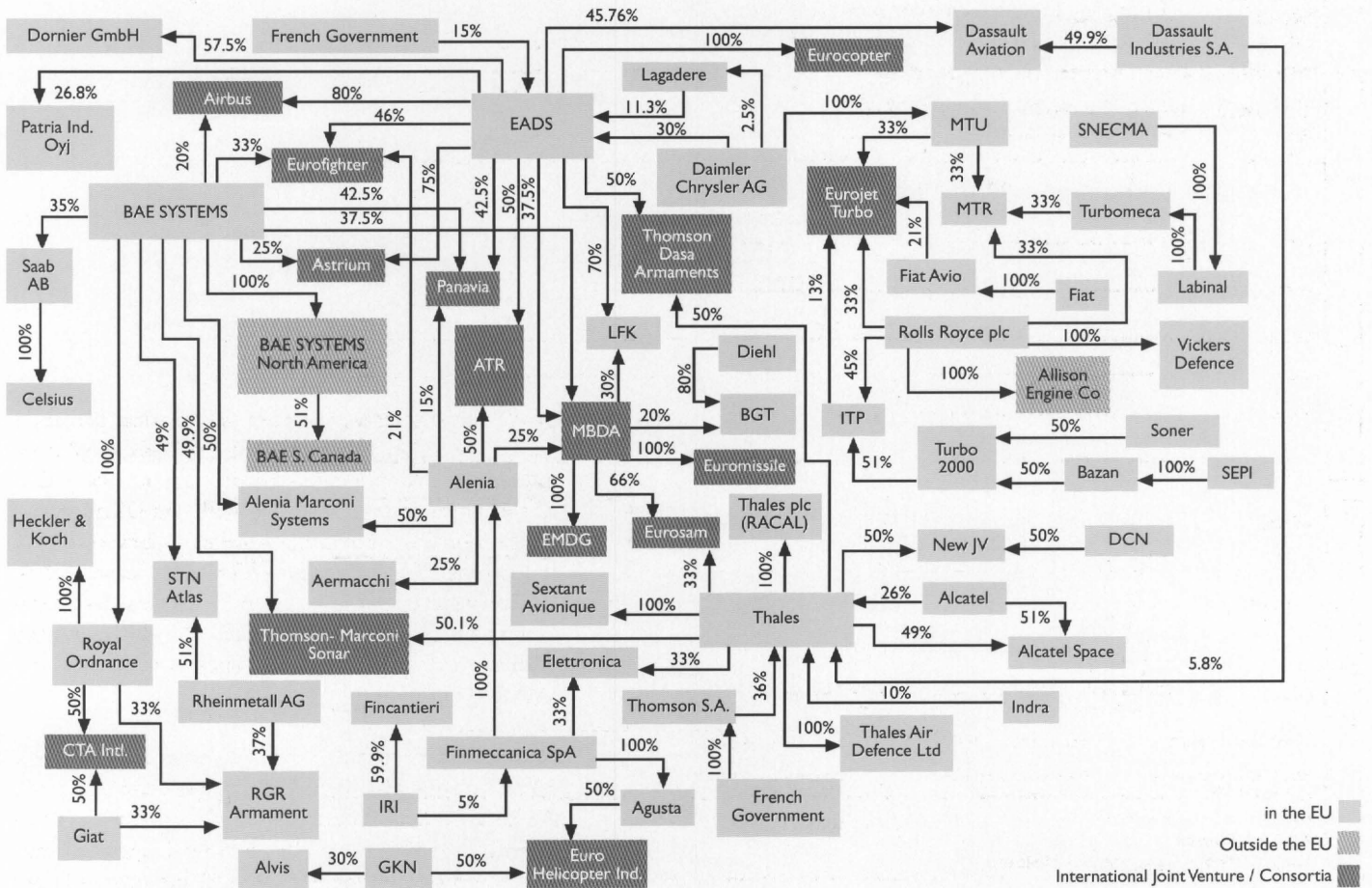
Fig. 28 Consolidation Process in the European Aerospace Industry



# Structure of the European Aerospace Industry

The global aerospace industry comprises a complex network of companies, joint ventures, international consortia and partnership agreements. The major European aerospace and defence cross holdings are shown in figure 29. In European aerospace, Airbus Industrie has become a genuine civil aerospace transnational with international production, distribution and R&D centres. In other areas, such as helicopters and missiles, European firms already exist and similar trans-national links are emerging between European, US and Asian companies at all levels of the supply chain. Strong linkages with Australia and South Africa will be augmented with further commercial and technological relationship in Asia and the Far East. The EAI will continue to play its part in globalisation.

