EU MARKET SURVEY 2003

CASTINGS AND FORGINGS

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CENTRE FOR THE PROMOTION OF IMPORTS FROM DEVELOPING COUNTRIES

CBI: YOUR EUROPEAN PARTNER FOR THE EUROPEAN MARKET

The CBI (Centre for the Promotion of Imports from developing countries) is an agency of the Dutch Ministry of Foreign Affairs. The CBI was established in 1971. The CBI's mission is to contribute to the economic development of developing countries by strengthening the competitiveness of companies from these countries on the EU market. The CBI considers social values and compliance with the most relevant environmental requirements to be an integral part of its policy and activities.

CBI offers various programmes and services to its target groups:

Market information
A wide variety of tools to keep exporters and Business Support Organisations (BSOs) in developing countries in step with the very latest development on the EU market.
These include market surveys and strategic marketing guides for more than 40 product groups, manuals on export planning and other topics, fashion and interior forecasts and the CBI News Bulletin, a bi-monthly magazine. This information can also be obtained from our website at www.cbi.nl For all information on non-tariff trade barriers in the EU CBI has a special database, AccessGuide, at www.cbi.nl/accessguide
And finally CBI's Business Centre is offering free office facilities, including telephones, computers, internet and copiers for eligible exporters and BSOs. Market reports, international trade magazines, cd-roms and much more can be consulted in the information section of the business centre.

Company matching
The company matching programme links well-versed suppliers in developing countries to reliable importing companies in the EU and vice versa. The online matching database contains profiles of hundreds of CBI-audited and assisted exporters in developing countries that are ready to enter into various forms of business relationships with companies in the EU, as well as many EU companies interested in importing or other forms of partnerships such as subcontracting or private labelling.

Export development programmes (EDPs)
EDPs are designed to assist entrepreneurs in developing countries in entering and succeeding on the EU market and/or in consolidating or expanding their existing market share. Selected participants receive individual support over a number of years by means of on site consultancy, training schemes, trade fair participation, business-to-business activities and general export market entry support. Key elements usually include technical assistance in fields such as product adaptation, improving production, implementing regulations and standards and export marketing and management assistance.

Training programmes
Training programmes for exporters and BSOs on, among others, general export marketing and management; trade promotion; management of international trade fair participations and developing client-oriented market information systems. The duration of the training programmes vary between two days and two weeks and are organized in Rotterdam or on location in developing countries.

BSO development programme
Institutional support for capacity building for selected business support organisations.
The programme is tailored to the specific needs of participating BSOs and can include train-the-trainer assistance, market information systems support and staff training. CBI's role is advisory and facilitative.

Please write to us in English, the working language of the CBI.

Centre for the Promotion of Imports from developing countries
Centrum tot Bevordering van de Import uit de ontwikkelingslanden

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Frank Weeber, Photodisc

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REPORT SUMMARY

The purpose of this survey is to provide the potential exporter of Castings and Forgings to the European market with the following:
- an up-to-date insight into the potential of the European market (Part A);
- an overview of the requirements for accessing the European market (Part B);
- specific suggestions for analysing the market and selecting the most suitable target market, evaluating the implications for the organisation, making a well-considered decision regarding whether or not to embark on exports and developing a specific and realistic Marketing Plan (Part C).

This survey profiles the EU market for castings and forgings. The emphasis of the survey lies on those products which are of importance to developing country suppliers. The major national markets within the EU for those products are highlighted. The survey includes contact details of importers, trade associations, and other relevant organisations. Statistical market information on consumption, production and trade is provided, as well as information on trade structure and prices and margins.

As an exporter you will need this information in order to formulate your own market and product strategies. The survey can also be used as a practical handbook for exporters engaged in, or wishing to engage in the exporting of castings and forgings to the European Union. It provides practical market information and a methodology for analysis and strategy development, of use to exporters in formulating their own market and product strategies.

Market research
This EU Market Survey serve as a basis for further market research. Having read this market survey (Parts A and B) and filled in the frameworks in the Export Marketing Guidelines (Part C) it is important to further research your target markets, sales channels and potential customers.

Market research depends on secondary data (data that have been compiled and published earlier) and primary data (information that you collect yourself). This EU Market Survey is an example of secondary data. Primary data are needed when secondary data fail to meet your needs, for example when researching your specific type of consumer about the acceptance of your specific product. Sources of information include (statistical) databanks, newspapers and magazines, market reports, (annual) reports from branch associations, shops in target countries, products or catalogues from your competitors, and conversations with suppliers, specialists, colleagues and even competitors. Having received/collected your information, you should analyse it. In order to assess the attractiveness of the market, sales channel or customer, you will need to use/develop a classification or score system.

For more detailed information on market research, please refer to the CBI's 'Export Planner' (2000).

Product groups
Casting and forging products have been divided into ten product groups:
- Household products
- Cast products of iron or steel
- Forged products of iron or steel
- Products of copper
- Products of aluminium
- Locks and padlocks
- (Parts of) gas turbines
- Cylinders for calendering or other rolling machines
- Parts of machinery
- Parts of transmission

These product groups serve as a guideline throughout the whole survey.

In general the above product groups are applied in the following type of industries:
- Motor vehicle industry
- Mechanical and systems engineering
- Construction industry

Consumption
The most important market segments for castings in the European Union are the automotive industry, mechanical engineering and the construction industry. When looking at development in the forging business in Europe, we must consider those developments as they affect our customers. The main customers of the forging industry are car and truck producers and their system suppliers. Nearly 60 percent of total forging production is consumed by this branch. The mechanical engineering industry is the second biggest customer. The main consuming markets are Germany, UK, Italy and France, which is also where the most important producing enterprises are found.

Production in the EU
In 2002, the weight of castings produced by the iron, steel, and malleable foundries in Europe amounted to around 11.4 million tons, representing a decrease of 1.6 percent compared to the preceding year. Switzerland, Poland and Norway all showed a substantial decline, whereas in Hungary and Spain production rose somewhat. The four top producers, Germany, France,

Italy, and the United Kingdom, together responsible for around 75 percent of the entire output of iron castings, lost about 1 percent between them.

Imports
In 2001, the total value of imports of castings and forgings by EU countries amounted to more than € 24 billion, 41 percent being imported from countries outside the European Union. Total imports refer to intra-EU imports plus extra-EU imports. Between 1999 and 2001, total imports increased by 22 percent. Of all EU members, Germany had the highest value of imports, accounting for almost 24 percent of total imports.

Total extra-EU imports of castings and forgings amounted to € 9.8 billion in 2001. This represented an increase of 5 percent in comparison to the figures for 2000. The average EU value-to-volume ratio is € 5,144 per metric ton.

Figure 5.1 shows the importance of Germany as the leading EU country in extra-EU trade of castings and forgings, accounting for one quarter of all trade. Other important countries are the United Kingdom (17 percent), France (10 percent), Italy (9 percent) and the Netherlands (6 percent).

In 2001, China was once again the developing country with the highest share in EU imports, followed at a large distance by Slovenia and Turkey. The share held by China represented 3.4 percent of total EU imports and 8.5 percent of extra-EU imports of castings and forgings. The share of developing countries remained stable between 1999 and 2001, at 18 percent of extra-EU imports. However, imports from China grew by 30 percent in this period. No other developing country showed such high growth rates.
The rise in the following specific product groups is especially interesting: tables, kitchen or other household products, cast products of iron or steel and third cast, moulded, stamped or forged products of copper.

Exports
Total EU exports of castings and forgings amounted to € 30,447,579 million in 2001. The most important European exporters were Germany, Italy, France and the United Kingdom. These countries will therefore be discussed in more detail. Together they represent 73 percent of European exports of castings and forgings world-wide. The United States is the most important destination for EU exports, representing 14 percent. The ten next important destinations are all European countries, with Germany as the leader. 49 percent is exported to these countries. Of the 48 percent extra-EU exports, 15 percent is exported to developing countries of which China, Brazil and India are the most important.

Opportunities for exporters in developing countries
In principle, developing countries have the potential to play an important role in the market for cast and forged products in The European Union, since (especially in the steel sector) labour is one of the main cost factors. Price competition from companies in East-European countries is forcing West-European companies to look for other ways to compete. They are looking for manufacturers who can produce labour-intensive products of European quality at competitive prices and they are willing to transfer the expertise required. This opens up opportunities for manufacturers in developing countries. Such manufacturers must, however, be prepared to act (at least initially) as sub-contractors, comply with the European legal technical requirements, guarantee the same level of quality and apply the same commercial and communication standards. European companies place the emphasis on short, reliable delivery times and a professional, direct and reliable communication structure. West European companies have so far been reluctant to do business with companies in developing countries, precisely because of the poor quality of both delivery logistics and communication!

INTRODUCTION

This CBI survey comprises three Parts: EU Market Information (Part A), EU Market Access Requirements (Part B) and Export Marketing Guidelines (Part C).

Market Survey

Part A **EU Market Information** *(Chapter 1-8)*	**Part B** **EU Market Access Requirements** *(Chapter 9)*
Product characteristics Introduction to the EU market Consumption and production Imports and exports Trade structure Opportunities for exporters	Quality and grading standards Environmental, social and health & safety issues Packaging, marking and labelling Tariffs and quotas

Part C
Export Marketing Guidelines: Analysis and Strategy

External Analysis *(Chapter10)* Opportunities & Threats	**Internal Analysis** *(Chapter 11)* Strengths & Weaknesses

Decision Making
(Chapter 12)

SWOT and situation analysis
Target markets and segments
Positioning and improving competitiveness
Suitable trade channels and business partners
Critical conditions and success factors

Marketing Tools
(Chapter 13)

Matching products and product range
Building up a trade relationship
Drawing up an offer
Handling the contract
Sales promotion

Chapters 1 to 8 (Part A) profile the EU market for Castings and Forgings. The emphasis of the survey lies on those products that are of importance to developing country suppliers. The major national markets within the EU for these products are highlighted. The survey includes contact details of trade associations and other relevant organisations, as well as statistical market information on consumption, production and trade, and information on trade structure and opportunities for exporters. We have used recent data wherever possible. In some cases, however, reliable data was only available up to the year 2001 (Eurostat).

Whilst Part A provides EU market information, Chapter 9 (Part B) describes the requirements that have to be met in order to gain market access for the product sector concerned. It is also of vital importance that exporters comply with the requirements of the EU market in terms of product quality, packaging, labelling and social, health & safety and environmental standards. For this reason, these issues are also addressed in Part B.

Having read Parts A and B, it is important for an exporter to analyse the target markets, sales channels and potential customers in order to formulate marketing and product strategies. Part C then aims to assist (potential) exporters from developing countries in their export-decision-making process.

After having assessed the external (Chapter 10) and internal environment (Chapter 11), the (potential) exporter should be able to determine whether there are interesting export markets for his company.
In fact, by matching external opportunities and internal capabilities, the exporter should be able to identify suitable target countries, market segments and target product(s) within these countries, and possible trade channels via which to export the selected products (Chapter 12).

Chapter 13 outlines which marketing tools can be used to build up successful business relationships.

The survey is of interest to starting exporters as well as exporters already engaged in exporting (to the EU market). Part C is of particular interest to more experienced exporters starting to export to the EU and exporters looking for new EU markets, sales channels or customers. Starting exporters are advised to read this publication together with the CBI's Export planner, a systematic guide to setting up export activities.

Part A
EU market information

1 PRODUCT CHARACTERISTICS

1.1 Product groups

The range of products in which the casting and forging process plays a part is large and varied, largely due to the freedom of the casting and forging process itself. The characteristics of the main production processes are shown below, followed by a definition of the product groups used in this survey.

Casting is one of the oldest manufacturing techniques. In comparison with the manufacturing of products made by a transformation process, casting offers enormous freedom in terms of to the shape of the product.

Casting can be subdivided into three different processes. The first is casting with sand (further subdivided into hand moulding, mechanical moulding, automatic moulding and shell moulding). The second is the lost-wax model method and the third is casting in permanent shapes. An example of casting with sand is the shell-moulding process. This is a precision sand casting process, capable of producing castings with a superior surface finish and better dimensional accuracy than conventional sand castings. These qualities of precision can be obtained in a wider range of alloys and with greater flexibility in design than via die-casting and at a lower cost than via investment casting. Table 1.1 identifies a few characteristics of the different casting processes.

Forging is a metal forming process used to produce large quantities of identical parts, as in the manufacture of automobiles, and to improve the mechanical properties of the metal being forged, as in aerospace parts or military equipment. The design of forged parts is limited where undercuts or cored parts are required. All cavities must be comparatively straight and largest at the mouth, so that the forging die can be withdrawn. The products of forging may be tiny or massive and can be made of steel (automobile axles), brass (water valves), tungsten (rocket nozzles), aluminium (aircraft structural members) or any other metal.

In forging, a block of metal is deformed under impact or pressure and reformed to the desired shape. Cold forging, in which the metal is not heated, is generally limited to relatively soft metals. Most metals are hot forged; for example, steel is forged at temperatures between 1,150°C and 1,260°C. These temperatures cause deformation, as the grains of the metal elongate and assume a fibrous structure of increased strength along the direction of flow.

In forging, the dimensional tolerances which can be held vary depending on the size of the workpiece. The process is capable of producing shapes of 0.5 to >50.0 cm in thickness and 10 to <100 cm in diameter. The tolerances vary from ± 1/32 inch for small parts to ± $^{1}/_{4}$ inch for large forgings. Tolerances of 0.010 inch have been held in some precision forgings, but the cost associated with such precision is only justified in exceptional cases, such as some aircraft work.

The casting and forging products have been divided into ten product groups:
- Household products
- Cast products of iron or steel
- Forged products of iron or steel
- Products of copper
- Products of aluminium
- Locks and padlocks
- (Parts of) gas turbines
- Cylinders for calendering or other rolling machines
- Parts of machinery
- Parts of transmission

These product groups serve as a guideline throughout the whole survey. The relevant HS-codes are given in Table 1.2.

Table 1.1 Casting processes

Process characteristics	Casting with sand			Lost-wax model method	Permanent shapes
	Hand moulding	Mechanical moulding	Automatic moulding		
Moulding alloy	Steel, cast iron, non-ferrous alloys			All metal alloys	Cast iron, non-ferrous alloys with T<1000 °C
Size	Small to big			Small	Small to average
Complexity	Simple to high	Moderate	Moderate	Very high	Moderate
Minimum quantity	1	50	100	500	1000

In general the product groups are applied in the following type of industries:

- Motor vehicle industry
- Mechanical and systems engineering
- Construction industry

1.2 Customs/Statistical Product Classification

The range of products made by casting and forging is both large and diverse. We have therefore made a broad selection of product groups. Table 1.2 gives a list of the HS codes of products relevant to this survey and the value of extra-EU imports. The HS codes listed below are also those given further consideration in this survey.

It is important to note that this selection of HS codes forms the basis for most of the survey, especially Chapters 5, 6 and Appendix 1. However, when data is collected from sources other than Eurostat, different classifications are applied. This gives rise to tables and figures with other classifications, as is the case in Chapters 3 and 4. This has implications for the comparability of the figures and tables presented. Conclusions should therefore be drawn with extreme caution.

Table 1.2 HS code classification of castings and forgings

Product group	HS code	Description
Household products	732391	Table, kitchen or other household products of iron
	732393	Table, kitchen or other household products and parts thereof, of stainless steel
Cast products of iron or steel	732510	Products of iron or steel
	732599	Cast products of iron or steel
Forged products of iron or steel	732619	Forged products of iron or steel
Products of copper	741991	Products of copper
Products of aluminium	76169910	Products of aluminium, cast, n.e.s.*
Locks and padlocks	830110	Padlocks of base metal
	830120	Locks of a kind used for motor vehicles
	830140	Locks of base metal
(Parts of) gas turbines	841182	Gas turbines of a power > 5 000 KW
	841199	Parts of gas turbines n.e.s.
Cylinders for calendering or other rolling machines	842091	Cylinders for calendering or other rolling machines
Parts of machinery	843120	Parts of machinery of heading no. 8427 n.e.s.
	843131	Parts of lifts, skip hoists or escalators n.e.s.
	843139	Parts of machinery of heading no. 8428 n.e.s.
	843143	Parts for boring or sinking machinery
	843149	Parts of machinery of heading nos. 8426, 8429, 8430 n.e.s.
	843290	Parts of agricultural, horticultural or forestry machinery
	843999	Parts of machinery for making or finishing paper or paperboard n.e.s.
Parts of transmission	848310	Transmission shafts
	848330	Bearing housings for machinery
	848340	Gears and gearing for machinery
	848350	Flywheels and pulleys, including pulley blocks
	848360	Clutches and shaft couplings
	848390	Parts of transmission, shafts, balls, screws

* n.e.s. = not earlier specified

2 INTRODUCTION TO THE EU MARKET

The European Union (EU) is the current name for the former European Community. Since 1 January 1995 the EU has consisted of 15 member states. Ten new countries are to join the European Union in 2004. Negotiations are in progress with a number of other candidate member states.

In 2002, the EU population totalled 379.4 million, and the average GDP per capita amounted to approximately € 21,023.

Within Western Europe (15 EU member countries plus Iceland, Liechtenstein, Norway and Switzerland) more than 20 million enterprises are active. Small and medium-sized enterprises (SMEs) account for the lion's share. In 2000, the average turnover per enterprise of SMEs and large enterprises amounted to € 600 thousand and € 255 million respectively.

EU Harmonisation
The most important aspect of the process of unification (of the former EC countries) in terms of trade is the harmonisation of rules in the EU countries. Since the unification allows free movement of capital, goods, services and people, the internal borders have been removed. Goods produced in or imported into one member state can be moved around between the other member states without restrictions. A precondition for this free movement is uniformity in the rules and regulations concerning locally produced or imported products. Although the European Union is already a fact, not all the regulations have yet been harmonised. Work is still in progress in the fields of environmental pollution, health, safety, quality and education. For more information about harmonisation of the regulations visit AccessGuide, CBI's database on non-tariff trade barriers at www.cbi.nl/accessguide

Monetary unit: Euro
On 1 January 1999, the euro became the legal currency within twelve EU member states: Austria, Belgium, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, The Netherlands, Spain, and Portugal. In 2002 circulation of euro coins and banknotes replaced national currency in these countries. Denmark, the United Kingdom and Sweden have decided not to participate in the Euro.

The most recent Eurostat trade statistics quoted in this survey are from the year 1999. We have used the € as the basic currency unit to indicate value.

Trade figures quoted in this survey must be interpreted and used with extreme caution. The collection of data regarding trade flows has become more difficult since the establishment of the single market on 1 January 1993. Until that date, trade was registered by means of compulsory customs procedures at border crossings, but, since the removal of the intra-EU borders, this is no longer the case. Statistical bodies like Eurostat cannot now depend on the automatic generation of trade figures. In the case of intra-EU trade, statistical reporting is only compulsory for exporting and importing firms whose trade exceeds a certain annual value. The threshold varies considerably from country to country, but it is typically about € 100,000. As a consequence, although figures for trade between the EU and the rest of the world are accurately represented, trade within the EU tends to be underestimated.

Overview 15 EU countries, 2002

Population	**379.4 million**
Area	**31,443,000 km²**
Density	**83 people per km²**
Languages	**15 (excl. dialects)**
GDP/capita	**€ 21,023**
Currencies	**€, UK£, DKr., SKr.**
Exchange	**€ 1 = US$ 0.99**

Source: The World Factbook 2002

Population and GDP of selected EU countries, 2002

Countries/category	Population in millions	Age 15-46	GDP (€ billion)
Germany	83.3	68%	2,206
France	59.8	65%	1,556
UK	59.8	66%	1,485
Italy	57.7	67%	1,416
Spain	40,1	68%	836
The Netherlands	16.0	68%	417

Source: The World Factbook 2002

Furthermore, the information used in this market survey is obtained from a variety of different sources. Therefore, extreme care must be taken in the qualitative use and interpretation of quantitative data, both in the summary and throughout the text, as well as in drawing comparisons between the different EU countries with regard to market approach, distribution structure, etc.

For more information on the EU market, please refer to the CBI's manual Exporting to the European Union.

3 INDUSTRIAL DEMAND

3.1 Market size

The customers of the Casting and Forging companies are the main suppliers of modules (e.g. motor blocks, vessels, valves) and the Original Equipment Manufacturers (OEM). The OEM manufacture from the modules and other parts the finished products (e.g. machines, vehicles, kitchen equipment, buildings) and deliver them to the end user (industries or private customers). This means that the main suppliers and OEM's as industrial companies, are the "consumers" of the products from the Casting and Forging companies (for example motor blocks and bodywork for vehicle manufacturers). They generate the industrial demand and form as such the market for Castings and Forgings.

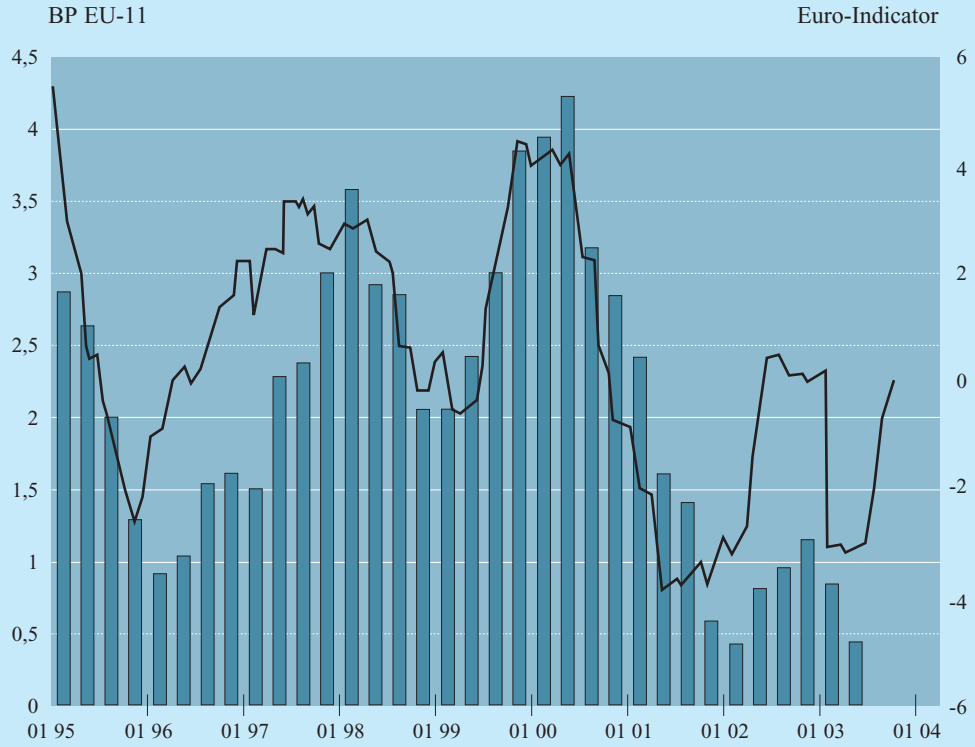
In order to help you arrive at a good analysis of your opportunities in the EU-market, the survey includes some general economic data and trends for the EU and the important countries, and the most important industrial customers for the Castings and Forgings products.

European Union
The Gross Domestic Product of the EU increased slightly in 2002 to approximately € 9.1 trillion.

Below is a quotation taken from a report written at the end of the first quarter of 2003:
'The euro area and EU economy ended 2002 on a very weak note due to global uncertainties and persistent

(EUROPEAN ECONOMY. No. 2. 2003. Office for Official Publications of the EC. Luxembourg. 123 pp. Tabl. Graph.)
KC-AR-03-002-EN-C; ISBN 92-894-5084-3; ISSN 0379-0991

GDP, sliding rate per year *)
September 2003



Source: DG-Bank
*) New orders Industry/Manufact., Production expectations Manufact., MSCI Share price index, Money supply M3, Reuters Purchasing managers' index, a.o.

structural rigidities that reduce our capacity to react to shocks. Continued sluggishness is expected to prevail in the first half of this year. Assuming that geo-political tensions abate before the summer, the return of confidence and lower oil prices would trigger a moderate recovery in the second half of 2003. It is unlikely to be a vigorous rebound as the rise in unemployment weighs on consumption, the protracted fall in stock markets affects corporate balance sheets and oil prices continue to put pressure on inflation. Consequently, for a third consecutive year growth is likely to disappoint: the average growth rate is expected to be a meagre 1 percent in 2003 in the euro area (1.3 percent in the EU). A more solid average growth rate of 2.3-2.4 percent is projected in the euro area and EU next year, when employment creation resumes, investment picks up and the international environment is more supportive. However, given the high level of uncertainty, a further delay in the acceleration of growth cannot be excluded.'

The largest economy in the EU is Germany, followed by France, Italy, and the United Kingdom. The EU economy is heavily weighted towards the service sector. Industry contributes about 25 percent and construction 6 percent, leaving agriculture with about 2.5 percent. As with most features of the EU, there is considerable variation between member states.

The most important market segments for castings in the European Union are the automotive industry, mechanical engineering and the construction industry. When looking at the development of the forging business in Europe, we must also take into account the developments facing our customers. The main customers of the forging industry are car and truck producers and their system suppliers. Nearly 60 percent of all forging production is consumed by this branch. The mechanical engineering (m.e.) industry is the second biggest customer. Countries with a strong automotive industry like France and Germany are still showing growth, while the other European countries are seeing slight decreases in their production.

Table 3.1 Customer profile of the European forging industry, percentage share by weight

Automotive	58%
Mechanical engineering (m.e.)	11%
Agriculture machinery (m.e.)	8%
Mining machinery (m.e.)	2%
Railways	2%
Aerospace equipment	1%
Other constructions	18%

The Netherlands

Market

Domestic sales from the Dutch mechanical and electronics industry branches dropped in 2002 by 4.5 percent. Sales of investment goods (goods that you don't consume, like machines, trucks and buildings, but use to produce consumables or other investment goods) decreased, as did the demand for stocks of metal products, while the Dutch consumer markets and deliveries to other Dutch industries left limited room for growth. The consumer markets for durables and new cars still grew, but at a rather lower rate.
Demand from the construction sector, an important buyer of metal parts and components, hardly rose because of the low increase in the construction of dwellings and buildings.

Overall sales from the Dutch mechanical industry dropped (-4 percent) as a consequence of decreased exports and domestic sales. Production fell even further in terms of value added volume (-5.25 percent), as the trend towards outsourcing non-core activities continued. The electronics industry showed the largest fall (-10 percent) due partly to the world-wide ICT-malaise and partly to the relocation of production to lower-wage countries.
Production cuts in other mechanical industries varied between –1 percent and –4 percent.

Trends

Assuming that international confidence returns as expected, production in the Dutch mechanical and electronics industry may recover from the low point reached at the beginning of 2003. An hesitant upward trend will set in, just strong enough to prevent a further fall of average production in 2003. This zero average growth may be followed by growth of 2.25 percent (volume of value added) in 2004. This development will depend primarily on exports. However, the rate of export growth will continue to lag behind the rate of world trade due to loss of market share. This loss is the result of two factors: the aftermath of the industry's loss of competitive power during the last year and a further shift of production capacity from the Netherlands to lower-wage countries. Production is not being stimulated by domestic demand, as domestic demand is not growing.

Metal products and the machinery industries are expected to recover more significantly. Domestic sale will contribute substantially to this recovery, since demand for semi-products is increasing. The improving market growth abroad will open up further opportunities for growth, although the weakened competitive power may make it difficult to make take full advantage of every such opportunity.

France

Market
The automotive industry is the main customer. In 2002 car production decreased by –4.9 percent for passenger cars and –10 percent for commercial vehicles. The output of light commercial vehicles (less than 5 tons) and heavy trucks also followed the negative trend, by –7 percent and –11 percent respectively. A further decrease of –5 percent is forecast for 2003.
In the building and construction industry, production rose by 5 percent.
Production in the mechanical engineering industry fell by –2.4 percent in 2002. This sector is expected to improve production by 2 percent in 2003.
Aeronautic firms failed to increase production in 2002, seeing instead a further decline of –4 percent.
Over the year 2002, industrial investments decreased by –11 percent.

Trends
No positive overall change is expected in French activities in 2003. Several foundries working notably for automotive industry recorded a decrease in their activity (from 15 percent to 20 percent for the first months in 2003) on the French and foreign markets, although certain units with strong export activity continue to benefit from the international market.

Germany

Market
The German automotive industry found itself forced to cut its output of passenger cars by 3.0 percent to 5.1 million units in 2002, although this still kept the production level above the five-million mark for the sixth year running. At the same time, truck production fell by 11.05 percent to 347,000 units. Whilst the output of light commercial vehicles declined by 14.0 percent, that of heavy trucks declined by no more than 6.0 percent (124,700 units).

In 2002 , German mechanical and systems engineering firms were confronted by a 3.8 percent production decline, and sales figures shrank by 1.6 percent from 133 to 131 billion in nominal terms. New orders declined once again, by 2.0 percent.

In the construction industry, depression continued through a seventh year. Across the board, construction investments shrank by 5.9 percent compared to 2001. Investments in residential construction also declined by 5.9 percent, while investments in non-residential construction, i.e. public and commercial buildings, decreased by an only slightly smaller 5.8 percent.

Throughout 2002, new orders for a total weight of 3.855 million tons for castings were received by the iron, steel, and malleable foundries of Germany, giving rise to an increase of 4.4 percent above the level of 2001. Auto makers, the industries' biggest customers, increased their orders by 13.9 percent to 2.120 million tons. Mechanical engineering firms ordered a total weight of 906,000 tons (a decline of 6.6 percent). Orders for pipes and fittings went down by 4.4 percent, at slightly less than 266,000 tons. 563,00 tons of parts for miscellaneous applications were ordered, bringing the level down by 3.3 percent compared to the previous year.

Trends
The building industry is expecting a decline of 2.5 percent for the year 2003, while for the general engineering and plant industry the business outlook is worse than it was in 2002. Only the electrical engineering and electronics industry are hoping, based on exports, for a slight growth (approx. 2 percent) in year 2003. The automotive industry, however, will remain the key industry for the non-ferrous metal casters, as it has been in the past. While in Germany the number of new registrations is dwindling (in spite of the introduction of new models), the automotive industry is expecting new impetus from the export business, in this case mainly from the Asian market. All automotive industrial analysts are expecting that the trend in Germany will turn at the end of the year 2003 at the earliest. Until then, the mass manufacturers of cars will suffer more from the present slump than the premium manufacturers. The same will apply to the respective foundries as suppliers. With all the many imponderables and uncertainty affecting future business developments, it is now much to early to forecast the beginning of an upturn in the automotive market and, in turn, in the foundry sector supplying the automotive industry. But it is certain that the non-ferrous metal foundries will in the future rely even more on new applications for the light material castings in motor vehicles.

Great Britain

Market
GDP forecast for 2003 have been revised downwards from 2.4 percent to 2.2 percent. This forecast reflects the fact that overseas growth has continued to fall below expectations with economic activity in the USA stalling at the end of 2002. The main worry now, however, is in the Euro area, where demand and output have remained weak and forward-looking surveys suggest little by way of recovery in the near term. While remaining a key growth engine, consumer-spending growth is expected to slow from 3.9 percent in 2002 to 3.0 percent in 2003 and 2.7 percent in 2004, as the housing market cools and personal debt burdens rise. If the slowdown in personal consumption is gradual, and if it coincides with an upturn in investment

and exports, it could rebalance the economy. If consumer spending plummets (this remains unlikely) in reaction to a housing market crash or a sharp rise in unemployment, some reports suggest that the threat of recession will worsen considerably.
Business investment is expected to remain very weak, though recent falls were less sharp than previously estimated; in the fourth quarter of 2002, it was 5.4 percent lower than a year earlier (12 percent lower for private sector manufacturing) and no significant recovery is likely until excess capacity shrinks sufficiently. In spite of the fall in the pound, export are expected to remain weak until the global economy recovers.

Trends
Prospects for those supplying the automotive sector continue to be firm but the market for power generation castings remains subdued with no improvement in the foreseeable future. Opportunities in the building and construction sector are described as firm.
The escalation in raw material prices is now a major concern within the ferrous sector. Increases of up to 60 percent in the cost of raw materials experienced during the first quarter of 2003 have compounded the difficult trade climate.

Italy

Market
Three customer sectors determine the demand for castings and forgings: vehicle manufacturing, mechanical industry and construction.
The vehicle industry reported its worst results of the decade for 2002. Automobile production was down by about 12 percent while production of lightweight vehicles (up to 3.5 tons) registered an actual 2 percent drop, and truck production was down 4 percent over the previous year. Bus production was the only exception, with a 25 percent increase, but the quantities produced (2,776 vehicles) saturated productive potential only to a modest extent. Production of tractors, incomplete tractors and agricultural machinery was slightly higher than in 2001.
The mechanical industry was less heavily affected by the unfavourable trends in the market, and managed to achieve 2.3 percent growth in turnover over 2001.
The outlook in the construction industry appears positive, though it is slowing down. Levels of production in the sector dropped from +5.6 percent in 2000 to 3.7 percent in 2001 and settled at +2.3 percent in 2002. Despite the slowdown, however, the construction industry continues to lead the way in the national economy as a whole. In an economic scenario characterised by uncertainty on financial markets and a toned-down real economy, the construction industry is producing growth and performing its traditional function of going against the flow and leading the way in the economy. Growth in residential construction is estimated at 2.5 percent in terms of quantity, due to growth in both the construction of new housing (2 percent) and renovation work (3 percent). Activity in the sector of public housing is, on the whole, stationary.

Trends
The fragility of the expected upswing in industrial production in 2003 and uncertainty regarding the development of international trends are having a significant impact on prospects for recovery in the foundry sector.
In short, the forecast is for significant tension in terms of costs due to the dynamics of raw materials prices and difficulty in achieving a further increase in sale prices.

Spain

Market
The situation of the Metal Sector during the last months of 2002 improved significantly compared to the first half of the year, when there was a recession in production activity, a fall in exports and a slowing down of the labour market. The second half of the year marked an overall upward trend, despite the slowing down of the economy in an international context. Production went from a fall of 6.2 percent in the first half of the year to an increase of 1.5 percent in the second half.

Not all the different activity areas developed uniformly. There was growth in the production and first transformation of metals (6.2 percent), shipbuilding (3.6 percent) and precision instrument manufacture (6.5 percent). Those areas worst affected by a decline in activity were office machinery manufacture (-39.2 percent), manufacture of other material of transport (-13.1 percent) and electronic material manufacture (-9.2 percent).

Trends
A loss of demand in every sector is forecast for 2003. In addition to the usual threats posed by the Asian countries, there are those arising from the expansion of the Common Market. Initially, this expansion will affect us negatively, although we anticipate that in the longer term the resulting increase in global demand will be to our advantage.

3.2 Market segmentation

Potential customers for cast and forged products are:
- Automotive industry;
- Mechanical and systems engineering;
- Construction industry;
- Original Equipment Manufacturers (OEMs) and first tier suppliers of OEMs;
- Engine builders;

- Pipe and pipe-related industry (fuel skids, pumping units etc.);
- Power generation industry and related activities (e.g. gas turbines, steam turbines, hydro turbines, wind turbines, exhaust systems, generators and coolers);
- Households, hotel and catering industry;
- Traders in casting and forgings.

See table 3.2 for development in turnover.

Chapter 5 gives a detailed overview of imports per product group per country for these customers.

The first three sectors together represent more than 80 percent of total demand. We have therefore included below information on trends per sector, in addition to the relevant data on these sectors in the above paragraphs.

Automotive industry
For the first time since 1996, production figures declined in 2002. The output of passenger cars shrank by 1 percent to 14.8m vehicles, while truck production figures had to be slashed by as much as 7 percent. Only Spain, and Great Britain were able to increase their output of passenger cars while losses were recorded in France, Germany, Italy, Sweden, Belgium, the Netherlands, Portugal Austria and Finland.
Following growth at a moderate rate in the first half of 2003, quarter III saw a major slowdown due to the changeover to new models. This slowdown was concentrated in this period only, and was due principally to this single factor. The introduction of new models should boost production in coming quarters. Exports have been strong but EU producers could face additional pressure if the dollar continues to decline.

Despite low investment levels, production of industrial vehicles is up and the outlook for both 2003 and 2004 is fairly positive.

Mechanical engineering
Mechanical engineering production in the EU declined by 2.2 percent in 2002. Hopes for a revival of investments failed to materialise. Most countries had to scale down their expectations in the course of the year. In Western Europe as a whole, mechanical engineering sales dropped by 2.6 percent. The only countries that logged positive growth rates were Italy (+0.8 percent), Sweden (+2.2 percent), Belgium (+1.0 percent) and Austria (+1.5 percent). Results were affected particularly by losses in Germany (-3.1 percent), Great Britain (-4.1 percent), Spain (-9.0 percent) and Finland (-7.0 percent).

Order levels are low both on domestic and export markets for mechanical engineering products. The fall in investment has hit this sector hard. Activity depends on demand from manufacturing in general, which at present is poor. There are some signs of the trend in industrial production beginning to turn towards the end of 2003. That may bring about a stabilisation of output levels in mechanical engineering and brighter prospects for 2004, assuming business conditions to improve.

Construction industry
The overall picture for construction is positive. However, there are substantial variations in developments both within the sector itself and between EU countries. Within the sector, residential construction is generally quite active, supported by low interest rates and strong upwards prices in some markets. In contrast,

Table 3.2 Development of turnover of main steel-using industrial sectors

(compared with the corresponding period in the previous year as percentage)

Industrial sector	Year 2001 / Year 2000	Quarter 1 /2002 Quarter 1 /2001	Quarter 2 /2002 Quarter 2 /2001	Quarter 3 /2002 Quarter 3 /2001
Automotive	-1	-6	0	-2
Mechanical engineering	+1	-4	-1	-1
Construction	+2	+2	+2	+2
Structural steelwork	+1	-1	+1	+2
Domestic appliances	-5	-6	-2	0
Shipyards	0	-3	+1	0
Tubes	+4	-1	-2	0
Metalware	+1	-5	-1	-1
Miscellaneous	0	-3	0	-1
Total	**+1**	**-3**	**-1**	**0**

Source: EUROFER, April 2002

commercial non-residential construction is seeing a fall in activity which is fairly wide spread across the EU due to the drop in investment levels. There is a lot of spare construction capacity in this segment. It will take some time before there is a noticeable improvement in this area. Non-residential public building is more active, as is public infrastructure. Budget limits are tightening, however. The situation in Germany remains particularly difficult, and activity levels have also fallen slightly in France and the Netherlands.

3.3 Consumption patterns and trends

The market for Castings and Forgings is dependent on the demand from customer industries, which in turn is dependent on the general economical situation, affecting how private customers decide to spend their income. This subsection indicates a number of trends relevant to C&F in economical development, in the market and in the automotive industry as major industrial customer, and some general trends in the market (for further details see also par. 3.2 and the web-sites of the branch organisations).

Economic trend
The total EU economy ended 2002 on a very weak note. The customer sectors for the Castings and Forgings industry also lagged behind. In general there are some indications that by the end of 2003 or in 2004 business will pick up again.

Trends in the automotive industry
For the long term, mobility is still growing (car km per person per year) and consumption of vehicles will therefore also continue to grow. As cars become more reliable and their lifetime lengthens, the market for spare parts will grow.

With respect to automobiles themselves, there is a clear trend towards safer construction and less weight, in order to minimise fuel consumption and hence reduce the operational cost and the burden on the environment.

Substantial changes are occurring in the automotive industry. Important trends are an acceleration of the concentration and globalisation process between the OEMs. An example is the take-over by General Motors of Fiat and Daewoo. OEMs are buying more and more systems and sub-assemblies instead of components and parts. As a result, system production plants are being spun-off and system and component development is being shifted to the supplier as part of the simultaneous engineering process. Furthermore, the platform strategy within the automotive industry is leading to higher volumes for certain components. Finally, e-business is becoming common in purchasing departments, with Internet auctions as a new tool.

Product quality and design
Cast and forged products are subject to high quality and inspection standards. Certification of the products, processes and / or materials used can be necessary for entry into the European market. Some companies will only use those products that have all the necessary certificates. Full tracking and traceability is crucial, especially for free forged products and for special sectors (automotive, energy and process industries). This means that producing companies must arrange material certificates (and numbering), processing documents, data quality sheets and third party inspection sheets.

The trend in the cast and forged products trade is towards more added-value processing in combination with complex products (for which there are no general standards) and towards lower prices for standard products of a certain specified quality (in conformity with standard product and process specifications). It is of great importance that buyer and seller communicate in detail regarding the completion of the product, specifying the tolerance and defects accepted or not accepted and the material used for making the product. There should be total clarity, in order to avoid claims and the possible breakdown of relationships that have often been built up at great expense in terms of time and energy.

Price sensitivity
The economic situation (less growth) will lead to fiercer competition. Pressure is high to reduce prices. For cast and forged products, this is leading to more specialisation by the companies in Europe. One possibility is volume production in one product (e.g. crankshaft or conrod), using special product expertise. Another possibility is to become a process-oriented shop, with smaller volumes and a wide range of products, all requiring the same special process expertise.

Location of production abroad
Price developments are leading companies to reconsider the most effective production locations. Many companies are planning to reallocate parts of their standard components manufacturing to low-wage locations within the next 5 years.

4 PRODUCTION

4.1 European Union production

The German Ruhr-area, the United Kingdom and Sweden are still dominant areas for the cast steel sector. There is no such regional concentration for cast iron, but the most innovative companies in this field are located in Italy and France. Prospective new members of the EU like Poland and the Czech Republic have played an important role in the past decade. Now, however, their presence on the EU market is declining, as adaptation to the stringent EU regulations and rising wages drive up price levels. Countries like Poland and the Czech Republic are becoming potential customers for developing countries.

Concentrations of the primary metal sector:
- Germany: the Ruhr-area and around Stuttgart;
- France: around Paris and the North;
- Italy: the North;
- United Kingdom: between Sheffield and Birmingham;
- Spain: around Bilbao and Barcelona.

4.2 Castings

Overview
In 2002, the iron, steel and malleable foundries of the CAEF (Committee of Associations of European Foundries) member states produced around 11.4 m(illion) tons of casting components. Thanks to its surprising cyclical stability, the motor-vehicle industry saved the non-ferrous (NF)-metal foundries from a marked decline.

The progress of material substitution in recent years caused the share of iron castings in the output total to decline slightly, dropping from 58.9 percent in 2001 to 58.2 percent in 2002. At the same time, producers of nodular-iron castings held a share of 34.3 percent in the production total in 2002, marking an increase of 0.5 percentage points compared to 2001. Producers of malleable castings succeeded in expanding their share from 1.1 percent in 2001 to 1.3 percent in 2002, while the share of steel castings in the output total lay around 5.8 percent in 2002 (2001 = 5.9 percent).

The output of NF-metal alloys was still dominated by light metal castings at a share of 75.1 percent of the NF-production, despite a decline by 3.5 percentage points compared to 2001. The share of copper alloys went down from 10.1 to 9.8 percent, and the share held by the producers of zinc alloys similarly shrank from 8.7 to 7.3 percent. The difference was absorbed by miscellaneous NF metals and processes not specified in the statistics.

If we look at those CAEF member countries for which data is available that makes it possible to draw a comparison between 2001 and 2002, we find that the value of iron, steel, and malleable castings produced dropped by 5.2 percent. At the same time, the related output tonnage shrank by a relatively small 2.6 percent. Because of gaps in the information received, comparing the production figures of the NF-metal foundries remains impractical. From what data we have, it would appear that output declined by 0.8 percent in terms of value, while in terms of weight it declined by 0.4 percent.

Efforts to improve productivity continued throughout 2002. The resulting rationalisation in the ferrous-metal castings sector caused employment figures to decline markedly. Only Belgium and Spain were able to increase their workforces. In Sweden, the number of persons employed in the industry remained stable, while all other countries reported substantial declines. The NF-metal foundry sector presents a similar picture. From the data available, it appears that the only country to increase its workforce was the Czech Republic. In Sweden, employment figures remained unchanged, while all the other countries without exception reported declines in their employment figures, some of them marked.

In Austria, Belgium, the Czech Republic and Sweden, the number of iron, steel and malleable foundries increased. In Denmark, Finland, Norway and Portugal, head counts remained stable, while in France, Germany, Great Britain, Italy, Poland, Spain and Switzerland, there were fewer foundries still active on the market compared to 2001. Judging from the limited information available, it would appear that the number of NF-metal foundries increased in the Czech Republic, Finland, Norway, and Spain and remained stable in Denmark and Sweden. In Austria, Belgium, France, Germany, Poland, Portugal and Switzerland, the number of NF-metal foundries declined.

Ferrous metals
In 2002, the iron, steel and malleable foundries of the CAEF (Committee of Associations of European Foundries) member states produced around 11.4 million of casting components. Compared to the preceding year, this marked a 1.6 percent output decline in terms of weight, although it should be noted that output figures differed greatly from one member state to the next. The four dominant countries of Germany, France, Italy, and Spain together accounted for more than 73 percent of the total output of ferrous-metal castings. In Italy and Spain, production increased by 1.9 percent and 3.9 percent respectively, while in Germany and

Table 4.1 Total production of iron, steel and malleable iron castings in 1,000 tonnes

Country	1998	1999	2000	2001	2002	2002:2001 (±%)
Austria	190.1	181.7	191.4	192.4	181.2	-5.8
Belgium	144.4	149.3	149.8	149.5	143.7	-3.9
Czech Rep.	493.0	379.1	390.3	413.8	381.6	-7.8
Denmark	85.8	86.0	96.5	85.7	87.3	1.8
Finland	122.6	109.0	117.6	119.5	112.5	-5.8
France	2,237.3	2,133.9	2,271.5	2,135.4	2,128.6	-0.3
Germany	3,662.9	3,555.2	3,758.2	3,801.4	3,749.7	-1.4
Great Britain	1,076.3	949.2	968.2	906.3	886.3	-2.2
Hungary	78.1	68.7	74.8	62.8	67.9	8.1
Italy	1,508.4	1,492.6	1,516.4	1,433.3	1460.0	1.9
Netherlands	140.6	121.0	136.0	130.9	123.7	-5.5
Norway	65.3	67.7	70.1	73.4	67.3	-8.2
Poland	675.0	610.2	671.2	673.0	598.0	-11.1
Portugal	98.6	97.7	102.3	100.0	96.7	-3.4
Spain	706.6	759.3	950.5	955.7	992.9	3.9
Sweden	264.2	253.2	266.7	244.7	234.6	-4.1
Switzerland	122.8	122.0	119.9	105.5	81.8	-22.5
Total	**11,672.2**	**11,135.8**	**11,851.3**	**11,583.3**	**11,394.6**	**-1.6**

Source: CAEF The European Foundry Industry 2002

France it declined by 1.4 percent and 0.3 percent respectively. Among the smaller producers, only Denmark (+1.8 percent) and Hungary (+8.1 percent) reported positive growth rates, while virtually all the other countries did less well than the year before.