Fig. 29 Major European Aerospace and Defence Industry Crossholdings



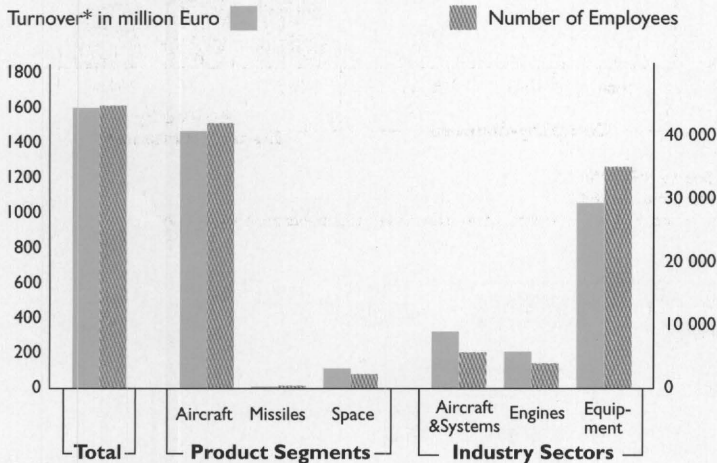
Source: SBAC

## Small and Medium-sized Enterprises (SMEs)

Though the contribution of smaller companies to the industry's turnover and employment is comparatively small, these companies are nevertheless considered vital for the development of the aerospace industry due to their high degree of flexibility and creativity.

Fig. 30 2000 Turnover\* and Employment of EU Aerospace Industry SMEs\*\*

Total Turnover\*: 1 607 million Euro  
Total Employment: 44 935



Source: AECMA

(\*) based on consolidated turnover

(\*\*) excl. suppliers to EU Aerospace Industry

As might be expected, the main customer group for SMEs is represented by the EAI itself. The EAI – mainly through their primes – account for 68% of the SMEs' turnover. This portion of turnover must not be accounted for in the EAI's overall sales of 72.3 bn.

The balance of the SME's sales of 1.61 bn Euro was sold to non-EAI customers. 9% of the turnover or products worth 450 mio Euro have been shipped to the non-EU aerospace industry. 23% or 1160 mio Euro directly went to end-users outside the EU (figure 31).

## SME Turnover and Employment

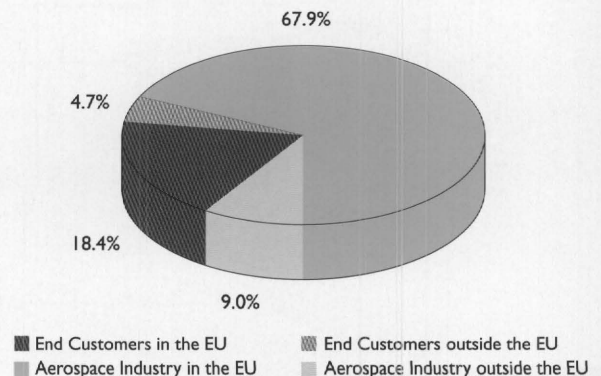
In 2000, the 526 SMEs of the EAI have successfully exceeded the 5 billion Euro turnover figure (unconsolidated turnover, figure 31 below). This turnover was brought about by 45 000 employees.

The SMEs' consolidated turnover and employment for the various product segments and industry sectors is shown in figure 30. In line with the overall industry, SMEs are predominantly supplying the Aircraft product segment (92% of SMEs' turnover). However, strongly deviating from the repartition of the overall industry, a majority of 78% of all SMEs' employees are working in the Equipment sector.

Aircraft maintenance plays an important role not only for EAI as a whole, but also for its SMEs. The portion of turnover from this task is estimated at 40%.

Fig. 31 2000 Turnover of EU Aerospace Industry SMEs\* by Customer

Total turnover: 5 005 million Euro



Source: AECMA

(\*) excl. suppliers to EU Aerospace Industry from other industry sectors

# Small and Medium-sized Enterprises (SMEs)

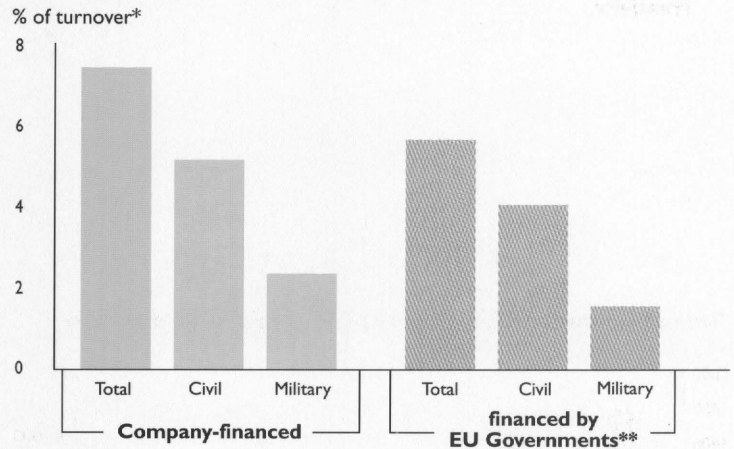
## SME Research & Development

A high level of R&D expenditure is not only a characteristic of large aerospace companies but also of the EU Aerospace Industry SMEs (figure 32). These companies contributed well above 200 million Euro to aerospace R&D in 2000. As a percentage of turnover, R&D expenditure for these companies is only slightly lower (at 13,3%) than the EAI average (at 14,5%). 57% of this R&D money was funded by the SMEs themselves.