Iron

In 2002, the CAEF member states produced 6.6m t. of iron castings, representing a decline of 2.8 percent compared to the year before. Positive growth rates were logged by foundries in Italy (+1.4 percent) and the Netherlands (+3.1 percent), as well as by foundries in Denmark and Hungary, which reported growth rates of 4.0 percent and 13.3 percent respectively. All other producers recorded declining production figures in the year 2002, with the highest losses reported by Switzerland (-31.0 percent), Norway (-19.3 percent), and Austria (-14.1 percent). There are too many gaps in the data relating to the iron casting sector to be able to calculate a production value total, although reports from CAEF member states indicate that pressure on sales prices was severe.

Ductile Cast Iron

The output of ductile cast iron (nodular and malleable cast iron) rose by 0.6 percent to 4.1m t in 2002. Compared to the preceding year, manufacturers of malleable castings lost 7.7 percent (this does not take into account Spanish production, for which no benchmark data from the preceding year was available). The output of nodular cast iron shrank by 0.2 percent overall. Only five countries reported positive growth rates in the ductile sector: Germany increased its output by 0.5 percent, and Italy by 4.9 percent. Foundries in Portugal reported an increase of 4.2 percent, while those in Spain and Sweden recorded gains of 12.7 percent and 0.4 percent respectively. The country where output figures dropped most severely was Switzerland (-18.9 percent), followed by the Netherlands (-12.2 percent) and Belgium (-11.0 percent). In France, the second biggest producer, losses remained relatively moderate at -0.2 percent.

Across the board, 3.9m t of nodular-iron castings were produced in 2002. Compared to the preceding year, this represents a slight loss of no more than 0.2 percent. With a share of more than 96 percent, nodular cast iron was, as always, the dominant material in the ductile sector. Six countries increased their output. While the Czech Republic logged a gain of 0.5 percent, German foundry men reported a 0.6 percent increase. In Italy, production expanded by 5.0 percent, and in Portugal and Spain, production similarly expanded by 4.2 percent and 2.3 percent respectively, beyond the level of the year before. Sweden also reported a positive growth rate of 0.4 percent, while the output of nodular cast-iron components declined markedly in Switzerland (-18.9 percent), the Netherlands (-11.3 percent), and Belgium

Table 4.2 Total production of non-ferrous metal castings in 1,000 tonnes

Country	1998	1999	2000	2001	2002	2002:2001 (±%)
Austria	90.4	92.4	105.9	113.3	116.2	2.5
Belgium	25.3	23.8	27.2	26.4	26.7	1.6
Czech Rep.	44.8	48	57.7	58.1	59.6	2.7
Denmark	1.7	4.0	4.0	4.8	4.6	-3.3
Finland	10.5	10.0	10.0	10.0	9.7	-3.2
France	338.2	343.8	373.9	*	390.3	-1.1
Germany	783.9	777.0	842.1	842.4	845.6	-0.4
Great Britain	121.0	*	*	*	*	*
Hungary	24.8	35.0	44.8	58.4	68.3	16.9
Italy	832.3	832.1	908.7	960.0	979.7	2.1
Netherlands	*	*	*	*	*	*
Norway	22.2	25.2	26.4	30.9	26.7	-13.5
Poland	66.5	84.0	84.0	72.2	76.3	5.7
Portugal	17.5	21.2	22.6	25.3	25.6	0.6
Spain	140.7	153.6	121.1	142.1	149.9	5.5
Sweden	51.8	55.7	58.5	53.3	52.9	-0.8
Switzerland	22.3	22.9	25.1	24.1	21.1	-12.3
Total	**2,607.1**	**2,542.2**	**2,777.0**	**2,823.2**	**2,853.5**	**1.1**

* no data available
Source: CAEF The European Foundry Industry 2002

(-11.1 percent). The 0.3 percent production decline reported by France, the second biggest manufacturer, was more than offset by the biggest producer, Germany. Together, these two countries account for almost 58 percent of the total output of nodular iron castings.

As always, most of the output of nodular-iron castings was absorbed by the motor-vehicle industry. With the exception of the Czech Republic and Great Britain, the motor-vehicle industry absorbed more than 30 percent of the total output in all countries for which data is available. Ranking top were Portugal at 81 percent, Hungary at 55.1 percent, and Germany at 51.2 percent. In most CAEF member states, the second biggest customer for nodular-iron castings was the mechanical-engineering industry. Its share in the total output was highest in the Czech Republic at 56.5 percent, and Finland at 54.0 percent.

Without taking into consideration the figures from Spain, the output of malleable castings shrank by 7.7 percent to 92,000t. Only France (+8.0 percent) and Portugal (+32.8 percent) reported positive growth rates. Conversely, the three dominant countries Germany, Great Britain, and Poland logged losses of 3.1 percent, 6.1 percent and 20.2 percent respectively. In this context, it should be noted that statistics have recently become less informative because in some countries malleable castings are no longer listed as a separate sub-item of the ductile cast sector.

Steel

The output of steel castings shrank by 3.3 percent to 659,000t, with production increases reported only by Spain (+4.0 percent) and Sweden (+8.3 percent). The dominant countries in the steel casting sector include Germany, France, the Czech Republic, Italy and Spain, which together account for almost 80 percent of the entire output. At -26.5 percent, -11.2 percent, and -10.7 percent respectively, the highest losses were reported by Portugal, Poland, and HungaryThis was quite obviously due to the constraints of structural adaptation.

In those countries for which benchmark data are available, it appears that the overall value of production declined by 10.7 percent, while the related output in terms of weight fell by no more than 5.8 percent. From the available benchmark data, it appears that the number of foundries increased by 0.8 percent to 238, while manpower strength declined by 4.4 percent to 27,023. Only the Belgian foundries reported a rise in employment figures, while manpower cuts were most extensive in Norway, Germany and Finland.

Non-ferrous (NF) metals

Thanks to its surprising cyclical stability, the motor-

vehicle industry saved the non-ferrous (NF)-metal foundries from a marked decline. No data is available from the NF-metal foundries in Great Britain and the Netherlands, but it appears that the output of the CAEF member countries increased by 1.1 percent to 2.9 million tons. Italy and Germany, the dominant countries in this sector, logged growth rates of +2.1 percent and -0.4 percent respectively. In France, the third biggest producer, output figures similarly declined by 1.1 percent. However, the countries which suffered most in terms of output were Norway (-13.5 percent) and Switzerland (-12.3 percent). Conversely, fairly marked growth rates were reported from Spain (+5.5 percent), Poland (+5.7 percent) and Hungary (+16.9 percent).

Available benchmark data suggest that the foundry tally went down by 7.0 percent to 1,386. New foundries were opened in Czechia, Finland, Norway and Spain; everywhere else, the number of foundries declined. Developments in the employment sector remained negative. Compared to the year before, the workforce total shrank by 1.0 percent to 80,312. Work forces grew only in the Czech Republic and in Finland. In Sweden, employment figures remained stable, while redundancies were reported by all other CAEF member countries.

Traditionally the production of NF-metal castings has always been dominated by light material, most of the output being absorbed by the motor-vehicle industry. In 2002, the output of light-metal castings (i.e. aluminium and magnesium) increased by 2.0 percent (Spain not being taken into consideration because of incomplete data). In terms of weight, the output rose to 2.1m t, most of the gain being booked by Italy, where production increased by 4.1 percent. In Germany, the second biggest producer, production grew by just 1.0 percent. Together, these two countries account for almost 70 percent of the total output of light-metal castings (bearing in mind, once more, that no data was available from Spain and Great Britain). Production losses were reported by Finland, France, Norway, Portugal, Sweden and Switzerland. At -12.5 percent and -11.1 percent respectively, the most severe losses were reported by Switzerland and Norway. The most dynamic production increase was reported by Poland at 9.8 percent. In terms of output weight, magnesium plays a secondary role in the light-alloy sector. In Germany, the country that dominates production, output shrank by 5.6 percent. In contrast, annual growth rates of 40 or even 70 percent are by no means rare in the smaller producer countries.

Copper
In the NF-metal sector, copper and copper alloys form the second most important material category. In 2002, output (279,900t) remained approximately on par with the level of 2001, always keeping in mind that no data were received from Spain and Great Britain. The production of casting components made from copper or copper alloys was dominated by Germany and Italy with a joint share of more than 71 percent. While Germany increased its production by 1.7 percent, Italy lost 3.9 percent. Next to Italy, the only countries that reported output declines were Poland, Sweden and Switzerland, whilst the highest gains were reported by the Czech Republic, Denmark and France.

Zinc
Output of zinc castings fell by 9.3 percent to 207,300t. Once again, the market was dominated by Italian and German manufacturers. The joint share of these two countries in the production lay above 70 percent. The only countries that reported positive growth rates were Austria, the Czech Republic, Finland, Poland and Sweden, while the greatest losses were reported by Switzerland at -15.4 percent and Germany at -15.5 percent.

4.3 Forgings

Table 4.3 presents an overview of the performance of the European forging industry in the year 2001. It should be noted that the countries with a strong vehicle industry like France and Germany showed some growth, while the other countries showed slight decreases in their production figures.

The general trend (also stated at the end of 3.3) is that companies are specialising, either in product (high volume, small number of products) or process (low volume, wide range of products). The strategy of major foundries (e.g. Corus, focus on steel only) and forging companies (e.g. Polynorm, focus on big steel, forged car parts) is following that same trend. This opens up opportunities for developing country manufacturers, in terms of standard products in different volumes.

4.4 Trends

The Metal Sector showed some clear trends in 2002. The first was a shift in the types of products being demanded, relating to the usage of lighter materials with higher quality standards and the increasing price pressure. Another trend was towards conformation in production, in order to ensure compliance with (inter)national and environmental requirements.

Most important was the overall stabilisation of (or even decrease in) production because of the fall in demand. It was predicted that this trend would continue in 2003. Another reason for the fall in demand was the pressure on prices, which motivated industries to shift the supply to cheaper producers, e.g. in developing countries.

Table 4.3 Closed die production by independent forging companies, 2001

	Shipments (1,000 tonnes)	Change to 2000 (%)	Sales (€ million)	Change to 2000 (%)
Belgium	15	4.5	23	10.0
Czech Republic	110	4.8	130	4.5
France	360	1.0	980	2.0
Germany	1,119	3.6	2,331	5.0
Italy	573	-1.2	775	-1.8
Poland	132	-4.3	175	-13.1
Spain	216	-1.4	317	-0.9
Sweden	71	-8.9	114	-13.1
United Kingdom	220	-3.0	419	3.0
Total	**2,816**	**0.75**	**5,264**	**1.5**

Source: Euroforge, June 2002

Some examples

Germany: The non-ferrous metal foundries are mainly medium-sized and small companies who have very few opportunities to opt out of Germany as a business location. This means that they have to do the best they can within the existing business environment. They struggle with a collective bargaining agreement that is prohibatively expensive and with excessively bureaucratic labour laws. At the same time, they are required to meet the rising cost of the social security system and, being an industry dependent on energy, they must bear the additional burdens placed on the consumption of energy, oil and gas.

Great Britain: Foundries are preparing themselves for the cost and resource implications emerging from implementation of the new IPPC environmental regulations. Nevertheless, foundry operators are looking at various ways of keeping operating costs to a minimum, with more and more companies looking to adopt lean manufacturing techniques. Efforts are also being directed at improving energy efficiency, as well as exploring fresh opportunities to extend recycling and reuse.

Technological trends

A number of technological trends are emerging in forging. In terms of the materials used, a shift of emphasis is taking place from carbon and carbon-alloy parts to microalloy steel, aluminium and magnesium alloys. Intelligent die design is reducing the stock volume input without going to net shape forming. Non-traditional die materials extend die life. The trend in heating stock is towards the more widespread use of induction heating, infrared heating of forging billets to improve material microstructure and the refitting of furnaces with the latest insulation and burner technology. Trends in lubrication are new application technologies to reduce the amount of graphite used, automation of the lubrication process using robots and surface technology that eliminates the need for lubricants. In addition, there is the adoption of concepts such as lean manufacturing, STEP (Standard for the Exchange of Product Model Data) and electronic communication. Advances in information technology are allowing for faster and more sophisticated 3D simulation programmes for complex shapes and for ring rolling, and diagnostic and prognostic systems in the forging line.

Environmental, occupational health and safety factors

European legislation on environmental and occupational health and safety is forcing companies to invest in environmentally friendly production equipment and tools, in order to guarantee the safe production of goods.

The ecolabelling procedures are aimed purely at the products themselves, and indicate that products bearing a label have a reduced impact on the environment. If a manufacturer wants to indicate to external parties that his manufacturing methods are also environmentally sound, then he can opt to comply with the following standard:

- ISO 14001

This standard is based on the ISO 9000 series of standards for quality management. The relevance of the ISO 14001 standard for the future can be clearly seen by following the development and use of the ISO 9001 and ISO 9002 quality standard. Although voluntary, customer pressure is resulting in the ISO 9001 and IS0 9002 quality standard becoming increasingly necessary for those wanting to do business around the world. Similarly, the ISO 14001 environmental management standard may soon become a *de facto* requirement for being able to compete in many regions of the global marketplace.

This trend presents both opportunities and threats for foreign countries where legislation is less severe. In the short term, the cost price of products in foreign countries will be more competitive because of less demand for environmentally-based production and product (package) investments. In the longer term, however, European consumer movements will place foreign countries under pressure to satisfy globally accepted environmental standards. Developing country exporters should be preparing their companies now for production in accordance with ISO 14001.
The opportunities for developing country manufacturers are the result of increased raw material prices and pressure on sales prices (because of severe competition). End users are looking to alternative suppliers, able to supply goods against fair prices.

5 IMPORTS

5.1 Total imports

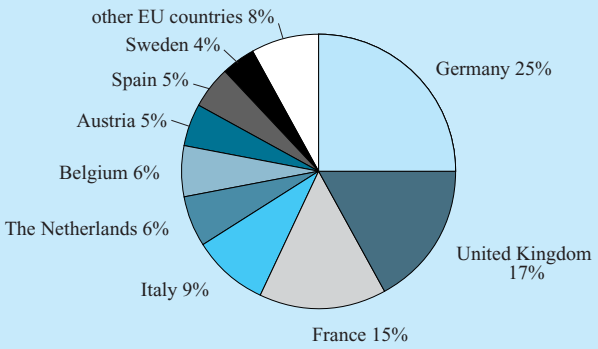
The total value of imports of castings and forgings by EU countries amounted to more than € 24 billion in 2001, 41 percent being imported from countries outside the European Union. Total imports are intra-EU imports plus extra-EU imports. Between 1999 and 2001 total imports increased by 22 percent. Of all EU members, Germany had the highest value of imports, i.e. almost 25 percent of total imports.

The total extra-EU imports of castings and forgings amounted to € 9.8 billion in 2001. This represented an increase of 5 percent compared to 2000. The average EU value to volume ratio was € 5,144 per metric ton.

Figure 5.1 shows the importance of Germany as the leading EU country in extra-EU trade of castings and forgings, accounting for one quarter of total trade. Other important countries were the United Kingdom (17 percent), France (5 percent), Italy (9 percent) and the Netherlands (6 percent).

The biggest source of imports of castings and forgings is the European Union itself (59 percent), followed by the United States with 15 percent. The other sources of imports are a lot smaller, and include Japan (3 percent), Switzerland (3 percent), China (3 percent), Czech Republic (3 percent) and Poland (2 percent).

Figure 5.1 Extra-EU imports of castings and forgings per EU countries, 2001 percentage of total value



Source: Eurostat (2002)

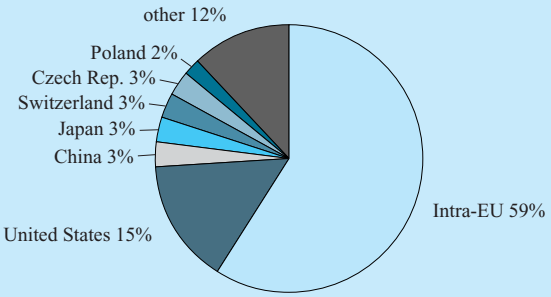
Germany was the main supplier of castings and forgings to other EU member states, supplying € 4.2 billion or 18 percent of intra- and extra-EU imports. Other important European suppliers were Italy, France, the United Kingdom and Belgium.

Table 5.1 Extra-EU imports of castings and forgings per EU country, 1999–2001
€ 1,000 / tonnes

	1999		2000		2001	
	value €	volume	value €	volume	value €	volume
EU	19,711,677	4,048,585	23,116,688	4,501,674	24,086,664	4,678,184
Austria	1,094,419	228,603	1,204,601	246,672	1,317,459	276,082
Belgium	1,253,992	260,837	1,458,300	265,288	1,430,507	266,296
Denmark	486,875	74,253	512,833	88,875	622,622	102,803
Finland	400,750	74,711	491,355	90,521	507,181	95,713
France	2,719,551	700,246	3,301,144	752,187	3,497,286	677,497
Germany	4,869,657	1,119,444	5,741,328	1,339,975	5,967,947	1,294,100
Greece	199,159	35,145	164,908	37,206	156,725	36,757
Ireland	242,248	47,869	319,289	49,092	286,936	52,276
Italy	1,696,484	401,734	2,098,509	464,327	2,262,416	500,319
Luxembourg	50,309	12,716	53,684	11,007	60,157	9,375
The Netherlands	1,256,013	178,061	1,377,094	195,793	1,459,321	195,399
Portugal	180,922	40,162	230,235	46,202	230,435	47,641
Spain	970,639	209,233	1,273,959	245,063	1,181,726	241,986
Sweden	882,550	189,616	1,019,980	204,071	1,040,563	233,710
United Kingdom	3,408,108	475,955	3,869,470	465,395	4,065,400	648,230

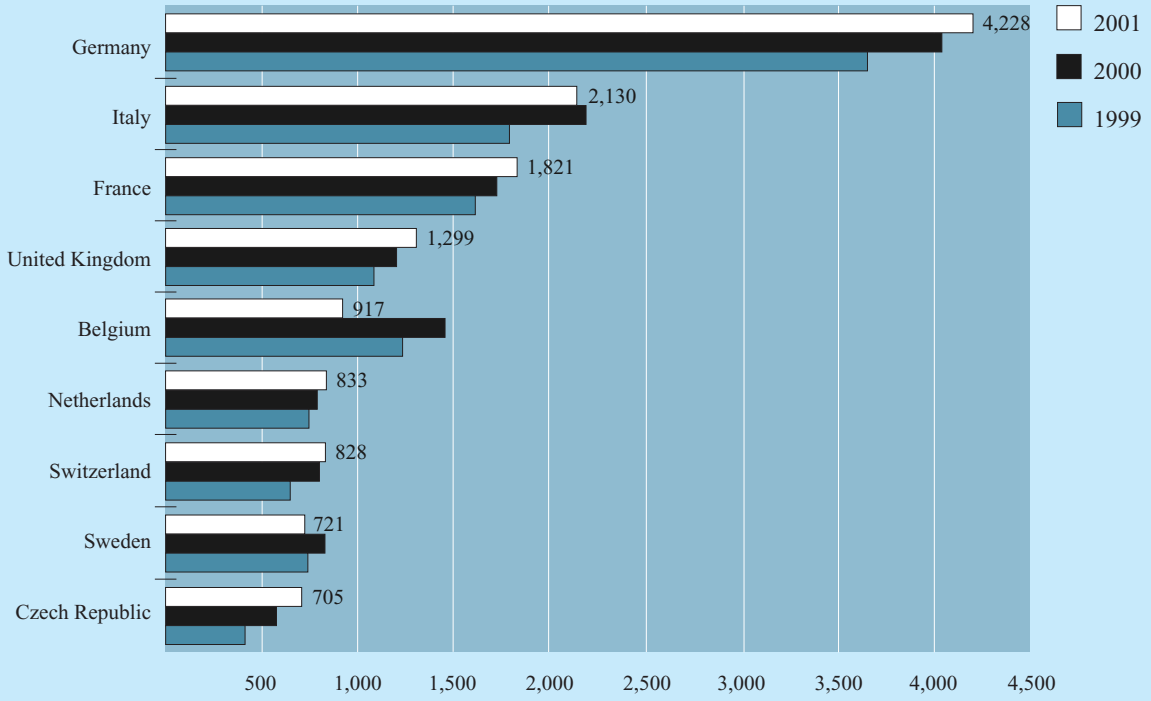
Source: Eurostat (2002)

Figure 5.2 Sources of EU imports of castings and forgings, 2001
percentage of value



Source: Eurostat (2002)

Figure 5.3 Leading European suppliers of castings and forgings to EU, 1999 – 2001
EUR million

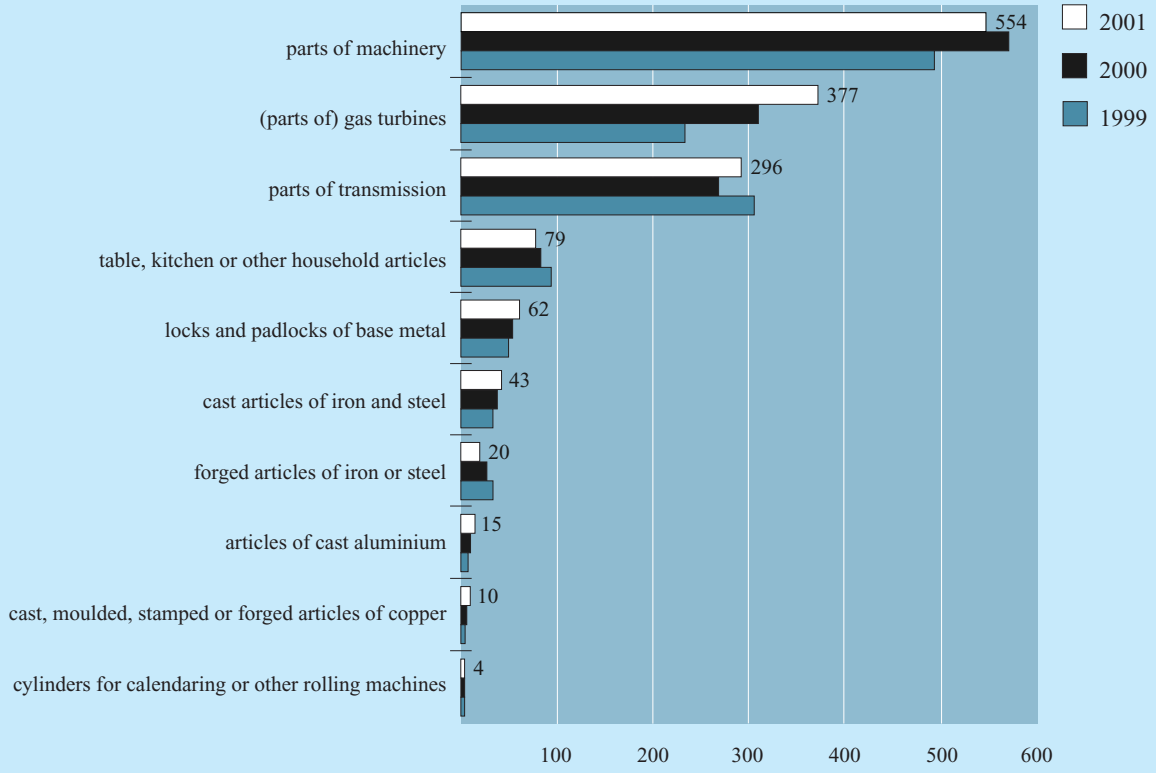


Source: Eurostat (2002)

The Netherlands

Total imports of castings and forgings amounted to € 1,459 million in 2001, representing a 16 percent increase since 1999. Most product groups remained stable. The most important product groups in Dutch imports were parts of transmission and gas turbines, which increased significantly in 2001. The imports of cylinders for calendering, products of cast aluminium and products of copper are of relatively little importance.

Figure 5.4 Dutch imports of castings and forgings per product group, 1999 – 2001
EUR million



Source: Eurostat (2002)

Table 5.2 Leading suppliers of castings and forgings to the Netherlands percentage of total imported value in 2001

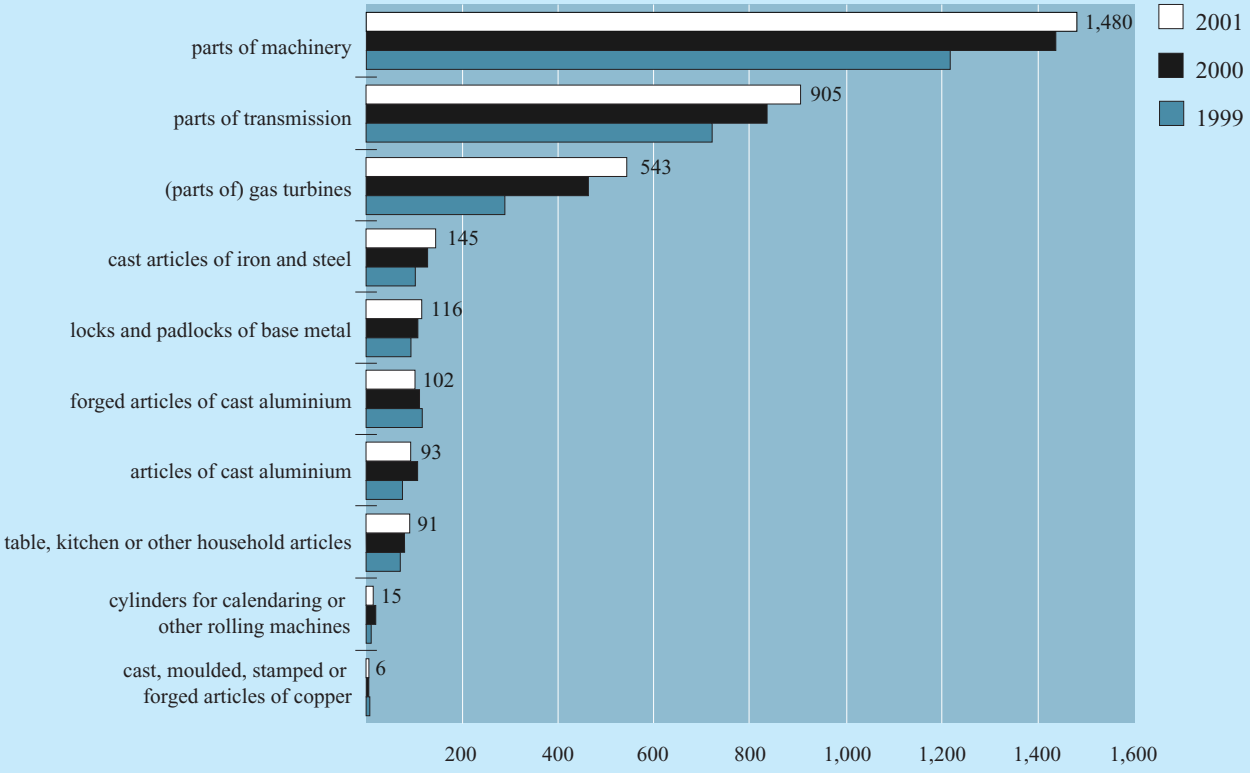
→ United States (24%)
→ Germany (24%)
→ United Kingdom (7%)
→ Japan (7%)
→ France (6%)
→ Belgium (6%)

Share of developing countries: 6%
→ China (4%)
→ Turkey (1%)

France

The total value of French imports of castings and forgings grew by 28 percent over a 2-year period to € 3,497 million. The two most important product groups, parts of transmission and machinery, represented 26 and 42 percent of those imports respectively. (Parts of) gas turbines held a share of 15 percent and the remaining product groups together accounted for 17 percent.

Figure 5.5 French imports of castings and forgings per product group, 1999 – 2001
EUR million



Source: Eurostat (2002)

Table 5.3 Leading suppliers of castings and forgings to France percentage of total imported value in 2001

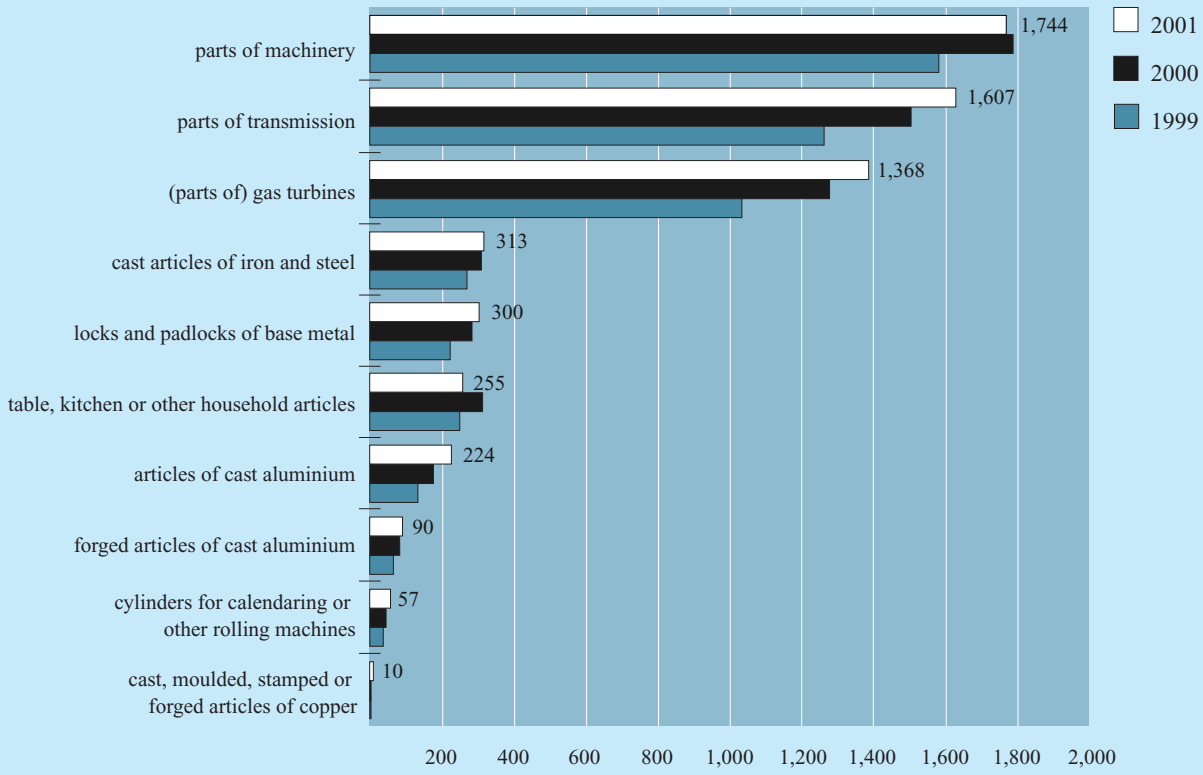
→ Germany (26%)
→ Italy (17%)
→ United States (15%)
→ United Kingdom (8%)
→ Belgium (8%)

Share of developing countries: 4%
→ China (2%)

Germany

Germany had the highest share of EU imports in 2001, with imports of castings and forgings amounting to € 5.9 billion. This represented a 22 percent increase since 1999. In Germany, parts of machinery, parts of transmission and (parts of) gas turbines together accounted for 79 percent. Of lesser importance to German imports are the other seven product groups, which had a combined share of 21 percent. The main product groups that showed a strong growth in imports were (parts of) gas turbines and transmission. Other product groups showed a moderate growth.

Figure 5.6 German imports of castings and forgings per product group, 1999 – 2001
EUR million



Source: Eurostat (2002)

Table 5.4 Leading suppliers of castings and forgings to Germany percentage of total imported value in 2001

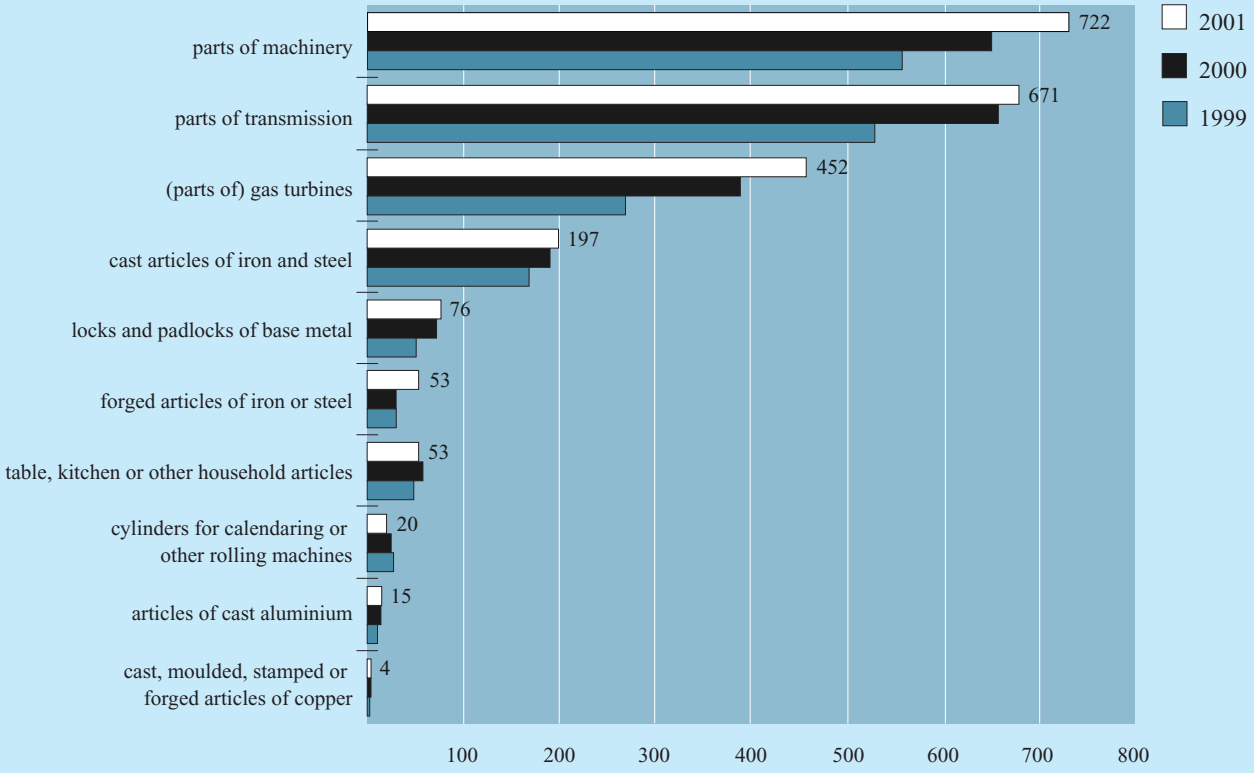
→ United States (18%)
→ Italy (10%)
→ France (10%)
→ Czech Republic (9%)
→ Switzerland (7%)
→ United Kingdom (7%)

Share of developing countries: 9%
→ China (4%)
→ Slovenia (1%)
→ Turkey (1%)
→ Brazil (1%)

Italy

Italy was the fourth largest importer of castings and forgings. The value of total imports amounted to € 2.262 billion in 2001. Transmission and machinery parts had equal shares, accounting for around one-third of imports. The third product group of importance was (parts of) gas turbines, with a growing share of up to 20 percent. Cast products of iron and steel were next, representing a share of around 9 percent. The remaining 10 percent was divided between the six smallest product groups.

Figure 5.7 Italian imports of castings and forgings per product group, 1999 – 2001
EUR million



Source: Eurostat (2002)

Table 5.5 Leading suppliers of castings and forgings to Italy percentage of total imported value in 2001

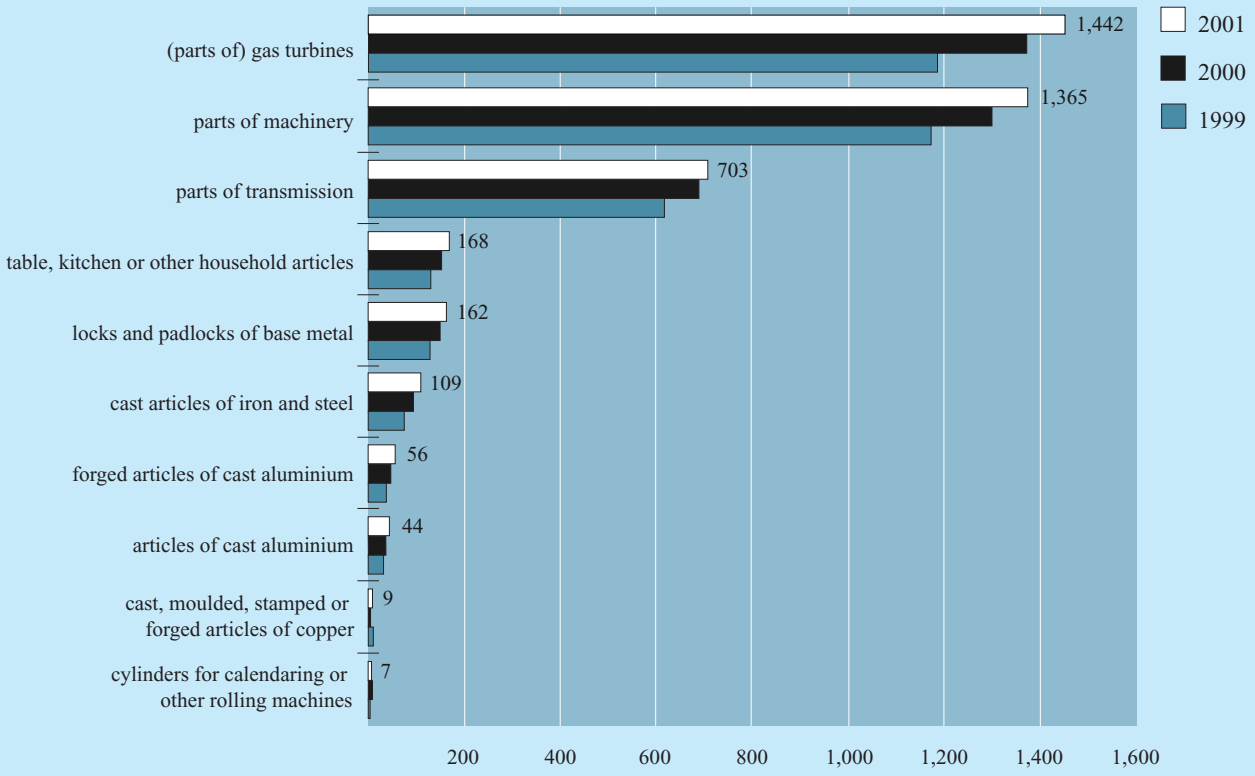
→ Germany (20%)
→ United States (16%)
→ France (12%)
→ United Kingdom (8%)
→ China (6%)
→ Spain (6%)

Share of developing countries: 12%
→ China (6%)
→ Turkey (1%)
→ Slovenia (1%)
→ India (1%)
→ Brazil (1%)

United Kingdom

The United Kingdom, the second largest importer, imported a total of € 4,065 million in 2001, which represented a 19 percent increase in value since 1999. The largest product group in the UK was (parts of) gas turbines which has maintained a stable share of 35 percent in recent years. The second largest product group, parts of machinery, showed a stable growth of about 30 percent between 1999-2001. Parts of transmission, which constituted the third largest product, continued to hold an 18 percent share in imports. The remaining product groups together represented only 13 percent of the total import value of castings and forgings.

Figure 5.8 UK imports of castings and forgings per product group, 1999 – 2001
EUR million



Source: Eurostat (2002)

Table 5.6 Leading suppliers of castings and forgings to the United Kingdom percentage of total imported value in 2001

→ United States (25%)
→ Germany (17%)
→ Italy (9%)
→ France (7%)
→ Japan (5%)

Share of developing countries: 12%
→ China (4%)
→ India (1%)
→ Venezuela (1%)
→ Saudi Arabia (1%)
→ Brazil (1%)
→ Bahrain (1%)

5.2 Imports by product group

Table 5.7 shows that 48 percent of the EU imports of table, kitchen and other household products came from China. This also explains the 4 percent share of China as a source for EU imports of castings and forgings in total shown in figure 5.9. In this case there were, of course, also intra-EU import (36 percent), but these were still smaller than the imports from China. Other countries are Taiwan and Switzerland (4 and 5 percent respectively) and India and Turkey, both with 3 percent.

Table 5.8 shows the sources of EU imports of cast products of iron or steel. The biggest source for the EU is imports from other countries of the EU, i.e. 48 percent. After intra-EU imports, there were three important sources: China with 13 percent, the Czech Republic with 10 percent and Poland with 9 percent.

The biggest source of EU imports of forged products of iron or steel (table 5.9) are the countries within the EU, i.e. 68 percent. Other countries with small but significant exports to the EU were the United States (10 percent), the Czech Republic (3 percent), Poland (3 percent), China (2 percent) and Turkey (2 percent). The total share of developing countries grew to 8 percent, of which China had the largest share at 2 percent.

After EU imports of products of copper (table 5.10) from other EU countries (50 percent), South Korea is the main supplier of products of copper, with 23 percent. Next comes Switzerland, with 6 percent. Morocco and Slovenia are developing country sources of EU imports.

Again, intra-EU imports constitute the largest source of EU imports of products of aluminium (table 5.11) with 66 percent, followed by the Czech Republic (6 percent), Slovakia (4 percent) and Poland (5 percent). The biggest developing country supplier is Slovenia, with 3 percent of the total EU imports.

Intra-EU imports are also the largest source of locks and padlocks of base metal (64 percent). Within the EU, the Czech Republic is the biggest source with 9 percent, whilst outside the EU China accounts for a 7 percent share. (table 5.12)

Table 5.7 Leading sources of EU imports of table, kitchen and other household products percentage of total imported value in 2001

Share of intra-EU: 36%
→ Italy (8%)
→ Germany (8%)
→ Belgium (6%)

Share of extra-EU: 64%
→ China (41%)
→ Switzerland (5%)
→ Taiwan (4%)

Share of developing countries: 49%
→ China (41%)
→ India (3%)
→ Turkey (3%)
→ Thailand (2%)

Source: Eurostat (2002)

Table 5.8 Leading sources for EU imports of cast products of iron or steel percentage of total imported value in 2001

Share of intra-EU: 48%
→ France (12%)
→ Germany (12%)
→ Spain (5%)

Share of extra-EU: 52%
→ China (13%)
→ Czech Republic (10%)
→ Poland (9%)

Share of developing countries: 20%
→ China (13%)
→ India (2%)
→ Turkey (2%)
→ Slovenia (2%)

Source: Eurostat (2002)

Table 5.9 Leading sources for EU imports of forged products of iron or steel percentage of total imported value in 2001

Share of intra-EU: 68%
→ Germany (18%)
→ Italy (18%)
→ France (13%)

Share of extra-EU: 32%
→ United States (10%)
→ Czech Republic (3%)
→ Poland (3%)

Share of developing countries: 8%
→ Turkey (2%)
→ China (2%)

Source: Eurostat (2002)

Table 5.10 Leading sources for EU imports of products of copper percentage of total imported value in 2001

Share of intra-EU: 50%
→ France (15%)
→ Germany (10%)
→ Italy (8%)

Share of extra-EU: 50%
→ South Korea (23%)
→ Switzerland (6%)
→ Morocco (4%)

Share of developing countries: 9%
→ Morocco (4%)
→ Slovenia (3%)

Source: Eurostat (2002)

Table 5.11 Leading sources of EU imports of products of aluminium percentage of total imported value in 2001

Share of intra-EU: 66%
→ Italy (20%)
→ France (13%)
→ Germany (10%)

Share of extra-EU: 34%
→ Czech Republic (6%)
→ Poland (5%)
→ Slovakia (4%)

Share of developing countries: 6%
→ Slovenia (3%)

Source: Eurostat (2002)

Table 5.12 Leading sources of EU imports of locks and padlocks of base metal percentage of total imported value in 2001

Share of intra-EU: 64%
→ Germany (26%)
→ France (11%)
→ Spain (7%)

Share of extra-EU: 34%
→ Czech Republic (9%)
→ China (7%)
→ United States (4%)

Share of developing countries: 9%
→ China (7%)

Source: Eurostat (2002)

Table 5.13 Leading sources of EU imports of (parts of) gas turbines percentage of total imported value in 2001

Share of intra-EU: 29%
→ United Kingdom (8%)
→ Germany (6%)
→ France (5%)

Share of extra-EU: 71%
→ United States (48%)
→ Switzerland (6%)
→ Canada (4%)

Share of developing countries: 5%

Source: Eurostat (2002)

Table 5.14 Leading sources of EU imports of cylinders for calendering or other rolling machines percentage of total imported value in 2001

Share of intra-EU: 78%
→ Germany (29%)
→ Austria (13%)
→ France (9%)

Share of extra-EU: 22%
→ Switzerland (4%)
→ United States (3%)
→ Norway (2%)

Share of developing countries: 5%

Source: Eurostat (2002)

Table 5.15 Leading sources of EU imports of parts of machinery percentage of total imported value in 2001

Share of intra-EU: 70%
→ Germany (18%)
→ Italy (10%)
→ France (8%)

Share of extra-EU: 30%
→ United States (7%)
→ Japan (4%)
→ Switzerland (3%)

Share of developing countries: 3%

Source: Eurostat (2002)

Table 5.16 Leading sources of EU imports of parts of transmission percentage of total imported value in 2001

Share of intra-EU: 66%
→ Germany (26%)
→ Italy (12%)
→ France (7%)

Share of extra-EU: 34%
→ United States (9%)
→ Japan (7%)
→ Switzerland (3%)

Share of developing countries: 5%
China (2%)
→ Brazil (1%)

Source: Eurostat (2002)

The biggest source of EU imports of (parts of) gas turbines is the United States, accounting for 48 percent of the total. The second largest source is intra-EU imports (29 percent), followed by Switzerland (6 percent). Other countries that are suppliers of (parts of) gas turbines are respectively: Canada (4 percent) and Japan (2 percent). As can be seen from the above results, there is no developing country at the moment that can be called a significant source (more than 1 percent) of EU imports of (parts of) gas turbines; the total share of developing countries is, however, 5 percent.