The SMEs' R&D focus is clearly on the civil side, regardless of the source of financing. In total, 70% of the R&D expenditure had been dedicated to civil programs. In general SMEs indicate that in view of their financial framework they must aim for near term market application of their technology development.

Fig. 32 2000 R&D Expenditure\* of EU Aerospace Industry SMEs

Total turnover: 214 million Euro = 13.3% of turnover\*



Source: AECMA

(\*) consolidated

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

## EU Accession Countries

The Czech Republic, Poland and Romania are the next countries to join the EU. The EU has a strong focus on the process of a successful enlargement of its community, so does the European Association of Aerospace Industry AECMA. The accession countries quoted feature remarkable aerospace industries with strong capabilities and a long history.

### The Czech Republic

In the beginning of the year 2000, the aerospace industry association of the Czech Republic AAM CR (Association of the Aviation Manufacturers in the Czech Republic) became full member of AECMA.

Their aerospace industry comprises 34 companies, 27 being SMEs. They employ almost 7400 workers, of which 2000 are engineers and graduates. The consolidated turnover amounts to 300 mio Euro.

Though the Czech Association has supported AECMA's facts & figures as early as they joined AECMA, their economical data are not yet included in the tables and diagrams exposed in this brochure.

### Poland

The Polish Association of Aviation Industry was founded in 2000. It has expressed its intention to join AECMA. Two workshops have been organised and held in Warsaw with the support of the TAIEX Office of Enlargement Directorate and the participation of DG Enterprise.

The Polish aerospace industry comprises 13 major companies. They employ reportedly almost 40 000 people.

### Romania

As part of its EU integration process, the Romanian aerospace industry plans to join AECMA in 2002. The first conference in this country on "European and Romanian Aerospace – European Union Accession Challenges and Opportunities" took place in May 2001 in Bucharest, based on those given in Prague and Warsaw.

The conference was co-ordinated and supported by the European Commission through the TAIEX office of the DG Enlargement and the Enterprise Directorate-General, and co-organised by the Chamber of Commerce and Industry of Romania and the Bucharest Municipality, by the Employers Organisation of Romanian Aeronautical Companies and by AECMA.

The Romanian aerospace industry comprises 15 companies and employs more than 10 000 people.

# International Aspects

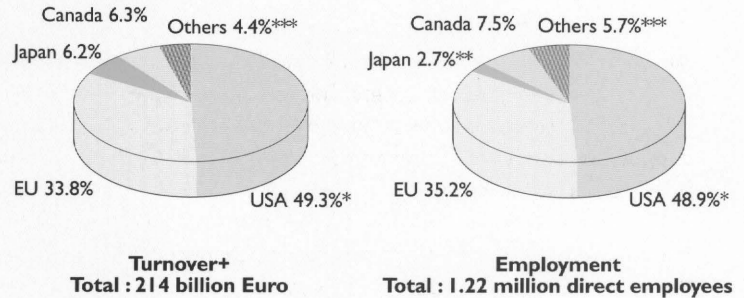
## Global Comparison

The aerospace manufacturing countries of the world (except the CIS and the PR China) are estimated to have achieved a combined sales volume of 214 billion Euro in 2000. This figure represents consolidated sales for the respective entities shown, i.e. supplies within the industry of a given entity have been eliminated. It does however include sales among the industries of the entities.

The US aerospace industry, with almost 50% of the worldwide turnover and direct aerospace industry employment, remains the dominant player in the global market place (figure 33).

The EAI has contributed about one third to sales and employment. This makes the EAI to the incontestable number two globally.

Fig. 33 2000 Comparative Aerospace Industry Turnover and Employment



Source: AECMA, AIA, AIAC, SJAC, Company Reports

(+) based on consolidated turnover

(\*) excluding turnover/employment not directly associated to Aerospace

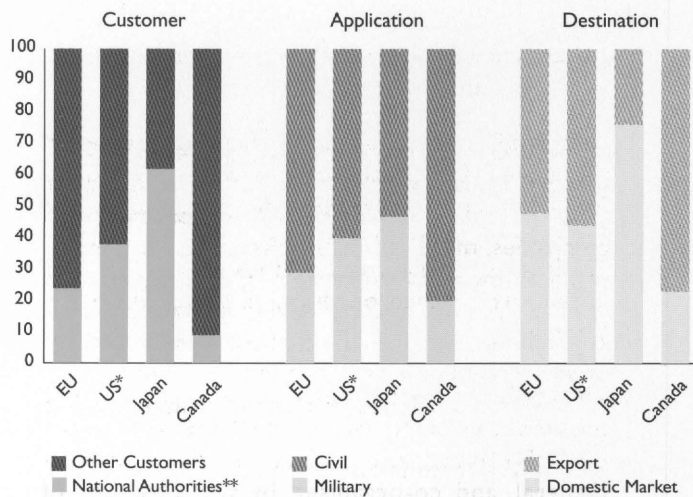
(\*\*) excluding company staff not directly related to development/manufacturing of aerospace products

(\*\*\*) excluding PR China and CIS

(Note: Japan's AI employment includes company staff only directly related to aerospace production, i.e. the figure is not comparable with that of other countries)

Fig. 34 2000 Comparative Aerospace Industry Turnover Breakdown+

% of total turnover



Source: AECMA, AIA, AIAC, Strategis, SJAC

(+) based on consolidated turnover

(\*) excluding sales not directly associated to aerospace

(\*\*) including defence and space agencies

Remarkable distinctions can be noted for the four largest aerospace manufacturing entities in respect of their customer base.