There are two developing countries that play a minor role in the EU imports of cylinders for calendering or other rolling machines, namely Turkey and Brazil, both with 1 percent. The total share of developing countries is 5 percent. Other countries of relatively little importance are Japan (1 percent), Norway (2 percent), Switzerland (4 percent) and the United States (3 percent). All further imports are accounted for by intra-EU imports, with 78 percent of the total.

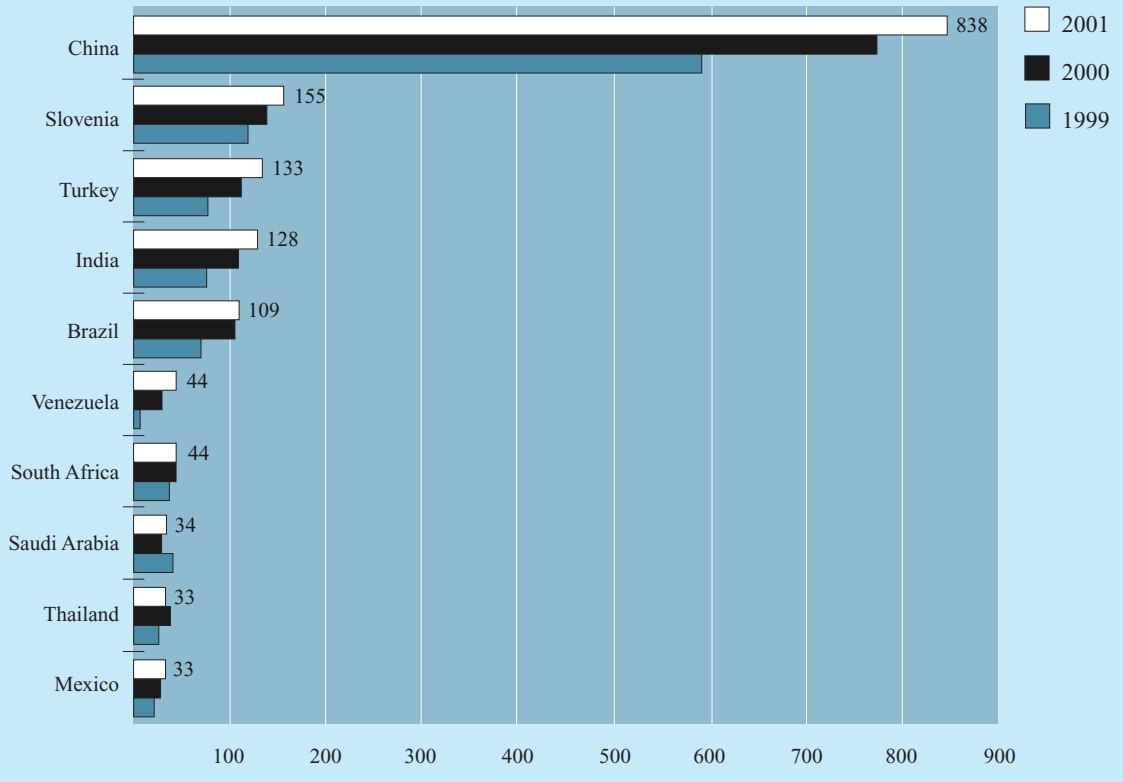
Again, intra-EU imports constitute the largest source of parts of machinery (70 percent), followed by the United States with 7 percent. Other countries are Japan (5 percent), Switzerland (3 percent), the Czech Republic (3 percent) and Poland (2 percent). There is no developing country that plays a significant role. Nevertheless, the total share of the developing countries as a source of EU imports of parts of machinery is 3 percent.

The biggest source of EU imports of parts of transmission are the countries within the EU. Total Intra-EU imports amount to 66 percent. The rest is shared between the United States (9 percent), Japan (6 percent), Switzerland (3 percent), the Czech Republic (3 percent), China (2 percent) and Canada (2 percent). Again China is the only major developing country supplying products for the EU; the total share of the developing countries is 5 percent.

5.3 The role of developing countries

In 2001, China was again the developing country with the highest share in EU imports, followed at a large distance by Slovenia and Turkey. The share of China represented 3.4 percent of total EU imports and 8.5 percent of extra-EU imports of castings and forgings. The share of developing countries remained stable between 1999 and 2001, at a level of 18 percent of extra-EU imports. However, imports from China grew by 30 percent in this period. No other developing country showed such high growth rates.

Figure 5.9 Leading developing countries supplying castings and forgings to the EU, 1999 – 2001
EUR million



Source: Eurostat (2002)

Table 5.17 Share of developing countries in imports of castings and forgings percentage of total value in 2001

Share of developing countries in The Netherlands: 6%
China (4%)
South Korea (1%)

Share of developing countries in France: 4%
China (2%)

Share of developing countries in Germany: 9%
China (4%)
Slovenia (1%)
Turkey (1%)
Brazil (1%)

Share of developing countries in Italy: 12%
China (6%)
Turkey (1%)
Slovenia (1%)
India (1%)
Brazil (1%)

Share of developing countries in the U.K.: 12%
China (4%)
India (1%)
Venezuela (1%)
Saudi Arabia (1%)
Brazil (1%)
Bahrain (1%)

Table 5.18 Share of imports from developing countries by product group 1999-2001 percentage of total value

	1999 % of value	2000 % of value	2001 % of value
Total imports:			
table, kitchen or other household articles	41%	46%	49%
cast articles of iron or steel	16%	18%	20%
forged articles of iron or steel	4%	5%	8%
cast, moulded, stamped or forged articles of copper	12%	11%	9%
articles of cast aluminium	7%	7%	6%
locks and padlocks of base metal	9%	10%	9%
(parts of) gas turbines	4%	5%	5%
cylinders for calendering or other rolling machines	6%	7%	5%
parts of machinery	3%	3%	3%
parts of transmission	4%	5%	5%
Total of castings and forgings	**6%**	**7%**	**7%**
Extra-EU imports:			
table, kitchen or other household articles	67%	73%	77%
cast articles of iron or steel	36%	38%	39%
forged articles of iron or steel	15%	18%	25%
cast, moulded, stamped or forged articles of copper	27%	28%	19%
articles of cast aluminium	21%	20%	18%
locks and padlocks of base metal	29%	30%	26%
(parts of) gas turbines	6%	7%	7%
cylinders for calendering or other rolling machines	27%	31%	24%
parts of machinery	11%	11%	11%
parts of transmission	14%	15%	16%
Total of castings and forgings	**17%**	**17%**	**18%**

Table 5.18 shows that in the period 1999 - 2001 the average percentage of imports from developing countries rose from 6 percent to 7 percent. The rise in certain product groups, namely table, kitchen or other household products, cast products of iron or steel and forged articles of iron or steel was above average.

When comparing the upper section of the table (total imports from developing countries) with the lower section (extra-EU imports), we see that the product groups mentioned above account for a substantial share of total extra-EU imports. In addition, developing countries also account for a large share of extra-EU imports of cylinders for calendering or other rolling machines and locks and padlocks of base metal. Their share is less obvious when only total imports are considered. The importance of (parts of) gas turbines (5 percent and 7 percent respectively) is low in both sections. On a more general level, a trend can be seen towards more casting and forging products being bought in developing countries. Total extra-EU imports increased slightly over the period, as did the share of those imports accounted for by developing countries. Finally, table 5.19 shows the total value of imports from developing countries in 2001 in greater detail, according to the HS code. This table brings certain facts to light when considered in combination with table 5.18. For example, whereas table 5.18 shows a reasonable share of developing countries in imports of products of copper, table 5.19 shows that the absolute value is low compared to the total value of EU imports of castings and forgings.

Table 5.19 Imports of developing countries per HS code

Product group	HS code	Imports from developing countries in 2000 (€ 1,000)
Household products	732391	11,748
	732393	465,059
Cast products of iron or steel	732510	175,845
	732599	63,203
Forged products of iron or steel	732619	39,790
Products of copper	741991	5,539
Products of aluminium	76169910	30,576
Locks and padlocks	830110	50,489
	830120	14,492
	830140	47,879
(Parts of) gas turbines	841182	99,723
	841199	138,706
Cylinders for calendering or other rolling machines	842091	9,846
Parts of machinery	843120	25,385
	843131	12,281
	843139	28,361
	843143	29,920
	843149	152,765
	843290	13,666
	843999	29,099
Parts of transmission	848310	101,154
	848330	43,126
	848340	59,024
	848350	45,362
	848360	17,039
	848390	68,070

Source: Eurostat (2002)

6 EXPORTS

Total EU exports of castings and forgings amounted to € 30,447 billion in 2001. The most important European exporters were Germany, Italy, France and the United Kingdom. These countries are therefore discussed in greater detail below. Together these countries represented 73 percent of European exports of castings and forgings world-wide. The United States was the most important destination for EU exports, representing 14 percent. The 10 next important destinations were all European countries, with Germany as the most important. 49 percent of total exports were exported to these countries. Of the 48 percent extra-EU exports, 15 percent were exported to developing countries, the most important being China, Brazil and India.

When considering the product groups listed below, several factors should be noted. First of all, the products groups parts of machinery and parts of transmission are by far the largest product groups, with a value of € 10,684 and € 8,245 million respectively. Together they represent 62 percent of the total EU exports of castings and forgings. Next in line is the product group (parts of) gas turbines, with a value of € 6,564 million and a share of 20 percent. All groups grew, but this last product group grew the fastest, by 56 percent in the period of 1999-2001.

Figure 6.1 Total EU exports of castings and forgings from EU countries, 1999 - 2001
€ 1,000 / tonnes

	1999		2000		2001	
	value €	volume	value €	volume	value €	volume
EU	24,438,988	3,582,656	28,402,625	4,165,896	30,447,579	4,145,626
Austria	1,228,994	183,824	1,305,418	209,970	1,345,705	198,141
Belgium	1,223,586	169,644	1,426,234	196,245	1,370,059	198,796
Denmark	328,425	79,449	381,197	91,115	463,252	104,407
Finland	619,557	68,095	776,462	78,651	886,438	86,825
France	3,311,529	685,106	3,918,708	738,959	4,145,451	772,360
Germany	7,650,672	994,214	8,862,946	1,159,404	9,546,827	1,129,633
Greece	16,074	3,383	18,770	3,944	19,661	4,669
Ireland	84,947	13,815	105,242	11,880	123,863	15,685
Italy	3,382,346	593,558	4,154,412	683,204	4,717,611	720,032
Luxembourg	29,137	3,932	23,941	4,683	32,233	6,550
The Netherlands	1,114,846	153,219	1,176,635	164,402	1,372,477	162,274
Portugal	111,903	30,865	128,824	28,605	130,799	26,093
Spain	781,830	174,752	1,050,151	231,426	1,052,073	233,285
Sweden	1,033,026	111,969	1,225,615	118,765	1,235,125	123,271
United Kingdom	3,522,119	316,831	3,848,076	444,643	4,006,023	363,605

Source: Eurostat (2002)

Figure 6.2 Total EU exports of castings and forgings per product group, 1999 - 2001
€ 1,000 / tonnes

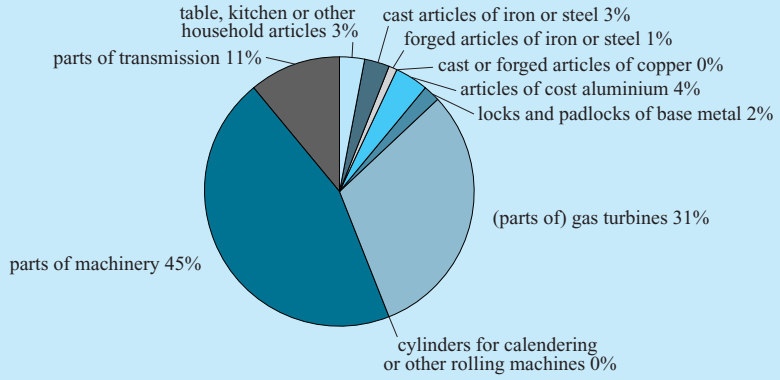
	1999		2000		2001	
	value €	volume	value €	volume	value €	volume
table, kitchen or other household articles	627,227	79,819	696,213	85,676	699,437	87,282
cast articles of iron or steel	1,127,360	779,707	1,228,330	849,831	1,264,306	869,062
forged articles of iron or steel	562,177	258,660	635,923	301,214	700,230	323,306
cast or forged articles of copper	48,313	9,211	52,385	8,297	53,028	8,355
articles of cast aluminium	617,480	111,526	717,447	123,629	714,370	123,319
locks and padlocks of base metal	1,223,801	87,614	1,282,826	85,358	1,264,452	89,771
(parts of) gas turbines	4,185,565	63,549	5,542,489	83,413	6,564,506	113,240
cylinders for calendering	243,065	39,406	255,354	42,740	256,717	45,805
parts of machinery	8,871,465	1,315,317	10,135,828	1,494,716	10,684,842	1,507,051
parts of transmission	6,932,535	837,847	7,855,830	1,091,022	8,245,691	978,435

Source: Eurostat (2002)

The Netherlands

When we consider the situation for the Dutch exports, it can be seen that most of them come from parts of machinery (45 percent of total exports), followed by (parts of) gas turbines (31 percent). The other product groups, parts of transmission, table, kitchen or other household products, cast products of iron or steel, forged products of iron or steel, products of cast aluminium, locks and padlocks of base metal, account for the remaining 26 percent, of which parts of transmission accounts for the largest share with 11 percent.

Figure 6.3 Dutch exports of castings and forgings per product group 2001
percentage of value



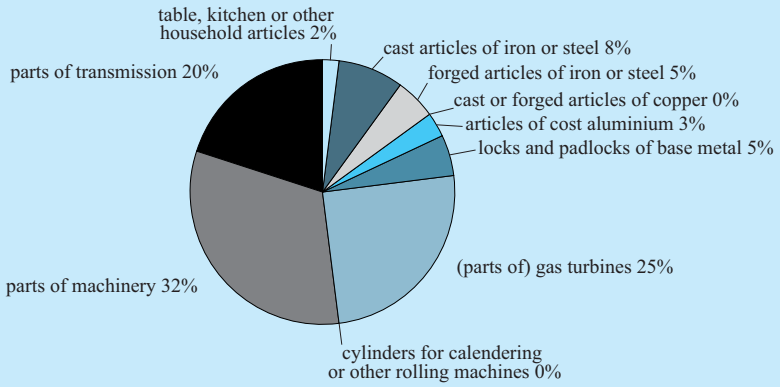
Source: Eurostat (2002)

France

As can be seen in the figure below, three main product groups together account for 77 percent of the total French exports, namely parts of transmission, parts of machinery and (part of) gas turbines. The other product groups take the remaining 23 percent, of which cast products of iron or steel claim the largest share with 8 percent.

Compared to 2000, exports increased by appr. 6 percent to around 0.77 million tons in 2001. The especially good performance of the non-ferrous metals exports (295,000 tons compared to 270,000 the previous year) boosted export growth to a record-breaking 16.3 percent. This development, together with the steady export rate of ferrous metals, enabled France to maintain the export rate of the overall foundry industry at a stable level of 28.8 percent in 2001.

Figure 6.4 French exports of castings and forgings per product group, 2001 percentage of value



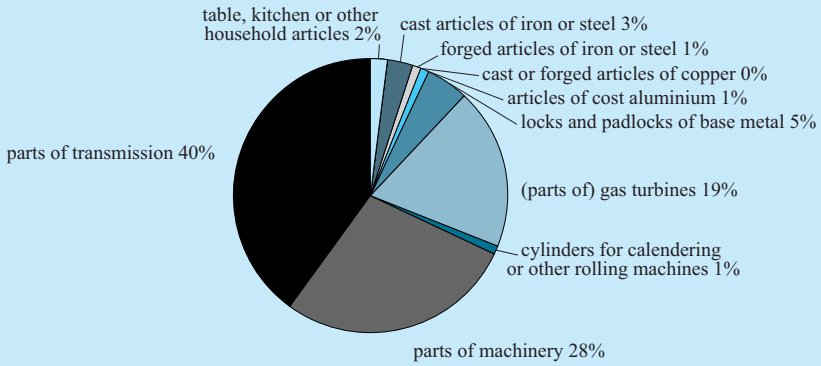
Source: Eurostat (2002)

Germany

40 percent of all the German exports of castings and forgings came from export of parts of transmission, followed by parts of machinery with 28 percent. This 68 percent of exports represented a value of € 7,636 million. Just as in France and the Netherlands, another main group was (parts of) gas turbines, with 19 percent of total share. The other product groups accounted for the remaining share.

Looking at developments from a regional angle, we observe the continuing of a trend already evident throughout the 90s, namely that of exports developing more dynamically than domestic sales. Slightly less than 27 percent of the total sales volume went in 2001 directly to foreign customers. In 2000, the export rate still amounted to 25.5 percent. However, sales to foreign customers from the mechanical-engineering industry went up by 27.0 percent and deliveries to foreign car-makers increased by 11.1 percent, whilst the volume of miscellaneous components exported rose by no more than 0.4 percent.

Figure 6.5 German exports of castings and forgings by product group, 2001 percentage of value



Source: Eurostat (2002)

Italy

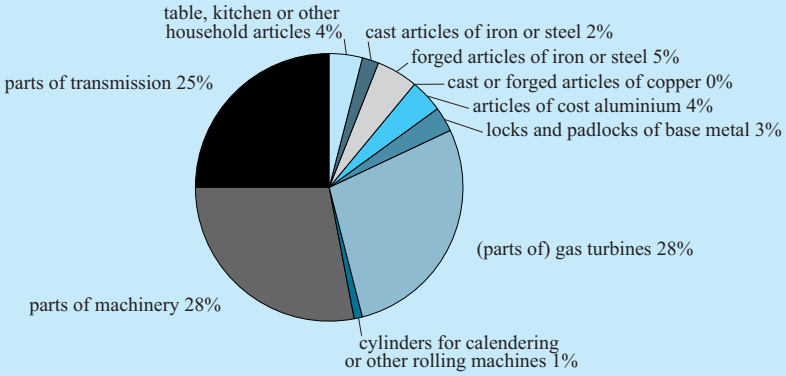
Italy, Europe's second exporter (after Germany), exported 3 main product groups, i.e. parts of machinery (28 percent), parts of transmission (25 percent) and (parts of) gas turbines (28 percent).

Foreign trade results were disappointing, showing a continuance of the trend of previous years, namely a considerable growth of imports but slow export developments.
In spite of the difference between the quantities imported and those exported, the balance of trade was still in favour of exports. No significant changes took place among the suppliers to the Italian market, which continued to be Far Eastern countries for standardised castings and East European countries for made-to-order castings. It should be noted, however, that there was a growth in imports from the Far East.

United Kingdom

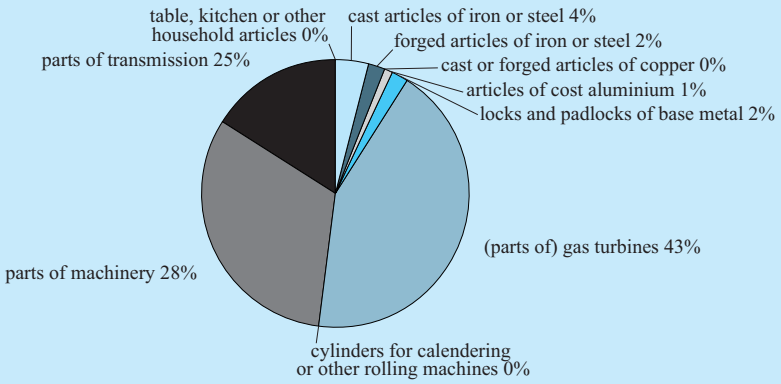
The last EU country discussed in this chapter is the UK. The UK was, after Germany and Italy, the fourth largest exporting country of castings and forgings with a value amounting to € 4,006 million). The biggest share of the UK exports came from (parts of) gas turbines with 44 percent. Two other groups followed with 32 percent and 16 percent respectively. The rest was shared among the remaining product groups as follows: cast products of iron or steel (4 percent), forged products of iron or steel (2 percent), locks and padlocks of base metal (2 percent), products of cast aluminium (1 percent) and table, kitchen or other household products and cast and forged articles of copper (0 percent).

Figure 6.6 Italian exports of castings and forgings per product group, 2001 percentage of value



Source: Eurostat (2002)

Figure 6.7 UK exports of castings and forgings per product group, 2001 percentage of value



Source: Eurostat (2002)

7 TRADE STRUCTURE

7.1 EU trade channels

Different players can be recognised in the supply chain from manufacturer to end consumer. The Product supplier or the Original Equipment Manufacturer (OEM) is responsible for the production and delivery of goods to the end consumer. More and more OEMs are defining their core competencies. A procedure for outsourcing is set in motion for those non core competencies (e.g. parts production) which they still perform. Figures 7.1 and 7.2 show the supply chains for OEMs for semi-finished products (7.1) and end products (7.2). In the supply chain for end products (primarily household products), developing country exporters make complete products, delivering direct to the retail via wholesalers. The supply chain for all type of products is almost the same for the business to business market.

The flow of goods is from the supplier of parts towards the end user. The triangle in brackets depicts a growing co-operation between the different companies involved in delivering a product to the consumer. Control activities are managed by the system supplier (translating market demand into individual unit and part demand per company). These include both demand and supply (checking that companies are performing as agreed) management.
Where suppliers of parts are located in developing countries, agents or importers could be used to find the right foreign supplier. European OEMs and system suppliers are also carefully orientating themselves in their search for developing country manufacturers.

The globalisation and specialisation of companies, a process still under development, has led and will lead in coming years to other responsibilities and activities for the individual types of companies. Marketing, Sales, Product Development, End Assembly and Service will stay with the OEM. Engineering and Production of Assembled Parts (units or modules) will be carried out by "Application System Suppliers". The production of "built to print" units will be carried out by main suppliers, who will outsource the production of common parts to parts or process suppliers.

Figure 7.1 Trade structure semi-finished products

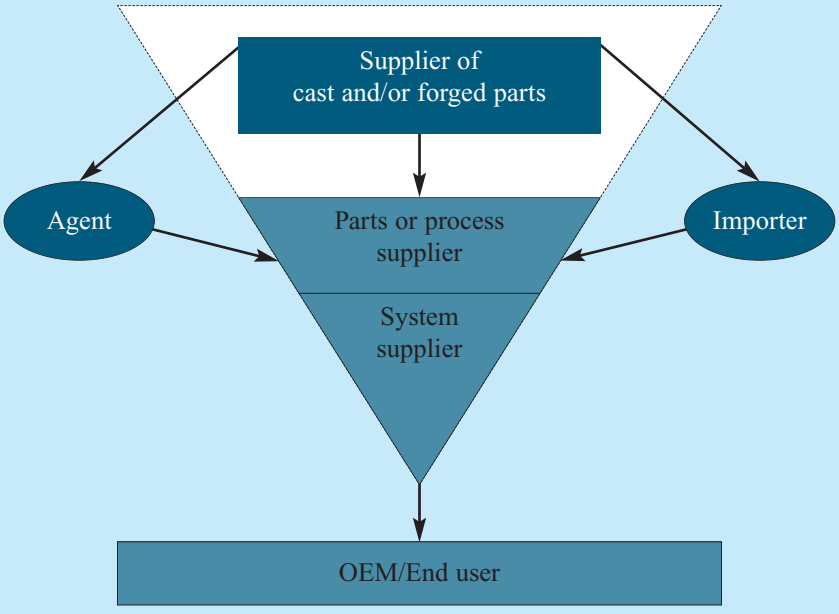
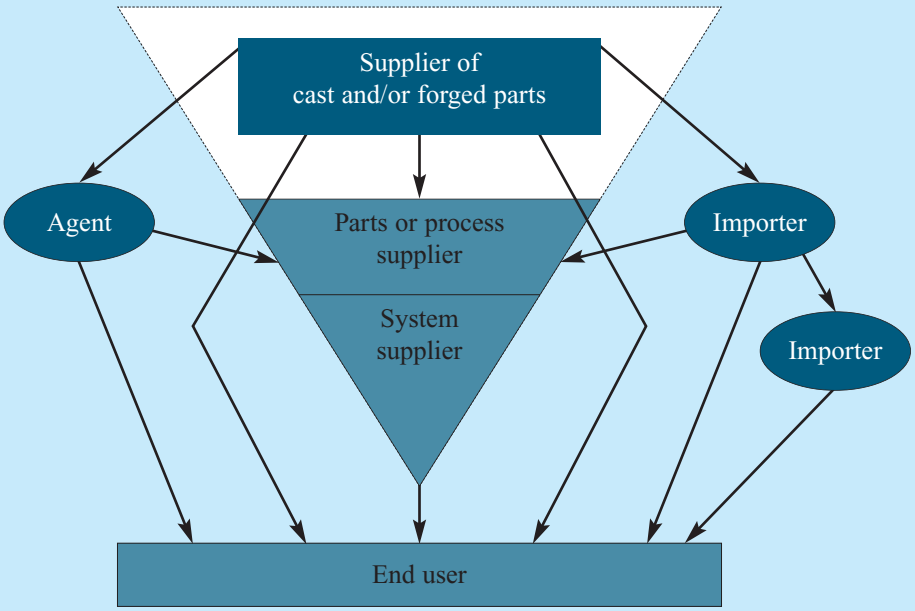


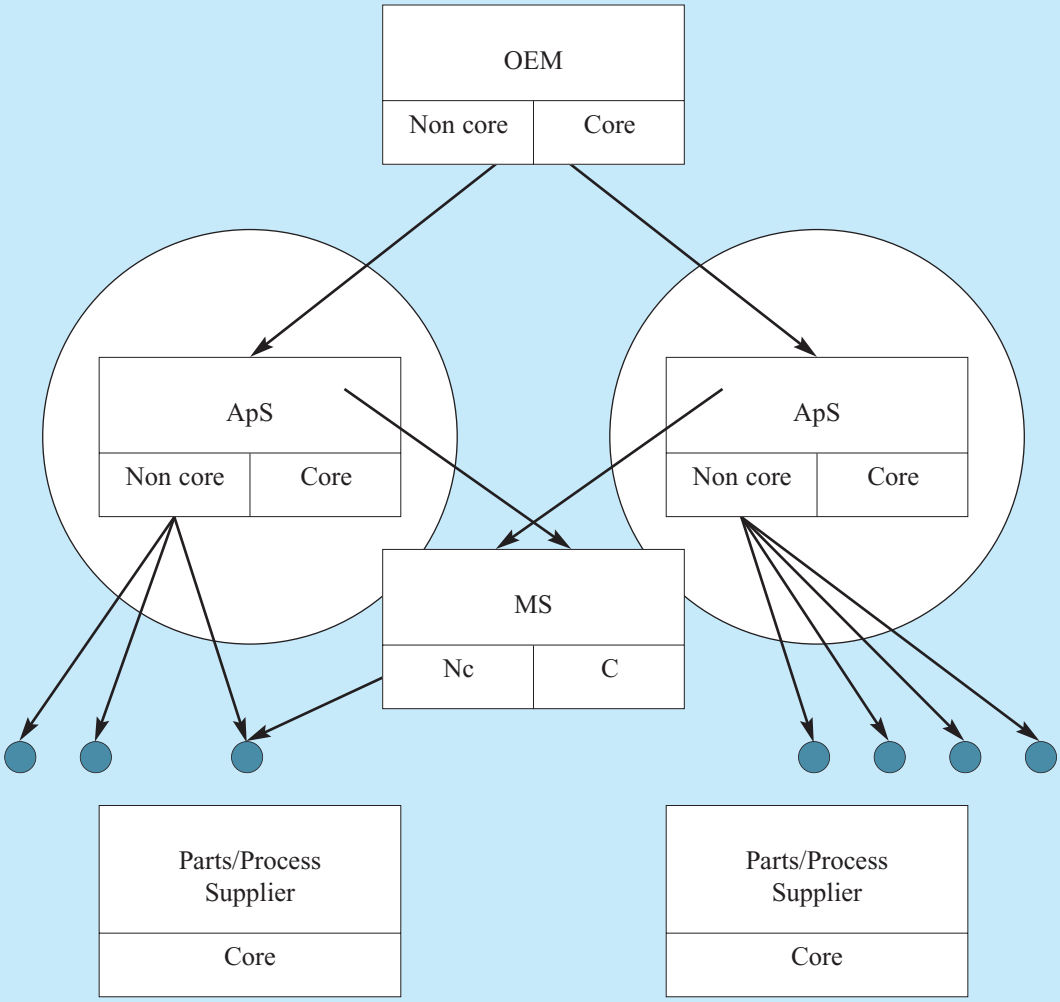
Figure 7.2 Trade structure finished products



Demand and supply chain (OEM consumers) for castings and forgings products, focus on batch deliveries.

A distinction can be made between traditional machine constructors, Original Equipment Manufacturers (OEMs), and innovative ones within supply chains in the manufacturing (parts producing) industry. The traditional companies can be found in Italy, Switzerland and Germany. The Netherlands (less tradition) has relatively more innovative OEM-ers, these being niche players (special equipment, small series). The figures below present both kinds of companies (7.3 = innovative OEMs and their supply chain; 7.4 = traditional OEMs) and the responsibilities in the chains. These companies also feature in Figures 7.1 and 7.2. Below figures 7.3 and 7.4 is information on the activities per type of company.

Figure 7.3 Position and responsibilities of OEMs and their suppliers



Responsibilities

OEM:
- markets & technology
- development end product
- final assembly & testing
- distribution, service

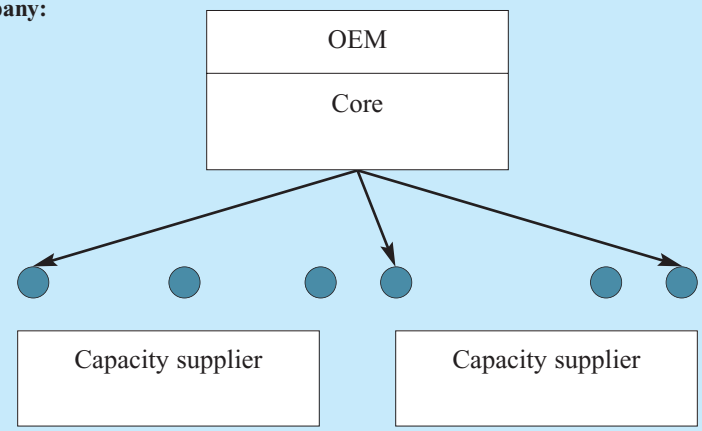
Application System Supplier (ApS):
- technology management
- modules design & engineering

ApS & Main Supplier (MS)
- core parts production
- organise logistics
- assembly & testing

Parts/process supplier:
- work preparation
- parts production or processing

Figure 7.4 Traditional position of an OEM

Traditional product company:



Traditional OEMs define almost all activities as core. They outsource only on capacity basis. It is complex for subcontractors to get involved in business with them.

Below is an outline of the most important activities per type of company:

- OEM

  system design
  functional specifications
  procurement subsystems / Supply chain management
  service and maintenance
  final assembly and testing
  configuration management
  result obligations, system responsibility

  → System level

- (Sub)System suppliers

  R&D in technological field
  process engineering
  added-value engineering
  logistics and sales
  configuration management
  service and maintenance
  subassembly and testing
  result obligations, partial responsibility

  → Subsystem level

- Task specialist (product of process supplier)

  process engineering
  work preparation
  internal logistics
  material purchasing
  work obligation

  → Component level

The general trend in the demand and supply chain is towards a growing division of tasks. “Time to market” and price/performance ratios are becoming more important in a global market. A distinction can be made between “technology-driven” and “product-driven” chains, with regard to time to market.
In technology-driven chains, the first supplier to present the market with new products with the required technology is “the winning company”. The “technology roadmap” is key (e.g. the semiconductor industry).
A product-driven chain is one that focuses less on technology and more on when to introduce a new product to the market. The “market roadmap” is key (e.g. the truck manufacturing industry): too early or too late means diminished sales and loss of position.

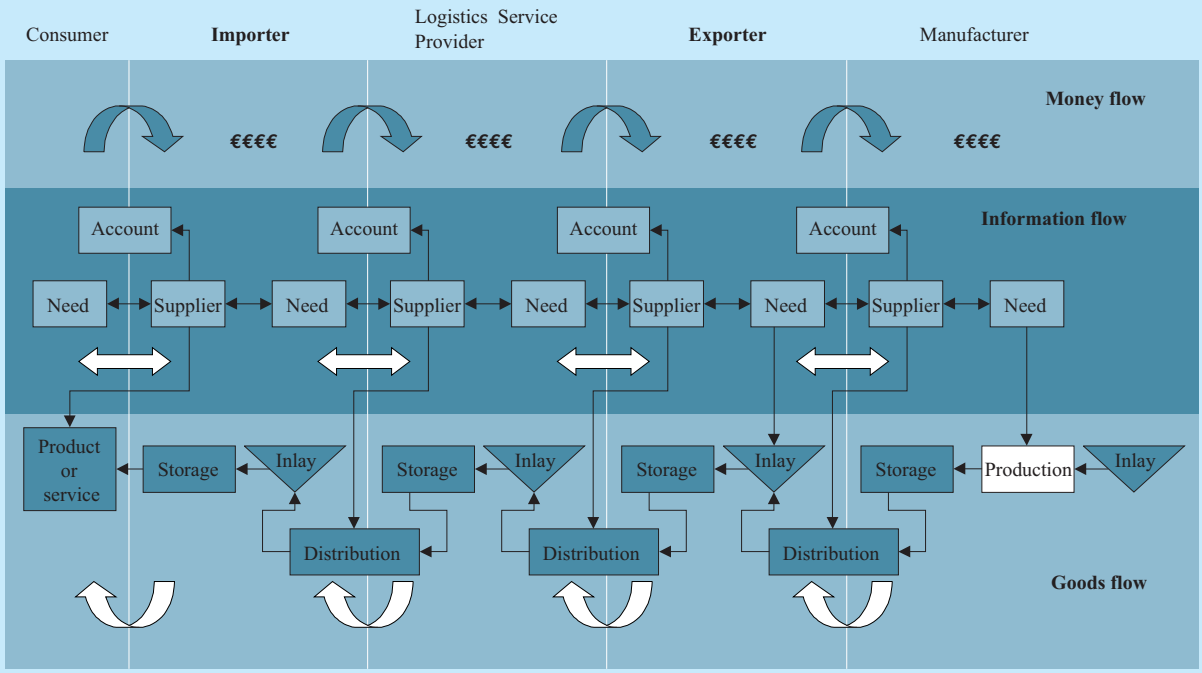
Chains are established according to the demands set by the end consumer.
The technology chain (Product-Creation-Process) is characterised by on-time realisation of (sub)orders according to technology specifications. Prototypes and 0-series are manufactured on a project basis. OEMs work closely together with companies (system suppliers) in their own neighbourhood. Production of series is outsourced to “low-wages countries”, under pressure from the OEM. System suppliers are outsourcing well-documented parts and sub-assemblies. And this opens up chances for developing countries. What has to be taken into account when taking these chances however, is that low price is not the only demand coming from the OEM and the system supplier. OEMs have increasing expectations regarding constant quality, effective communication (order processing, stock management e.g.) and delivery reliability. These factors can be regarded as order enablers. System suppliers therefore need to work closely with the producing party, both in the development and the production phase. Being able to communicate effectively and perform in these fields constitutes an ‘added value’ that may well prove to be the essential order-winner, especially in the non-commodity market.

The product chain (Order-Realisation-Process) is characterised by on-time availability of products in volume, using cost-effective techniques. Product development is a process worked out between OEM and product suppliers (e.g. Boost or Sun microsystems). Production of components and assemblies is executed preferably where it can be done cheapest. A lot of experience is available in Eastern and Southern Europe.

Although a small player, the Netherlands is leading this trend in Europe. It is slowly being followed by other countries, because of rising wages. This opens up opportunities for specialised assembly and production companies. Outsourcing is growing in Europe. At the same time, suppliers in Europe are becoming specialists (in technology, processes, markets, batch sizes, etc.)

Supply chain in ‘global trade’ (of trade products)
Figure 7.5 presents the structure of the trade process for ‘global trade’ as applicable to the past and near present. The Figure represents the flow of goods (flow of section in green), the information flow (middle section in green/red) and the money flow (upper section in orange). A triangle represents a stock point, the rectangle a point where a process is executed and the arrow the flow of goods, information or money from one point to another. The type of process is depicted in the rectangle. The chain shows the different players: consumer, producer, exporter, logistics provider, importer. The flows are ‘bulk flows’, focused on the transport of anonymous products and components between producers and consumers. The importer and exporter play a major role in the control of goods. The goods flow (from right to left in the Figure) starts with the manufacturer, where raw materials are transformed into products. A number of different handling steps follow, ending with the end consumer. The information flow (from left to right in the Figure) starts at the point at which the consumer’s need is detected and ends with the manufacturer. There it leads to a signal to produce goods. The money flow (left to right) indicates who is paying whom for what.
Under the influence of market developments in the “developed western world”, a number of starting points have been changed.

Figure 7.5 Global supply chain (past/recent)



Trends

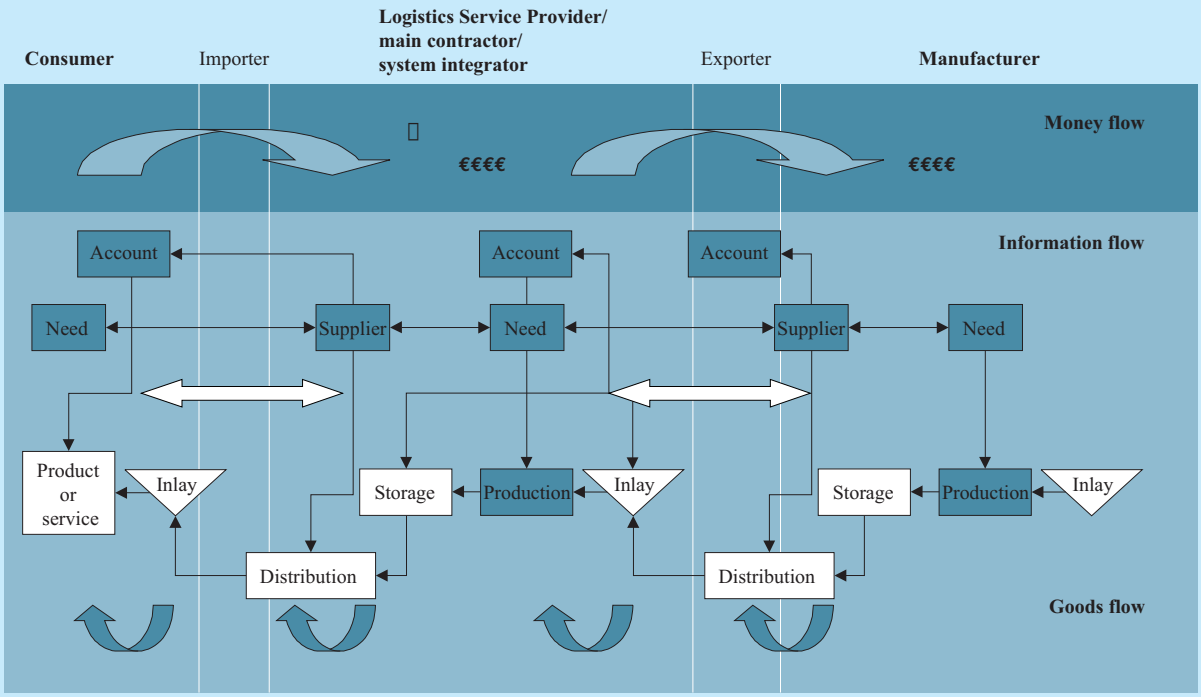
The relevant market segments have shifted in recent years from a 'push-market' to a 'pull-market', offering more tailor-made products. This entails the modularization of (product) concepts, which are individually finished to customer order. Another factor is the traceability along the chain. The total product must be tracked and traced throughout the chain. This means a lot of registration and controlled processes. Competition increases as tariff trade barriers decrease. Products are offered at lower prices. Production costs must be reduced. This leads to enlargement of scale, on which production costs are based. At the same time, lead times must be reduced. Lastly, through Internet common products are becoming available throughout the world. Suppliers for common parts are being selected by means of Internet auctions. Trade chains are gradually changing as a result. The chain is being directed more and more by consumers, logistics providers and producers. New services are necessary:

- The supplier (logistics service provider, main contractor, system integrator) possesses an increasing amount of information about the demands of the customer/consumer (supported by Customer Relationship Management systems) and tries to offer tailor- made solutions to consumers. The goal is to offer those products using standard components wherever possible.
- Value Added Logistics (VAL; transport, distribution and production, assembly) ensures rapid delivery of personalised products
- Manufacturers deliver components (sometimes via VAL-processes of logistics providers) to the main contractor or system integrator specified by the contractor/integrator.

This process is being strongly facilitated by developments in the area of information and communication technology. Figure 7.6 defines the re-engineered chain. Here the goods flow, information flow and money flow are represented in the same way as in Figure 7.5. The closer contact between fewer companies is evident, as is the diminishing influence of importers and exporters in the future. Also clear is the resulting elimination of process steps and stock points. This leads to shorter lead times for products and a better understanding of each other's needs.

Product (original equipment) manufacturers are returning to their core competencies in order to be able to develop the necessary new services. Manufacturers and service providers are developing and supplying not only the cast and forged products but also the related services, based on market information demanded and/or supplied by the OEM and the consumer. Services include spare part management, product life cycle management and product re-engineering (if necessary) based on field information.

Figure 7.6 Global supply chain (recent/future)



7.2 Distribution channels for developing country exporters

The important players in the distribution chain are the system supplier, the OEM and the importer/agent. Traditionally, the importer was the linking pin between European OEM and local manufacturer (developing country exporter). The developments in restructuring the supply chain described in 7.1 have resulted in the need for business re-engineering on the part of the importer.

Importers' activities are increasingly focused on additional services around the product itself. Nowadays they need to be well informed about their customers and the market, making maximum use of information sources and the available infrastructures.
In order to remain competitive and attractive, importers need to provide more *added value* in addition to the traditional functions. Careful attention must be paid to transitional functions, including:

- quality assurance
- sourcing knowledge
- transfer of knowledge
- stock keeping and fast delivery
- offering different methods of financing.

Co-product development (with the system supplier e.g.) is also considered to be an important added value.

More and more system suppliers, responsible for delivery of assembled products (units) and under price pressure, are looking for their own possibilities in low-wage countries. They are being forced into doing so by their customers. They enter into co-operation with developing country exporters via the importer/agent. As business grows in developing countries, system suppliers will exploit the relationships they have built up and other opportunities on their own initiative. The role of the importer will be negligible, if not non-existent.

Developing country exporters should be aware of these developments. The system supplier is already gaining importance in European countries, with many OEMs in a niche role (the Netherlands). Exporters should make attempts to contact these Dutch suppliers. A good opportunity is the ESEF (European Subcontracting and Engineering Fair) which is held every other year in the "Jaarbeurs" (conference centre) in Utrecht. It is useful both for identifying potential customers and for exhibiting.
In other European countries with more traditional product suppliers (Germany, Italy, France) the importer/agent is still playing an important role. However, the trend in the Netherlands is slowly increasing its impact on these countries. Attention should be paid to the level of development per country (publications in local journals).

More information about fairs and (local) journals can be found in paragraph 13.5.

8 OPPORTUNITIES FOR EXPORTERS

Introduction
In principle, developing countries have the potential to play an important role in the market for cast and forged products in the European Union, since (especially in the steel sector) labour is one of the main cost factors. Under price competition from East-European companies, West-European companies are being forced to look for other ways to compete. They are looking for manufacturers who can produce labour-intensive products of European quality at competitive prices and they are willing to transfer expertise as necessary. This presents a good opportunity for manufacturers in developing countries. Such manufacturers should, however, be prepared (at least initially) to act as sub-contractors, comply with the European legal technical requirements, guarantee the same level of quality and apply the same commercial and communication standards.
European companies are demanding quick and reliable delivery times and a professional, direct and reliable communication structure. West European companies are not at the moment eager to do business with companies from developing countries because of the poor quality of both delivery logistics and communication!

Most frequently heard complaints are:
- they are not responding to any communication;
- communication is very difficult;
- there is nobody who speaks good English on the phone;
- there is a discrepancy in the perception of the priorities;
- specifications and drawings are interpreted differently;
- the finish of the products falls below expectations;
- after the first shipment, the quality consistency is not maintained.

Business practice
A company operating internationally can choose between several market entry strategies. The question of which strategy is best is not always easy to answer. Criteria such as export market characteristics, company objectives, company strength, export strategy, applicable legislation, quality expectations and regulations must all be taken into account. All the more reason to draw up a thorough export marketing plan. The CBI Export Planner can be used as a guideline.

Gaining market access
In order to establish a foothold in the market as a supplier to the automotive or machine industry, exporters in developing countries are faced not only with the need to comply with technical legislation, regulations and international standards but also with the accepted trading practices. Companies in developing countries have to prove themselves twice over. Matters such as delivery time, consistency in quality and reliability as a supplier are basic conditions. In addition, exporters have to be aware that, if they trade without a European intermediary, their chances of being able to gain access to the market will be considerably weakened. One of the vital elements right from the start is to be able to communicate quickly and correctly.