Firstly, Canada and then the EU are the least dependent on orders from their national authorities, while in Japan the national agencies are the main customers (figure 34).

As for product application, Canada's aerospace industry is estimated to be 80% engaged in civil products and services, again followed by the EU with 71%. The US make about 60% of their turnover with civil products and services, followed by Japan with 53%.

Concerning the destination of the aerospace industries' products and services, Canada is leading in export intensity with a rate of 77%. The EU and the US export slightly above one half of their sales. Japan mainly produces for the home market.

The sponsor's weight of the industry... development and manufacturing process...

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## List of Abbreviations

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

## Definitions

### EU

The term EU as used in the AECMA Facts & Figures data covers the 15 Member States of the European Union: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, United Kingdom.

### Consolidated Turnover

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. The consolidated turnover therefore represents all sales to end-user customers as well as to aerospace companies outside the EU.

### Consolidated Turnover - Breakdown by Industry Sectors

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 supply a substantial part of their output to the EAI's Aircraft & Systems companies.

To calculate the individual contributions of the industry sectors to the total consolidated turnover, the major corrections to the sector's turnover data are:

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

### Breakdown of EU Aerospace Industry data

		Industry Sectors			
		Aircraft & Systems	Engines	Equipment	Total
Product Segments	Aircraft	a	b	c	<b>Aircraft</b> = a + b + c
	Missiles	d	e	f	<b>Missiles</b> = d + e + f
	Space	g	h	i	<b>Space</b> = g + h + i
	Total	<b>Aircraft &amp; Systems</b> = a + d + g	<b>Engines</b> = b + e + h	<b>Equipment</b> = c + f + i	<b>Total*</b> = $\sum (a...i)$

■ \* for financial data, this means unconsolidated

### Research & Development (R&D)

Various definitions of R&D exist and it is 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.



## Segments

### Aircraft & Systems

- Complete systems of and/or airframes for aeroplanes, helicopters and gliders, ground installations,....,their subsystems and parts, spares and maintenance
- Complete systems of and/or airframes for missiles, ground installations,...., their subsystems and parts, spares and maintenance
- Complete systems of and/or airframes for space vehicles, satellites, launchers, ground installations,...., their subsystems and parts, spares and maintenance
- Service Providers, Consultants, etc.

### Engines

- Piston engines, turboprops, turbojets, jet engines, their subsystems and parts, spares and maintenance, for installation in aircraft systems
- Engines, their subsystems and parts, spares and maintenance, for installation in missile systems
- Propulsion devices, their subsystems and parts, spares and maintenance, for installation in space vehicles, satellites, launchers

### Equipment

- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in aircraft systems
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in missile systems
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in space vehicles, satellites, launchers

## Sectors

### Aircraft

- Complete systems of and/or airframes for aeroplanes, helicopters and gliders, ground installations,....,their subsystems and parts, spares and maintenance
- Piston engines, turboprops, turbojets, jet engines, their subsystems and parts, spares and maintenance, for installation in aircraft systems
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in aircraft systems
- Service Providers, Consultants, etc.

### Missiles

- Complete systems of and/or airframes for missiles, ground installations,...., their subsystems and parts, spares and maintenance
- Engines, their subsystems and parts, spares and maintenance, for installation in missile systems
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in missile systems
- Service Providers, Consultants, etc.

### Space

- Complete systems of and/or airframes for space vehicles, satellites, launchers, ground installations,...., their subsystems and parts, spares and maintenance
- Propulsion devices, their subsystems and parts, spares and maintenance, for installation in space vehicles, satellites, launchers
- Finished products, subsystems and parts, spares and maintenance, also for test and ground-training equipment, for installation in space vehicles, satellites, launchers
- Service Providers, Consultants, etc.



# Aecma Facts & Figures 2000 & Figures 2000

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

Year	Turnover** const. 2000 mio Euro	Employees+ (Year End)
1980	38 204	547 193
1981	40 690	579 425
1982	42 111	560 168
1983	42 953	559 459
1984	45 751	540 215
1985	48 797	558 435
1986	54 271	565 577
1987	56 530	569 445
1988	58 027	564 947
1989	62 692	563 059
1990	64 306	561 062
1991	60 906	524 698
1992	58 421	480 305
1993	52 172	437 258
1994	49 163	407 520
1995	47 192	386 656
1996	53 671	382 012
1997	62 855	395 487
1998	65 962	422 484
1999	67 443	426 730
2000	72 279	429 107

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 (%)	Other Customers in (%)
1980	53.2%	46.8%
1981	47.7%	52.3%
1982	47.2%	52.8%
1983	48.2%	51.8%
1984	48.3%	51.7%
1985	47.2%	52.8%
1986	47.0%	53.0%
1987	47.8%	52.2%
1988	45.3%	54.7%
1989	41.6%	58.4%
1990	39.0%	61.0%
1991	40.4%	59.6%
1992	37.7%	62.3%
1993	38.0%	62.0%
1994	38.3%	61.7%
1995	36.2%	63.8%
1996	28.2%	71.8%
1997	23.6%	76.4%
1998	25.5%	74.5%
1999	26.3%	73.7%
2000	23.8%	76.2%

Source: AECMA

(\*) based on consolidated turnover in constant 1999 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 (%)	Military in (%)
1980	32.5%	67.5%
1981	34.1%	65.9%
1982	32.8%	67.2%
1983	35.4%	64.6%
1984	35.4%	64.6%
1985	36.2%	63.8%
1986	40.6%	59.4%
1987	39.6%	60.4%
1988	42.8%	57.2%
1989	49.1%	50.9%
1990	50.8%	49.2%
1991	53.0%	47.0%
1992	57.4%	42.6%
1993	56.9%	43.1%
1994	55.4%	44.6%
1995	54.1%	45.9%
1996	57.5%	42.5%
1997	60.5%	39.5%
1998	62.4%	37.6%
1999	68.5%	31.5%
2000	70.8%	29.2%

Source: AECMA

(\*) based on consolidated turnover in constant 1999 prices; incl. estimations for Sweden until 1992 and non-AECMA companies until 1995.

Fig. 4: EU Aerospace Industry Turnover\* Growth from 1999 to 2000

constant 2000 mio Euro	Total Sales	EU Governments	Other Customers	Military Exports	Military Domestic	Civil Exports	Civil Domestic	Total Domestic	Total Export	Total Military	Total Civil
1999 (revised)	67 443	17 709 26.3%	49 734 73.7%	6 277 9.3%	14 994 22.2%	28 048 41.6%	18 124 26.9%	33 118 49.1%	34 325 50.9%	21 271 31.5%	46 172 68.5%
2000	72 279	17 238 23.8%	55 042 76.2%	6 032 8.3%	15 073 20.9%	31 602 43.7%	19 573 27.1%	34 646 47.9%	37 634 52.1%	21 105 29.2%	51 175 70.8%
Change 1999 to 2000 (%)	4 837 +7.2%	-471 -2.7%	5 307 +10.7%	-245 -3.9%	79 +0.5%	3 554 +12.7%	1 449 +8.0%	1 528 +4.6%	3 309 +9.6%	-167 -0.8%	5 003 +10.8%
Contribution to total growth of +7.2%		-0.7%	+7.9%	-0.4%	+0.1%	+5.3%	+2.1%	+2.3%	+4.9%	-0.2%	+7.4%

Source: AECMA

(\*) based on consolidated turnover

Fig. 5: Industry Sector Contribution to 2000 EU Aerospace Industry Turnover\*  
Total: 72 279 million Euro

	Turnover in million Euro	%
Aircraft & Systems	39 074	54.0%
Engines	13 865	19.2%
Equipment	19 340	26.8%
Total	72 279	100.0%

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 manufacturers; Equipment figures include Equipment supplied to European Aircraft & Systems and Engines Manufacturers.

(\*) based on consolidated turnover

Fig. 6: Breakdown of 2000 EU Aerospace Industry Turnover\* by Product Segment  
Total: 72 279 million Euro

	Turnover in million Euro	Percentages
Aircraft	66 145	91.5%
Aircraft Final Products <sup>□</sup>	31 856	44.1%
Large Civil Aircraft	18 331	25.4%
Regional Aircraft	1 622	2.2%
Business Jets	1 463	2.0%
Helicopter	3 756	5.2%
Military Aircraft	6 685	9.2%
Aerostructures <sup>□</sup>	2 924	4.0%
Aircraft Engines <sup>□</sup>	8 352	11.6%
Aircraft Equipment <sup>□</sup>	5 734	7.9%
Aircraft Maintenance	17 279	23.9%
Missiles <sup>+</sup>	2 150	3.0%
Space <sup>+</sup>	3 984	5.5%
Total	72 279	100%

Source: AECMA, Aircraft breakdown estimated

(\*) based on consolidated turnover

(+) data comprises EU and non-EU supplied engines and equipment

(□) excluding maintenance

# Aecma Facts & Figures 2000

**Fig. 8: Breakdown of 2000 EU Aerospace Industry Turnover\* by Customer**  
 Total: 108 455 mio Euro unconsolidated  
 36 175 mio Euro Inter EU Aerospace Industry Sales  
 72 279 mio Euro consolidated, i.e. excl. Inter EU Aerospace Industry Sales

		End-Users mio Euro	Non-EU Aerospace Industry mio Euro	Intra EU Aerospace Industry mio Euro	Total mio Euro
Product Segments	Aircraft	55 489	10 656	32 238	98 383
	Missiles	2 110	40	930	3 080
	Space	3 100	884	3 008	6 992
	Total unconsolidated	60 698	11 581	36 175	108 455
Total consolidated		72 279		-	72 279
Industry Sectors	Aircraft & Systems	42 867	3 751	20 852	67 470
	Engines	10 195	4 716	3 918	18 829
	Equipment	7 636	3 114	11 406	22 156
	Total unconsolidated	60 698	11 581	36 175	108 455
	Total consolidated	72 279		-	72 279