Transportation and location
Particularly for cast and free-forged products, which are voluminous, the high weight/value (low value/weight) ratio makes transportation costs high related to the value of the products. Exporters from developing countries have little chance of success in approaching the European Market with voluminous products in view of the above ratio.

In order to remain profitable, many manufacturers in Europe are relocating to be near their clients. Given, for example, that Germany in particular has a number of relatively large regions of heavy industry, it follows that large numbers of companies in the engineering industry are located close proximity to such clients. We find the manufacturers of these voluminous products close to the plants where they have to assemble their equipment. Alternatively, the production of cast and/or forged products is outsourced to plants in Eastern Europe.

External trade in these products is therefore not of great interest to the European manufacturing industry, compared to many other industries. The main trading partners are neighbouring countries, and so intra-EU trade is much greater than extra-EU trade. Trade over long distances is usually confined to components and special products with a high value, such as completely finished locks and pads. Contractors may still export their services, but prefer to purchase locally.

Further information
More information on formulating your own market and product strategies can be found in the EU market survey Parts B and C.

Part B
Market access requirements

9 REQUIREMENTS FOR ACCESS

Having investigated the potential of the EU market as a possible exporter, you have to familiarise yourself with the conditions that apply to entering this market. The next paragraphs guide you through the quality and logistics requirements and the special tariffs for developing countries.

9.1 Non tariff trade barriers

CBI's AccessGuide is a useful database on non tariff trade barriers. This can be visited at www.cbi.nl/accessguide.

Quality and grading standards
The trend in the cast and forged products trade is towards more added-value processing in combination with complex products (for which there are no general standards) and towards lower prices for standard products of a certain specified quality (conformity to standard product and process specifications). It is of great importance that buyer and seller communicate closely regarding the completion of the product, including specifying the tolerance and defects accepted or not accepted and the material used for making the product. There should be total clarity, in order to avoid claims and the possible breakdown of contacts that have often been built up at great expense in terms of time and energy. At the end of this section is a classification of quality and grading standards generally required by the industry in the EU, described per product group.

More information about the actual standards, norms and legislation can be obtained from CBI's Access Guide and its Quick scan on internet (www.cbi.nl/accessguide/).

Quality management: ISO 9000
The International Organisation for Standardisation (ISO) developed the ISO 9000 series for quality management and assurance of the production process. The ISO 9000 standards represent an international consensus on the essential features of a quality system. Producers who have obtained an ISO 9000 series certificate possess an important asset. It is a major selling point when doing business in the competitive EU market. Quality, health, safety and environmental management programmes are usually strongly interwoven with the overall ISO management plan. Importers in the EU highly appreciate this production quality guarantee. ISO published the new, thoroughly reviewed version of the ISO 9000 quality standards on December 15, 2000 the so-called ISO9000:2000. Everyone/everything which is certified according to the 'old' ISO 9000:1994 series will have to adjust their quality management to meet the new demands before December 15, 2003. The revisions are based on eight quality management principles, reflecting best management practices. These are:
- Customer-focused organisation
- Leadership
- Involvement of people
- Process approach
- System approach to management
- Continual improvement
- Factual approach to decision making

The revision of the ISO quality management standards includes a significant change to the structure of ISO 9001 and ISO 9004, which have been restructured into four main sections:
- Management responsibility
- Resource management
- Product realisation
- Measurement, analysis and improvement.

Please refer to ISO's Internet site www.iso.ch for up-to-date information and to CBI's publication "Exporting to the European Union" for an overview of all ISO 9000 standards.

Technical standards (ANSI, DIN, EN and others)
It is becoming increasingly important to manufacture products according to accepted international norms or standards. For numerous products, norms are applicable which not only specify sizes and tolerances but also give strength and finishing requirements. Where a standard is available for a product but it is not manufactured accordingly, selling that product will prove very difficult and it will not be competitive with other products. Every EU member state has its own normalisation institute and hence its own norms. In many cases, standards and norms will be comparable with those in other countries. Access to the European market will be greatly facilitated by conforming to the best-known standards in the EU.

The Deutsche Industrie Norme (DIN - German Industry Norms), some of the British Standards (BS) and European Norms (EN) are the important ones to abide by. DIN norms are more favourable than most other norms and even in the United Kingdom they are increasingly preferred over the British Standard (BS) norms. At a European level the Comité Européen de Normalisation (CEN) is working on the establishment of European Norms (EN). Sometimes these are nothing more than existing European norms, but then harmonised. These European Norms became necessary due to new EU regulations in the field of safety.

Compliance with new EU regulations and/or the New Approach Directives relating to safety, health and the environment is the most straightforward if a manufacturer follows the harmonised EN norms. The European Norms do not have a legislative character, as normalisation is always voluntary. EN norms are being established by CEN, with contributions by all European normalisation institutes.

CEN is currently engaged in a massive operation to harmonise all the national standards into single European-wide EN norms. The New Approach Directives themselves do not deal with technical details. They indicate, in general terms, the Essential Requirements with which products have to comply. New Approach directives are based on the following principles:

- Harmonisation is limited to essential requirements.
- Only products fulfilling the essential requirements may be placed on the market and put into service.
- Harmonised standards, the reference numbers of which have been published in the Official Journal and which have been transposed into national standards, are presumed to conform to the corresponding essential requirements.
- Application of harmonised standards or other technical specifications remains voluntary, and manufacturers are free to choose any technical solution that provides compliance with the essential requirements.
- Manufacturers may choose between different conformity assessment procedures provided for in the applicable directive.

The parties responsible for attesting to the compliance of products with the Essential Requirements can include the producer, the importer, the distributor or independent institutions, such as third-party inspection or testing and certification bodies. Such institutions must be officially notified to the EC and work under the supervision of an accreditation body. Finally, the EU seal of conformity (CE marking) demonstrating compliance with these essential requirements must be placed on each product, or its packaging, before the product can enter the market or be taken into operation. The CE marking is a declaration by the manufacturer (or importer) to confirm that the product fulfils the essential demands and has passed through a prescribed module for compliance. Further, Member States are obliged to take appropriate measures to protect the CE marking.

The CE marking functions as a passport for trans-border traffic into and within the EU and EFTA countries. It constitutes an essential admission ticket to Europe. Products that are covered by a New Approach Directive will not be permitted to be brought in, traded, used or even installed unless they bear the CE marking.

Europe's new legislation stretches to its outside borders, so those importing products from outside Europe are regarded as manufacturers and are, as such, responsible for affixing the CE marking.

More information on the New Approach Directives is to be found at:

- www.newapproach.org

Below is a summary of the most commonly used standards and institutions. The addresses of these institutes can be found in appendix 3.1.

ISO, International Standardisation Organisation
ISO (the International Organisation for Standardisation) is a world-wide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organisations also take part in the standardisation work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardisation.

ASTM, American Society for Testing and Materials
ASTM provides a forum for producers, users, ultimate consumers, and those with a general interest to meet on common ground and write standards for materials, products, systems, and services. The American Society of Mechanical Engineers (ASME) and the American National Standards Institute (ANSI) are also prominent standardisation organisations in the United States.

DIN, Deutsches Institut für Normung
DIN, the German Institute for Standardisation, is a registered association with its head office in Berlin. DIN is not a government agency. The work of standardisation as undertaken by DIN is a service in the field of science and technology.

Frequently used standards
Over 5,000 standards exist for the products covered in the castings and forgings survey. Problems may arise when trying to place the casting and forging products into standards in situations where the norms and standards are defined by the customer. It is quite possible that these demands deviate from the known standards. Additionally, various combinations of relevant standards are possible in castings, forgings and subcontracting.

For the sectors energy (wind, gas, coal, hydro), shipbuilding, energy transportation, automotive general engineering and construction, different additional standards (submitted by the end user) will also apply.

An ability to communicate with the customer about required standards and comply with them is very important.

Below are a few of the most important standards. Most DIN norms are to be translated into EN norms, after publication of which the DIN norms will be withdrawn.

Pressure die-castings:
DIN 1687 part 4; DIN 1688 part 4; DIN 1725 parts 2 and 5; EN 10204 3.1B (DIN 50049-3.1B); SA 2.5 (DIN 55928 part 4; EN-ISO 12944 part 4).

Cast iron with lamelar graphite:
DIN 1686; DIN 50109; EN 1561 (DIN 1691).

Cast steel:
DIN 1681; DIN 1683 part 1; DIN 17182; DIN 17205; DIN 17465E; DIN 50049; EN 1370; EN 1559-2 (DIN 1690 part 2); EN 10213 part 1 to 4 (DIN 17245; DIN 17445); EN 12454; SEW 110; SEW 395; SEW 410; SEW 471; SEW 510; SEW 515; SEW 520; SEW 595; SEW 685; SEW 835.
Ductile iron, Nodular cast iron:
DIN 1685; EN 1563 (DIN 1693 part 2).

Malleable iron:
DIN 1684; DIN 1694; DIN50149.

Cast iron alloys:
DIN 1695; EN 1562 (DIN 1692).

Light metal castings:
DIN 1688 part 1, 3 and 4; DIN 1725 parts 1 and 5; DIN 1725 sheet 3; DIN 1729 sheet 2; DIN 29531.

Copper casting materials:
DIN 1687 part 1, 3 and 4; DIN 1703; DIN 1705; DIN 1709; DIN 1714; DIN 1716; DIN 1741; DIN 1742; DIN 1743 parts 1 and 2; DIN 17 655; DIN 17 656; DIN 17 657; DIN 17 568; DIN 17 730; DIN 17 810; ISO 1338.

Forgings:
DIN 7521; DIN E 7523 T2; DIN 1749 T3; DIN 9005 T2; DIN 17 673 T3; DIN 17 678.

Tolerances die forgings and stamped parts of steel:
DIN 7526.

Die forgings of non-ferrous metals; tolerances standards:
DIN 1749 T4; DIN 9005 T3; DIN 17 673 T4.

Free form forgings:
DIN 7527 T 1 to 6; DIN 17 606 T4; DIN 17 678.

Trade-related environmental, social, health and safety measures

Environmental aspects of products have become a major issue in Europe in recent years. Depending on the product group in question, environmental aspects may play a vital role in preparing for exports to the European market. As well as governmental actions (legislation and regulation), a strong consumer movement is evident, especially in the northern parts of the EU (Scandinavia, Germany, The Netherlands and the United Kingdom). “The environment” is more than a trend. It is a lasting issue affecting all products and nowadays even services. Manufacturers must, therefore, assess their products and production processes not just by looking at traditional aspects like price, quality, customer demands and standards, but also in terms of the environmental aspects. It is the aim of this section to briefly highlight several aspects that currently play a major role in the EU.

Financial instruments in the EU

Alongside legislation, one of the instruments used within the EU to promote environmentally sound products is the awarding of (tariff) preferences or the levying of so-called ‘environmental taxes’ on products. An example of preferential systems is the General System of Preferences (GSP) encouragement regime. Under the GSP, developing countries are exempted from the main WTO principles of reciprocity and non-discrimination (see Section 1.2). In May 1998 the first GSP, which covered the period 1999-2001, included an encouragement regime to stimulate developing countries to establish and implement trade-related social and environmental policies (Regulation EC 1154/98). In 2001, a new GSP was established, coverings the period 2002-2004. Import tariffs for countries producing in an environment-friendly and humane way may be reduced by 15-35 percent for a selection of products. For countries already in receipt of maximum preference, the encouragement regime may not be a direct incentive. For more details on GSP, please refer to CBI’s Guide ‘Exporting to the European Union’.

The EU is trying to promote cleaner production through the awarding of financial incentives. At the same time, in the EU and in some member states in particular, various financial instruments are being used to discourage the entrance of polluting products onto the market. This happens through the establishment of specific taxes. A very specific tax is the so-called ‘ecotax’ placed on energy consumption. These taxes can apply to both private households and to companies.

An overview of EU Environmental Legislation can be found at:
- europa.eu.int/scadplus/leg/en/s15000.htm

Sustainable development for businesses
The concept of sustainable development, adopted by nearly all those countries that participated in the 1992 Rio de Janeiro Conference, represents the philosophy that economic development should automatically take into account the issue of the environment, recognising the fact that polluting activities now will have great (negative) impacts on the way future generations can live. In this respect all parties, including the general public but also manufacturers, are asked to accept their social responsibility and minimise the environmental impact of their activities. In recent years, issues such as (environmental) Life Cycle Assessment (LCA) of products, Cleaner Production (CP) and Ecodesign have all become important tools available to companies to improve on the environmental performance of their products and production processes. These tools enable companies to analyse where the environmental impacts are the largest and how they could improve. This can lead to both internal (improved efficiency) and external (perceived image) advantages.

Application of the above tools can result in company-internal improvements in environmental performance. However, in order to be able to quantify the environmentally sound approach of a company towards its products and production processes, 'green' marketing tools such as ecolabels (for products) and environmental management standards (for the whole organisation) have been created both by governments and private parties.

Environmental standards
The ecolabelling procedures are purely aimed at the products and indicate that a product carrying such a label has a reduced impact on the environment. If a manufacturer wants to indicate to external parties that he is manufacturing in an environmentally sound way, he can comply voluntarily with the following standards:
- ISO 14001;
- EMAS.

Both standards are based on the ISO 9000 series of standards for quality management. The relevance of the ISO 14001 standard for the future is clear from the development and use of the ISO 9001 and ISO 9002 quality standard. Although voluntary, customer pressure is resulting in the ISO 9001 and IS0 9002 quality standard becoming increasingly necessary for those wishing to do business around the world. Similarly, the ISO 14001 environmental management standard may become a de facto requirement for being able to compete in many regions of the global marketplace.
It is a management decision to avoid pollution and waste and become more efficient and competitive while respecting the environment. The standard sets out details regarding what to do, but not how to do it. Management therefore needs to formulate an environmental policy. The resulting plan, responsibilities and procedures need to be documented. This strategy and plan then need to be implemented by the organisation. Training of staff on environmental management issues must also be in place.
Control, corrective and preventive action mechanisms need to be integrated into the organisation to guarantee environmentally friendly processes and resulting products. Periodic management review is required in order to manage the strategy and it's derived plans effectively.

Another environmental management standard also operational in the EU is the Environmental Management and Audit Scheme (EMAS). This scheme was set up by the Comité Européen de Normalisation (CEN) in 1993. As it only applies to companies with production facilities within the EU, it is not usually relevant for manufacturers in developing countries. The EMAS scheme has regularly been criticised as being too difficult, bureaucratic and expensive and it is therefore expected that - also in Europe - companies will favour ISO 14001. On a global scale, more than 8,000 companies are ISO 14001 certified. In comparison, some 2,000 companies are EMAS certified.

More information on non-tariff-barriers can be found at CBI's AccessGuide:
- www.cbi.nl/accessguide

Health and safety measures
There is an international standard for social accountability (SA 8000). The objective is to ensure the ethical production and sourcing of goods and services. It is a voluntary standard and can be applied to any size of organisation or business across all industries. SA 8000 sets basic standards for child labour, forced labour, health and safety, freedom of association and the right to collective bargaining, discrimination, disciplinary practices, working hours and compensation.

Safety and reliability in manufacturing require both technical, organisational and human solutions. Only coherent solutions will lead to process control in the broadest sense. Organisations must analyse human causes for failures and possible ways of bringing them under control. Corrective and preventive measures (technical solutions, human behaviour, organisational aspects) should be prepared and implemented. This will lead to cost-effective results. In the chemical industry these steps have already been taken, with good results. Other less sophisticated industries will and must follow the next years.

More information can be found at:
- www.cbi.nl/accessguide

The access guide offers a simple way of finding relevant information regarding environmental-friendly production process techniques and practical safety measures. You can find dedicated information by searching via keyword.

Certification by an authorised third party
Certification for ISO of the processes used and the company's organisation can be a prerequisite for entry into the European market.
Inspection and certification (based on CEN, ASME or other standards) are usually necessary for the delivered product(s) and often also for the used materials. Certification is carried out by a third party . Consumers only buy products from suppliers whose products are certified by their prescribed certification company or by a comparable other one certifying according to the prescribed standard. A company is well advised to include inspection and certification activities in their process procedures. It should form part of the process plan of an order. The inspection and certification should be managed in a professional manner. Inspection results must be documented and be included in the order documents (as must the obtained material and products certificates).

Useful links are:
- www.iqnet-certification.com (process and organisation)
- www.asme.org
- www.stoomwezen.nl

Packaging, marking and labelling
Apart from the conservation, corrosion and safety aspects and protection against damage, the focus of packaging is on environmentally friendly transport, as well as sales promotion packaging. This means, for example, that consideration should be given to whether returnable systems can be used on a much greater scale than to date.

In general, the packaging requirements for semi-finished products are laid down by the customer. Packaging must be marked not only to be identifiable during transport, but also to indicate the quantity, the weight, the products themselves and the brand. It is best to identify the customer's expectations and what he is used to, and then to conform to those requirements. Traders in Europe and local forwarders must be able to advise on suitable packaging. Care should be taken that the product is conserved in a suitable way. The package should not trap too much moisture (this may cause problems during climate changes). Packaging methods have been developed for cast and forged products. It is in everybody's interest to find the right supplier of the right packaging material (e.g. skids, Europallet, Eurocartons, Nedcontainers and seaworthy wooden crates).

Packaging waste
The European Commission presented the Export Packaging Policy Document in October 1992, in line with the efforts on the part of the European Union to harmonise national measures regarding the management of packaging and packaging waste. The packaging document was followed by a Directive in December 1994 (94/62/EC). The directive emphasises the recycling of packaging material.

Exporters in developing countries targeting the European market must be aware of these agreements and take appropriate measures in order to become or remain interesting trade partners for European businesses. The environmental requirements will be passed on to the exporter. This means that packaging (transport packaging, surrounding packaging and sales packaging) materials should be limited and be re-usable or recyclable. Otherwise, the importer will be confronted with additional costs, thus reducing the competitiveness of the exporter.

Since changes in the environmental policy tend to be frequent, exporters are advised to ask the importer about the latest regulations and/or requirements related to packaging. For more information about environmental regulations concerning packaging methods, please also refer to ITC.

9.2 Tariffs and quota

In general, all goods, including Castings and Forgings, entering the EU are subject to import duties. External trade conditions in the European Union are mostly determined by EU regulations. In the case of Castings and Forgings, the level of the tariffs depends on:
- the country of origin;
- the product.

In order to support exports from developing countries, the EU operates the Generalised System of Preferences. Under the current GSP scheme of the EU (Regulation 2820/98/EC), imports from a number of developing countries are admitted at a reduced tariff and imports from a group of least-developed countries at a zero tariff.

In 2001, the EU Commission established a new scheme of preferential rights for the period from 1 January 2002 to 31 December 2004, which also applies to castings and forgings. Under the new GSP, which covers the period 2002-2004, the preferential regime includes:
- preferential market access to Europe for industrial and agricultural goods from developing countries, depending on the sensitivity of goods. The 'sensitivity' of goods refers to the degree to which imported products cause, or threaten to cause,

serious difficulties to EU producers of similar or directly competing products;
- special treatment for Least Developed Countries(LDCs), and a group of Latin and Central American countries;
- an encouragement regime to stimulate developing countries to establish and implement trade-related social and environment policies.

SPGA are the least developed countries benefiting from the generalised system of preferences (Annex IV to Regulation (EC) No 2820/98). SPGE are South and Central American countries establishing programs to combat drug production (Annex V to Regulation (EC) No 2820/98) and SPGI are the countries benefiting from the generalised system of preferences (GSP), minus the countries of the SPGC group (3) (Annexes IV and V to Regulation (EC) No 2820/98). Please refer to Appendix 4 of CBI's EU Market Survey 'Castings and Forgings' or visit the website of Verlag Österreich (www.verlagoesterreich.at/onlineservices/taric_ldgr.html) for a list of countries falling under the groups mentioned above (SPGA,SPGE and SPGI). More recent information on TARIC tariffs can be found ON the European Union's website under Taxation and Customs (europa.eu.int/comm/taxation_customs/dds/en/tarhome.htm).

Using the market information given in Part A and the requirements for market access outlined in Part B, you can make an initial assessment of export possibilities to the EU. If this assessment is positive, Part C provides useful information on whether and how to select the target market and define the appropriate marketing approach. This will help to ensure that you make the right decision about exporting to the EU.

HS group	General Tariff	SPGA[1]	SPGE	SPGI	Mexico	South Africa
table, kitchen or other household articles						
732391	3.2	0	0[2]	0	0	2.4
732393	3.2	0	0[2]	0	0	2.4
cast articles of iron or steel						
732510	1.7	0	0[2]	0	0	1.2
732599	2.7	0	0[2]	0	0	2.0
forged articles of iron or steel						
732619	2.7	0	0[2]	0	0	0
cast or forged articles of copper						
741991	3	0	0[2]	0	0	0
cast articles of aluminium						
76169910	6	0	0[3]	2.5	0	0
locks and padlocks						
830110	2.7	0	0[2]	0	0	0
830120	2.7	0	0[2]	0	0	0
830140	2.7	0	0[2]	0	0	0
(parts of) gas turbines						
841182	0 / 4.1	0	0	0	0	0
841199	0 / 4.1	0	0	0	0	0
cylinders for calendering or other rolling machines						
842091	1.7 / 2.2	0	0	0	0	0
parts of machinery						
843120	4	0	0	0	0	0
843131	0	-	-	-	-	-
843139	0	-	-	-	-	-
843143	0	-	-	-	-	-
843149	0	-	-	-	-	-
843290	0	-	-	-	-	-
843999	1.7	0	0	0	0	0
parts of transmission						
848310	0 / 4	0	0	0	0	0
848320	6	0	0	0	0	0
848330	0 / 3.4 / 5.7	0	0	0	0	0
848340	0 / 3.7	0	0	0	0	0
848350	0 / 2.7	0	0	0	0	0
848360	0 / 2.7	0	0	0	0	0
848390	0 / 2.7 / 5.7	0	0	0	0	0

[1] SPGA (excluding Myanmar)
[2] SPGE (excluding China, Kazakhstan and Russia)
[3] SPGE (excluding China, Kazakhstan, Moldova and Russia)
Source: Dutch Customs Office, www.douane.nl/taric-nl/ (October, 2002)

Part C
Export marketing: analysis and strategy

PART C

The information in Parts A and B gave the basic information needed to analyse whether the market for Castings and Forgings is interesting for you as possible exporter. If this is the case, the next step is to ascertain how to successfully approach the market. A lot of questions have to be answered, including which target market to choose, which sales channels to use, how to satisfy market requirements and what investment is required.

These are common concerns for potential new exporters to the EU-market. The aim of Part C is to support you in this decision making process by helping you to answer the following questions:

- Which markets are most suitable for my actual product portfolio?
- Am I capable of meeting the norms and standards required? Can I follow the technical developments (or are they limited)?
- Can I exploit a profitable business? Are significant investments needed and what are the uncertainties? How can I manage the risks?
- What position should I aim at most logically (and, possibly, in which direction should I aim to grow in the next few years)?
- Who will be my most important competitors; what is their strategy, and what should my strategy be (e.g. cost and volume or niche player)?
- Is my internal organisation adequate? Where should I improve because actual performance is below market requirements?