Source: AECMA  
 (\*) based on consolidated turnover

**Fig. 9: Breakdown of 2000 EU Aerospace Industry Turnover\*  
 by EU Governments\*\* / Other Customers**  
 Total: 72 279 million Euro

		EU Governments civil	EU Governments military	Other Customers civil	Other Customers military	Total mio Euro
Product Segments	Aircraft	452	12 707	47 426	5 559	66 145
	Missiles	0	1 809	0	341	2 150
	Space	1 713	556	1 583	132	3 984
	Total	2 165	15 073	49 010	6 032	72 279
Industry Sectors	Aircraft & Systems	1 545	9 622	31 428	4 023	46 618
	Engines	267	2 305	11 906	433	14 911
	Equipment	353	3 145	5 676	1 576	10 750
	Total	2 165	15 073	49 010	6 032	72 279

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

**Fig. 10: Breakdown of 2000 EU Aerospace Industry Turnover\*  
 resulting from Sales of Aircraft Maintenance**  
 Total: 17 279 million Euro = 23.9% of total turnover\*

	at Aerospace Manufacturers		at Airline Maintenance Units		Total	
	mio Euro	%	mio Euro	%	mio Euro	%
Aircraft & Systems	2 167	3.0%	4 413	6.1%	6 580	9.1%
Engines	2 191	3.0%	4 067	5.6%	6 258	8.7%
Equipment	2 344	3.2%	2 097	2.9%	4 441	6.1%
Total Maintenance Turnover	6 702	9.3%	10 577	14.6%	17 279	23.9%

Source: AECMA (\*) based on consolidated turnover of 72 279 million Euro incl. maintenance

**Fig. 11-12: Breakdown of 2000 EU Aerospace Industry Turnover\*  
 by Civil / Military and by Domestic / Export**  
 Total: 72.28 billion Euro

		Civil EU Domestic billion Euro	Civil Export billion Euro	Military EU Domestic billion Euro	Military Export billion Euro	Total billion Euro
Total		19.57	31.60	15.07	6.03	72.28
Product Segments	Aircraft	17.64	30.24	12.71	5.56	66.14
	Missiles	0.00	0.00	1.81	0.34	2.15
	Space	1.94	1.36	0.56	0.13	3.98
Industry Sectors	Aircraft & Systems	13.34	19.63	9.62	4.02	46.62
	Engines	3.46	8.71	2.31	0.43	14.91
	Equipment	2.77	3.26	3.15	1.58	10.75

Source: AECMA (\*) based on consolidated turnover

# Aecma Facts & Figures 2000

Fig. 13: Trend of Aerospace Industry-to-Industry Turnover

	EAI Export (Euro bn 2000)		EAI Import (Euro bn 2000)	
	to AI Companies in the US	to AI Companies in ROW	from AI Companies in the US	from AI Companies in ROW
1996	4.43	1.83	6.50	0.60
1997	6.98	1.97	7.50	0.77
1998	7.83	1.88	8.85	1.11
1999	8.56	2.71	9.70	1.65
2000	8.34	3.24	10.02	2.13

Source: AECMA

Fig. 14: 2000 Aerospace Industry Import and Export of the EU

		by European Aerospace Industry million Euro	by Others in the EU *	Total (by EAI and Others in the EU) million Euro
Imports from	USA	10 024	24 518	34 542
	Rest of World	2 127	14 060	16 187
	Total Import	12 151	38 578	50 729
Exports to	USA Aerospace Industry	8 337	0	8 337
	USA other Customers	13 156	3 185	16 341
	USA Total	21 493	3 185	24 678
	ROW Aerospace Industry	3 244	0	3 244
	ROW other Customers	12 897	11 809	24 706
	ROW Total	16 141	11 809	27 950
	Total Export	37 634	14 995	52 629
Balance				1 900

Source: AECMA  
(\*) estimated

Fig. 15: 2000 Aerospace Trade Balance of the EU

	European Aerospace Industry million Euro	Others in the EU *	Total (EAI and Others in the EU) million Euro
with USA	11 469	-21 333	-9 864
with ROW	14 014	-2 251	11 764
Total	25 483	-23 583	1 900

Source: AECMA  
(\*) estimated

Fig. 16: EU Aerospace Industry Order Intake Trend

in (%) of turnover *	1997	1998	1999	2000
Civil		155%	116%	156%
Military		165%	117%	134%
Total (weighted)	118%	158%	116%	150%
in 2000 Euro bn	1997	1998	1999	2000
Civil		96.3	82.1	120.0
Military		55.8	36.1	42.4
Total	103.0	152.1	118.1	162.4

Source: AECMA  
(\*) based on unconsolidated order intake in percentage of unconsolidated turnover

Fig. 17: Breakdown of 2000 EU Aerospace Industry Order Intake\* by Customer

	EU** Governments (%)	Other EU Customers (%)	Non-EU Customers (%)	Total (%)
Aircraft & Systems	152%	134%	251%	178%
Engines	80%	117%	125%	116%
Equipment	98%	89%	101%	93%
Total	130%	120%	201%	150%

Source: AECMA  
(\*) based on unconsolidated order intake in percentage of unconsolidated turnover  
(\*\*) including ESA; national aerospace research establishments and agencies

Fig. 18: EU Aerospace Industry Operating Profit Margin

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
EU Aerospace Industry Operating Profit in % of Turnover	5.2%	4.2%	3.5%	3.8%	3.2%	2.4%	2.4%	-0.6%	0.7%	0.0%	0.0%	2.2%	3.9%	6.7%	6.8%	4.9%

Source: AECMA

# Aecma Facts & Figures 2000

Fig. 19: EU Aerospace Industry Turnover per Employee

	Turnover/Employee ** (Then year '000 Euro) Actuals	Turnover/Employee (Then year '000 Euro) at average growth rate
1980	30	30
1981	34	33
1982	38	36
1983	42	39
1984	49	42
1985	55	46
1986	63	50
1987	67	55
1988	72	60
1989	82	65
1990	89	71
1991	92	78
1992	99	85
1993	100	92
1994	105	101
1995	110	110
1996	119	119
1997	148	130
1998	152	142
1999	154	155
2000	169	169

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

Fig. 20-1: R&D Expenditure of the EU Aerospace Industry (Trend)

	1997	1998	1999	2000
Turnover * 2000 Euro bn	62.9	66.0	67.4	72.3
R&D * 2000 Euro bn	7.8	10.5	9.7	10.5
R&D related to turnover	12.5%	15.9%	14.4%	14.5%

Source: AECMA  
(\*) consolidated

Fig. 20-2: 2000 R&D Expenditure of the EU Aerospace Industry  
Total: 10.5 Euro bn = 14.5% of Turnover

	R&D Expenditure* in Euro bn	R&D Expenditure in (%) of turnover*
Aircraft & Systems	7.1	15.2%
Engines	1.7	11.2%
Equipment	1.7	16.1%
Total**	10.5	14.5%

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

Fig. 21: 2000 R&D Expenditure\* of the  
EU Aerospace Industry  
Total: 10.5 Euro bn = 14.5% of turnover

R&D Expenditure* in		Euro bn	(%) of turnover*
Company-financed	Civil	3.4	4.7%
	Military	1.6	2.2%
	Total	4.9	6.8%
financed by EU Governments**	Civil	0.9	1.3%
	Military	4.6	6.4%
	Total	5.6	7.7%
Grand Total		10.5	14.5%

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

Fig. 22: Breakdown of 2000 Direct EU Aerospace Industry Employment  
by Qualification and Activity  
Total: 429 107 employees

		Number of Employees
by Qualification	Graduates, Engineers, Managers, etc.	111 291
	Manual Workers	176 417
	Others	141 399
	Total	429 107
by Activity	R&D	72 364
	Production	254 101
	Others	102 642
	Total	429 107

Source: AECMA

Fig. 23: Breakdown of 2000 Direct EU Aerospace  
Industry Employment by Segments,  
Sectors and Product Application  
Total: 429 107 employees

Product Segments No. of Empl.		Industry Sectors No. of Empl.	Application No. of Empl.
Aircraft	386 727		
Missiles	13 630		
Space	28 750		
Aircraft & Systems		221 332	
Engines		82 180	
Equipment		125 595	
Civil*			300 375
Military*			128 732
Total	429 107	429 107	429 107

Source: AECMA  
(\*) estimate

Fig. 24: Contribution to 2000 Direct EU  
Aerospace Industry Employment  
Total: 429 107 employees

Country	Number of Employees
Austria	3 612
Belgium	7 447
Denmark	1 416
Finland	942
France	101 383
Germany	70 000
UK	150 659
Greece	3 938
Ireland	4 320
Italy	39 029
Luxembourg	585
Netherlands	11 261
Portugal	3 991
Spain	17 773
Sweden	12 751
Total	429 107

Source: AECMA

Fig. 25: Aerospace Industry Contribution  
to EU Industry Employment

Country	No. of Employees in the EAI*/ No. of Employees in the EU Industry*
Austria	0.3%
Belgium	0.7%
Denmark	0.3%
Finland	0.5%
France	1.6%
Germany	0.6%
UK	2.2%
Greece	0.3%
Ireland	1.1%
Italy	0.6%
Luxembourg	1.6%
Netherlands	0.5%
Portugal	0.2%
Spain	0.4%
Sweden	1.3%
EU	0.9%

Source: AECMA, Eurostat  
(\*) each based on 1998 data

# Aecma Facts & Figures 2000

**Fig. 26: Structure of the EU Aerospace Industry by Company Size**

Size of Companies in Number of Employees	Number of Companies
>10.000	7
1 000 - 10 000	74
250 - 1 000	143
<250 (SMEs*)	526
<b>Total</b>	<b>750</b>

Source: AECMA  
(\* Small and Medium-sized Companies)

**Fig. 27: The EU Aerospace Industry's SMEs and Suppliers**

	Number of Companies	
	SMEs	Non-SMEs
EU Aerospace Industry	526	224
Suppliers to EU Aerospace Industry*	20 000	80 000

Source: AECMA  
(\* estimate)

**Fig. 30: 2000 Turnover\* and Employment of EU Aerospace Industry SMEs\*\***

Total Turnover\*: 1 607 million Euro  
Total Employment: 44 935 employees

		Turnover* in million Euro	Number of Employees
Product Segments	Aircraft	1 474	42 147
	Missiles	14	476
	Space	118	2 312
	<b>Total</b>	<b>1 607</b>	<b>44 935</b>
Industry Sectors	Aircraft & Systems	330	5 764
	Engines	214	3 994
	Equipment	1 062	35 177
	<b>Total</b>	<b>1 607</b>	<b>44 935</b>

Source: AECMA  
(\* based on consolidated turnover, i.e. excl. suppliers to EU Aerospace Industry  
(\*\*) excl. suppliers to EU Aerospace Industry pertaining to other industry sectors)

**Fig. 31: 2000 Turnover of EU Aerospace Industry SMEs\* by Customer**

Total Turnover: 5 005 million Euro

		Turnover mio Euro
End Customers	in the EU	920
	outside the EU	238
Aerospace Industry	in the EU	3 398
	outside the EU	448
<b>Total</b>		<b>5 005</b>

Source: AECMA  
(\* excluding suppliers to EU Aerospace Industry from other industry sectors)

**Fig. 32: 2000 R&D Expenditure\* of the EU Aerospace Industry SMEs**

Total: 214 million Euro = 13.3% of Turnover

R&D Expenditure* in		million Euro	% of Turnover*
Company-financed	Civil	84	5.2%
	Military	38	2.4%
	<b>Total</b>	<b>122</b>	<b>7.5%</b>
financed by EU Governments**	Civil	66	4.1%
	Military	26	1.6%
	<b>Total</b>	<b>92</b>	<b>5.7%</b>
<b>Grand Total</b>		<b>214</b>	<b>13.3%</b>

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

**Fig. 33: 2000 Comparative Aerospace Industry Turnover and Employment**

	Turnover <sup>+</sup> in Euro bn	Employment <sup>++</sup> ('000)
USA*	105.6	595.9
EU	72.3	429.1
Japan	13.4	33.0**
Canada	13.6	91.5
Others***	9.4	70.0
<b>Total</b>	<b>214.2</b>	<b>1219.5</b>

Source: AECMA, AIA, AIAC, SJAC, Company Reports  
(+) based on consolidated turnover  
(++) at year end  
(\* excluding sales and employment not directly pertaining to aerospace  
(\*\*) includes company staff only directly related to aerospace production (i.e. figure not comparable with other countries)  
(\*\*\*) estimate, PR China and CIS not included

**Fig. 34: 2000 Comparative Aerospace Industry Turnover Breakdown<sup>+</sup>**

		EU	US*	Japan	Canada
Customer	National Authorities**	24%	38%	62%	9%
	Other Customers	76%	62%	38%	91%
Application	Military	29%	40%	47%	20%
	Civil	71%	60%	53%	80%
Destination	Domestic market	48%	44%	76%	23%
	Export	52%	56%	24%	77%

Source: AECMA, AIA, AIAC, Strategis, SJAC  
(+) estimate, based on consolidated turnover  
(\* excluding sales not directly associated to aerospace  
(\*\*) including sales to defence and space agencies)

Currency Conversion Table based on 2000 average Exchange Rates

For the calculations in this brochure, the following year 2000 exchange rates have been used:

**Euro Exchange Rates 2000 (annual averages)**

Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxembourg	Netherlands	Austria	Portugal	Finland	Sweden	UK	Czech Rep.	USA	Canada	Japan
			100	100			1000				100							
BEF	DKK	DEM	GRD	ESP	FRF	IEP	ITL	LUF	NLG	ATS	PTE	FIM	SEK	GBP	CZK	USD	CAD	YEN
40.33990	7.45381	1.95583	3.36635	1.66386	6.55957	0.78756	1.93627	40.33990	2.20371	13.76030	2.00482	5.94573	8.44662	0.60951	35.60420	0.92405	1.37121	0.99535

Example: 1 Euro = 1936.27 Lit

**US\$ Exchange Rates 2000 (annual averages)**

Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Luxembourg	Netherlands	Austria	Portugal	Finland	Sweden	UK	Czech Rep.	USA	Canada	Japan
			100	100			1000				100							
BEF	DKK	DEM	GRD	ESP	FRF	IEP	ITL	LUF	NLG	ATS	PTE	FIM	SEK	GBP	CZK	USD	CAD	YEN
43.65554	8.06646	2.11658	3.64304	1.80062	7.09872	0.85230	2.09542	43.65554	2.38484	14.89129	2.16960	6.43442	9.14087	0.65960	38.53060	1.00000	1.48391	1.07716

Example: 1 US\$ = 2095.42 Lit

Source: European Commission Services, 06.02.2001

**NOTE:** - rates are annual averages based upon daily rates through the year  
 - this table is based upon rounded figures, thus it is not suitable for financial transaction or payment calculations



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## Further Information

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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.

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