Chapter 10 explains how to carry out an analysis of the external environment in order to identify opportunities and threats, while chapter 11 explains how to analyse the internal environment, bringing to light the strengths and weaknesses of the exporter's company, using the so-called SWOT analysis. The essence of the SWOT analysis is to identify a market segment where there is an opportunity that matches the strengths of the company and where the threats will have a minimum impact on the weaknesses of the company. In fact, by matching external opportunities and internal capabilities, the exporter should be able to identify suitable target countries, market segments and target product(s) within these countries, as well as possible trade channels via which to export the selected products (chapter 12). Chapter 13 then describes which marketing tools can be used to built up successful business relationships.

For general export marketing information, please see the CBI's Export Planner. For general information on conducting market research, we refer the exporter to the CBI's new manual on market research.

10 EXTERNAL ANALYSIS

External analysis should be used to determine which markets (for example: fasteners in forging and valves in casting) and within those markets which European countries are of interest for you, given your import volumes, margins and manageable developments (e.g. technical). Once markets and countries have been selected, it is time to consider your possible competitors and the existing sales channels. This should lead you to a conclusion regarding whether you can obtain a position and, if so, how.
The way in which potential exporters can carry out external analysis is presented in the paragraphs below. Specific references to web-sites and other information points are included.

10.1 Market developments and opportunities

Introduction
The European market in general and, therefore, the market for castings and forgings is constantly developing. Relevant demand and production trends are outlined in Chapters 3 and 4. These, together with the opportunities in terms of imports and sales channels outlined in Chapter 5 and 7 and the conditions described in Chapters 8 and 9 provide the potential exporter with the most important basic data needed to determine whether the market offers interesting business opportunities.

Appendix 2 provides more detailed import / export statistics, and Appendix 3 lists useful addresses to be used for the analysis. The addresses and web-sites of the trade associations in Appendix 3.4 and OEM in Appendix 3.7 are of particular importance.

Based on its core competence(s) and ambitions, the (potential) exporter should select, in first instance, a broad area of interest (products (or product groups), countries, channels, companies) for analysis. Emphasis should be placed on the trends. The possibilities for product-market combinations (PMC) will then become more clear for all relevant aspects. Most possibilities can then be eliminated, and a few will become the focus.
These PMCs are then put through the next step of the internal analysis (Chapter 11) to determine the company's ability to meet the requirements of the targeted business area.

Main markets and main developments
The market demand for castings and forgings is strongly related to the market for automotive, mechanical engineering and construction products. The German Ruhr and Bavaria areas, the Italian Po area, the Manchester and Sheffield areas in the UK and the southern part of the Netherlands are dominant areas for industrial products such as castings and forgings. Within castings, we see a growing trend towards investment casting and the application of new material like aluminium, titanium and magnesium. In both castings and forgings increasing energy costs require special consideration.
More general and specific trends are highlighted in Chapters 3 and 4 of this survey.

There is a general trend in the market towards globalisation on the one hand and horizontal diversification on the other hand (tier 1 (OEM), tier 2 (system supplier), tier 3 (product supplier)). This means that in most cases your customer will be the product supplier, who will be demanding good quality, additional work and service and large quantities with a high price pressure. It is of great importance to understand the customer's business and requirements and to maintain a pro-active attitude in order to generate specific products and services.

Castings and forgings are manufactured all over the world in conformity with specifications laid down by the customers, but also, and more importantly, in conformity with DIN and EN or other standards mentioned in paragraph 9.1. For the regular (standard) products the traditional producers in Western Europe are no longer able to compete with companies in the emerging markets, due to price disadvantages. These traditional producers are now focussing instead on products and services with a high added value. The more or less standard products are being imported from the emerging markets. Because of the relatively low wages, importers are asking for more added value activities like turning, finishing or packaging of the products. An ability to meet these requirements will enhance your chances of doing business and increasing revenue.

Low cost prices are important, but are no guarantee for business. Importers are basing their selection of exporters increasingly on:
- Product quality (confirmation to spec and standards);
- Flexibility (quantity, labelling, packaging units);
- Reliability (quality, delivery time, cost);
- Pro-active attitude to provision of additional services;
- Quality of the organisation;
- Total cost (product, transport, damage, required control, etc.).

In order to meet the requirements, many new exporters are starting with products with low complexity and quality requirements and high labour component and volume. Having once established a good relationship,

the product range and requirements can be gradually extended.

Questionnaire, export opportunities
The following questions should be answered to get an idea of whether and, if so, which market (segments) offer realistic opportunities:

1. What (typical) markets can be identified for your product(s)?
   - How can each market be segmented in a more detailed way?
   - How is every segment organised (chain structure)?
   - What type of companies in the chain are typical potential customers?
2. What are the main developments (standards, barriers, volumes, technical demands, trade structure; opportunities and threats) per identified market (segment)?
3. What standard and specific requirements (product, process, organisation, quality) are demanded, and can I meet these requirements?
4. What is the expected sales volume (now; 2007) per market segment?
5. What is the import volume (also from developing countries)?
   - What is the trend (negative; positive; mean; strong changes expected)?
   - How positive is the attitude of importers towards exporters from developing countries (for product supplies and/or for joint ventures)?
6. What interest is being shown in your product by EU importers ?
   - What contacts already exist?
   - What contacts could be made?

As can be seen from Part A, Germany, France, Italy and the UK are the biggest importers for casting and forging products in general and parts of machinery and parts of transmission in particular, plus parts for gas turbines in the UK.
Good starting points for an extended competitive analysis are the trade associations for Europe and in the different countries, e.g.:

- Euroforge (www.euroforge.org)
- CAEF (www.caef-eurofoundry.org)
- Eurofer (www.eurofer.org)
- Orgalime (www.orgalime.org)
- World Foundrymen Organization (www.icme.org.uk)
- VDMA (www.vdma.org)

Chapter 9 and CBI's Access guide provide information about specific trade barriers for all products and markets. The Access guide will also help you to find details of European importers, who can be a major source of information about markets and access requirements. In most European countries, producers, importers and sometimes dealers/agents are organised in branch organisations. These organisations can be of use to new exporters to the EU, for the gathering of information about the market and for identifying potential trade partners. Addresses, telephone and fax numbers of Import Promotion Organisations and other organisations that may be of assistance to those wishing to enter the European Union market can be found in Appendix 3.3.

10.2 Competitive analysis

The structure of the castings and forgings industry is changing. Some of the traditional industries are buying production facilities in the emerging markets to strengthen their grip on the market and to be able to produce and deliver their quality products all over the world at low production and transportation costs. On the other hand, some of the newly industrialised countries (and companies within these countries) are investing heavily in building up market share in important markets. It is important that companies wanting to broaden their markets investigate the strength and the total offer (product and services) of the competition.

The following questions should be answered:

1. Who is the competition on the markets that you want to enter?
2. How strong are these companies (and supporting country policy)?
3. What is the focus of these companies, and do you know their strategies?
4. What is their market share and their specialisation?
5. What are the core capabilities of the competition?
6. What are the weak spots of the competition (products, production, logistics, marketing)?
7. What is their spare capacity, and if they have relevant free capacity, what are they doing with it (e.g. price dumping)?
8. What is their cost price (operational cost)?
9. In what way is your offer (product range and services, but also logistics and marketing) able to compete with the market leaders?

Exporters to EU countries should study information on competitors from sources including:

- Chapters **3, 4, 5, 7 and 8** of this survey;
- Internet, e.g. sector organisations www.euroforge.org, www.caef-eurofoundry.org, www.orgalime.org, and the web-sites of the key competitors you have found;
- Trade shows and press (trends, who is present, market developments), trade promotion associations and organisations.

10.3 Sales channel assessment

Introduction
Having evaluated the prospective countries and markets, the particular sales channels within those markets must be assessed. Following the assessment of the performance of your own company (next chapter), a comparison of the requirements of the sales channels with your company's performance will enable you to identify the most suitable sales channel(s). Each sales channel is appraised on the basis of three criteria:

1. Product standards
2. Logistics
3. Marketing

The potential exporter should ascertain the existing global trade structure per type of product. The different types of companies should be identified, including the names of most important companies. The exporter should derive from the information gathered which companies could be targeted and in which way they should be approached.

Each defined product-specific sales channel should be assessed, using the following questions:
1. What is the structure of the sales channel (and of other available channels); what products are dealt with (also in other related channels); what standards are required; why should and could I be part of this sales channel?
2. What lot sizes, delivery requirements and logistic performance is demanded; can I meet these requirements?
3. Which companies should be approached, and how; am I able to create appointments and do I have access to good presentation material?

The developing country exporter should explore the possibility of developing an exporting growth strategy, because of:
- The strong position in certain product groups (fasteners, car parts) of major importers, viewed as product suppliers;
- The existence of high quality levels (product and process);
- The requirement to add value to the product (minor assembly, packaging).

Exporters should start by offering standard components to importers or European suppliers supplying to system integrators or main contractors. Export could start with small importers (agents) offering a mixed portfolio of products.

The final evaluation of the sales channels should not take place until you have evaluated your own company performance.

Trends and developments
The important players in the distribution chain are the system supplier, the OEM and the importer/agent. Traditionally, the importer has always been the linking pin between European OEM and local manufacturer (developing country exporter). The developments in restructuring the supply chain (as described in 7.1) have resulted in the need for business re-engineering on the part of the importer.

The importer's activities are increasingly focused on additional services around the product itself. Nowadays importers need to be well informed about their customers and the market, making maximum use of information sources and the available infrastructures. In order to remain competitive and attractive, importers need to provide more *added value,* in addition to their traditional functions. Much emphasis is placed on transitional functions, which include:
- quality assurance
- sourcing knowledge
- transfer of knowledge
- stock keeping and fast delivery
- offering different methods of financing.

Co-product development (e.g. with the system supplier) is also considered to be an important added value.

More and more system suppliers, responsible for the delivery of assembled products (units) and under price pressure, are seeking out possibilities in low-wage countries on their own initiative. They are being forced into doing so by their customers. Many are starting co-operation with developing country exporters via the importer/agent. They are also starting to do their own research in developing countries. As business grows in developing countries, they will be increasingly inclined to exploit the relationships they have established and other opportunities as they see fit.
Developing country exporters should be aware of these developments. The system supplier is already gaining importance in European countries with many OEMs in a niche role (especially in the Netherlands). Exporters should make attempts to contact these Dutch suppliers. A good opportunity is the ESEF (European Subcontracting and Engineering Fair), held every other year in the "Jaarbeurs" (conference centre) in Utrecht (www.esef.nl) . It is useful both for identifying potential customers and for exhibiting.
Other sources that will help you to keep track of these developments are business journals and web-sites. For addresses, see Appendix 3.

In other European countries with more traditional product suppliers (Germany, Italy, France) the importer/agent is still playing an important role. However, the trend in the Netherlands is gradually impacting these countries to. Attention should be paid

to the level of development per country (publications in local journals).

E-commerce development
Within several sub-sectors of the casting and forging industry, mediation by third parties plays a crucial role in the distribution of products.
However, ICT and E-commerce have made it possible for suppliers to deal directly with buyers, encouraging a trend towards dis-mediation. The position of intermediaries will be determined by the type of value added services and the degree of price transparency they provide. E-marketplaces can be expected to gather momentum.
See also:
http://www.ebusiness-watch.org/marketwatch/index.htm
www.forgefinder.com
http://www.ebusiness-watch.org/marketwatch/resources/No09-II_Metal.pdf

10.4 Prices & margins

It is not easy to obtain prices for castings and forgings. The differences in production processes, the large number of possible materials, the different volumes (weight, size, shape) and batch sizes and the large number of resulting end products makes it hard to arrive at a complete, overall and exact overview of market prices. Furthermore, market prices differ from statistical prices because products are imported as e.g. car parts or locks, and not as castings or forgings. The price differences can therefore be huge. Some general trends are outlined below.

Margins are under pressure, because of the global economic downturn, politic instability (September 11th 2001), severe pressure on selling prices and increased raw material and labour costs.
In addition, the cost of energy is increasing. This affects the casting industry in particular, because of its high energy consumption.

It should also be noted that in the sales channel different mark-ups are applied to the producer's price (FOB) to arrive at the price for the customer:
- Freight and insurance;
- Import duty;
- Importer's/Agent's commission.

In total these can amount to a 40-60 percent increase on the exporter's price.

Sources of price information:

www.lme.co.uk	London metal exchange: metal prices
www.japanmetalbulletin.com	metal prices

Terms of payment
An experienced exporting firm extends credit cautiously. It evaluates new customers with care and continuously monitors older accounts. Such a firm may wisely decide to decline a customer's request for open account credit if the risk is too great and propose instead payment on delivery terms through a documentary sight draft or irrevocable confirmed letter of credit or even payment in advance. On the other hand, for a fully creditworthy customer, the experienced exporter may decide to allow a month or two to pay, perhaps even on open account.
It is always advisable to check a buyer's credit (even if safest payment methods are employed).
Listed in order from most secure for the exporter to the least secure, the basic methods of payment are:

1. Cash in advance;
   Receiving payment by cash in advance of the shipment. In this situation, the exporter is relieved of collection problems and has immediate use of the money. A wire transfer is commonly used and has the advantage of being almost immediate. Payment by cheque may result in a collection delay of up to six weeks. Therefore, this method may defeat the original intention of receiving payment before shipment. Buyers are often concerned that the goods may not be sent if payment is made in advance. Exporters that insist on this method of payment as their sole method of doing business may find themselves losing out to competitors who offer more flexible payment terms
2. Documentary letter of credit;
   Documentary letters of credit are often used to protect the interests of both buyer and seller. This method requires that payment be made based on the presentation of documents conveying the title and stating that specific steps have been taken. Letters of credit can be paid immediately or at a later date. Since payment is made on the basis of documents, all terms of payment should be clearly specified in order to avoid confusion and delay. A letter of credit issued by a foreign bank may be confirmed by a national bank. This confirmation means that the national bank (the confirming bank) adds its promise to pay to that of the foreign bank (the issuing bank). A letter of credit may either be irrevocable (i.e. unable to be changed unless both parties agree) or revocable (either party may unilaterally make changes). A revocable letter of credit is inadvisable as it carries many risks for the exporter.
3. CAD or draft;
   CAD (Cash against Documents): the buyer only takes possession of the goods after payment has been made. This method is relatively safe, but negotiations will be necessary to convince the buyer to accept. Drafts that are paid upon presentation are called sight drafts. Drafts that are to be paid at a later date, often after the buyer receives the goods, are called time drafts or date drafts. A sight draft is used when the exporter wishes to retain title to the shipment

until it reaches its destination and payment is made. Before the shipment can be released to the buyer, the original ocean bill of lading (the document that evidences title) must be properly endorsed by the buyer and surrendered to the carrier. It is important to note that airway bills of lading, on the other hand, do not need to be presented in order for the buyer to claim the goods. This increases the risk when a sight draft is being used with an air shipment.

4. Open account or clean payment
   An open account can be a convenient method of payment if the buyer is well established, has a long and favorable payment record, or has been thoroughly checked for creditworthiness. With an open account, the exporter simply bills the customer, who is expected to pay under agreed terms at a future date. Some of the largest firms abroad make purchases only on open account.
5. Other payment mechanisms, such as consignment sales
   The goods are shipped to a foreign distributor who sells them on behalf of the exporter. The exporter retains title to the goods until they are sold, at which point payment is sent to the exporter. The exporter has the greatest risk and least control over the goods with this method. Additionally, receiving payment may take quite a while. It is wise to consider risk insurance with international consignment sales. The contract should clarify who is responsible for property risk insurance that will cover the merchandise until it is sold and payment is received. In addition, it may be necessary to conduct a credit check on the foreign distributor.

Payment methods used most frequently when larger investments are involved are Cash Against Documents or Letter of Credit. Still, the determination of payment conditions for a regular export transaction is part of the package of negotiations between seller and buyer, who actually have more or less opposing interests. Also the experience of importers trading with developing country exporters will determine the conditions. The necessity to do business and the attractiveness of the offer will also be important for the condition setting .

Most commonly the relationship and delivery of more standard products (intended to be produced in batches, several years running) starts with Letter of Credits or bank guarantees. Clean payment is normal once relations have been established. Sometimes relations start with clean payment.

Most common delivery terms:

- **FOB** *(Free On Board)*: The buyer arranges for transportation and insurance. FOB must specify the port of departure.
- **CFR** *(Cost & Freight)*: The exporter pays the freight, the buyer arranges for the insurance.
- **CIF** *(Cost, Insurance & Freight)*: The exporter pays the freight and the insurance.

It is recommended that quotations to European customers should be made on a CIF basis. The CIF price thus includes all domestic freight costs, ocean/air freight and insurance but not import duty or VAT. Based on the landed cost the importer will calculate his mark-up depending on the type of product, market etc. However, supplier and importer are free to negotiate and agree whether quotations and subsequent trade are based on CFR or FOB prices.

CBI's Export Planner also includes definitions of terms of payment and delivery conditions.

Examples: Product Profiles

Products from the range Castings and Forgings are normally specified in DIN or EN standards .
An example is given, but you are free to draw up your own product profile, showing the specifics of your product.

1. Product name: Vessel head / ACCORDING TO DIN 28 011
Specific drawing

2. Market requirements:
European quality standards:
DIN 28011. Material according to DIN 17 441, ADW2 and ADW 10 and APZ according to EN 10204/3 1 B

Sizes/dimensions:
Specifies in table per product the diameter, radius, tolerance, material type and other relevant dimensions, including the weight (kg).

Minimum labelling:
• Material certificate
• Product description/label
• Certificate/logo

Packaging:
According to the contract

Import regulation:
The general import tariff depends on specific agreements between your country and the EU.
Relevant import documents:
• AWB or Bill of Loading
• Pro forma invoice
• EUR 1 form for ACP countries
• FORM A for other countries

3. Market structure:
Average prices: (business to business)
Due to the fact that there are many products we refer to the Internet for current material price information. Some price trends are described in Chapter 8 of the EU Market Survey Castings and Forgings. The cost and sales price will be derived from your own configuration of the product and the calculation of material, labour, inspection, overhead and transportation costs.

Main markets:
The main EU markets for Castings and Forgings are Germany, Italy, United Kingdom and France. The main suppliers of Western Europe in the field of castings and forgings are from Germany and Italy. East European countries are emerging suppliers. Complex products or products with, for example, specific welding constructions come from West European countries.

Market trends:
Importers tend to focus on suppliers who can supply a complete product, including added value in service. The use of the Internet will be essential in providing information and in the commercial process.

4. Main suppliers:
The leading suppliers of forged components for pressure vessels and related products are in Western Europe (Germany, Italy, United Kingdom, Belgium, Netherlands).

Eastern Europe and Middle and Far East countries (Poland, the Czech Republic, Israel, Singapore and Korea are becoming important new suppliers).

5. How to improve the quality:
Material and product: Special emphasis should be given to specific configuration of the product. Create customer-specific products as far as possible out of standard product structure. Define a high quality product engineering and process routing. Organise the quality structure well (procedures, automated testing and document making) and ensure that certificates are in order.

1. Product name: Cast iron lower gearbox housing / ACCORDING TO DIN 28 011
Specific drawing

2. Market requirements:
Parts to be supplied with:
LRS certificate, 3.1b and 3.1c
All parts to be supplied with complete manufacturing dossier stating dimensions and used materials.

Sizes/dimensions:
Dimensions in mm: 786x400x35
Drawing: 901
Material: GGG 50
Weight: 160 kg
All parts to be machined up to 2-3 mm above the requested measures, indicated on the drawing.

Paint specifications:
One component zinc primer on base of polyurethane anti corrosion quick drying and hardening, waterproof shoprimer for use under and above water. Usable at relative humidity of 90 percent.
Density: ± 3,30 kg/l
Volume: ± 65 percent steady metal
Thinner: N-74
Wet layer: 30-60 micron
Dry layer: 20-40 micron
Dust dry: 15 minutes
Repaint: after 4 hours at 20° c. 50 percent humidity

Minimum labelling:
- All parts painted Fortix IH-zinc charge nr., clearly visible near logo
- All parts to be provided with engraved or hammered code correlating with specific measurement document.

Packaging:
According to the contract

Import regulation:
The general import tariff depends on specific agreements between your country and the EU.
Relevant import documents:
- AWB or Bill of Loading
- Pro forma invoice
- EUR 1 form for ACP countries
- FORM A for other countries

3. Market structure:
Average prices: (business to business)
Due to the fact that there are many products we refer to the Internet for current material price information. Some price trends are described in Chapter 8 of the EU Market Survey Castings and Forgings. The cost and sales price will be derived by your own configuration of the product and the calculation of material, labour, inspection, overhead and transportation costs.

Main markets:
The main EU markets for Castings and Forgings are Germany, Italy, United Kingdom and France. The main suppliers of Western Europe in the field of castings and forgings are from Germany and Italy. Eastern European countries are upcoming. Complex products or products with for example specific welding constructions come from Western European countries.

Market trends:
Importers tend to focus on suppliers that can supply a complete product, including added value in service. The use of the Internet will be essential in providing information and in the commercial process.

4. Main suppliers:
The leading suppliers of forged components for gearboxes and related products are in Western Europe (Germany, Italy, United Kingdom, Belgium, Netherlands).

Eastern Europe and Middle and Far East countries (Poland, the Czech Republic, Israel, Singapore and Korea are becoming important new suppliers.

5. How to improve the quality:
Material and product: Special emphasis should be given to specific configuration of the product. Create customer-specific products out of standard product structure. Define a high quality product engineering and process routing. Organise the quality structure well (procedures, automated testing and document making) and ensure that certificates are in order.

1. Product name: Free Forging
Specific drawing

2. Market requirements:

All parts to be supplied with quality data according to "Stahl eisen prufblatt 1921, material specifications and a Veritas Certificate (DIN 10204 – 3.1C) in duplicate, specifying:

- Holec ordernumber
- Chargenumber
- Charge-analysis
- Results of the mechanical test
- Magnetisation curve
- Results of the ultrasonic- and surface crack inspection
- Temperaturegraphs of the applied heat treatment
- Photo micrographs of the grain size

Material specifications:
Quenched, tempered and stress-relieved forged S.M. steel.

Chemical composition:

C: 0,21- 0,31%	Cr: 0,95 – 1,25%
Mn: 0,45 – 0,75%	Mo: 0,20 – 0,30%
S: 0,009 – 0,015%	P: max. 0,03%
Si: 0,20 – 0,32%	S + P: max. 0,05%
Ni: 1,55 – 1,85%	

Mechanical properties:
Tensile strength: 640 – 850 N/mm^2
Yield strength: min. 550 N/mm^2

Elongation:	Axial	: min. 18%
	Radial	: min. 15%
	Tangential	: min. 15%
Contraction:	Axial	: min. 50%
	Radial	: min. 40%
	Tangential	: min. 40%
Impact Value:	Axial	: min. 63 J
	Radial	: min. 47 J
	Tangential	: min. 39 J

Magnetic Conductivity:

A/m	4000	13000
T	min. 1,45	min. 1,72

Weight: 160 kg
All parts to be machined up to 2-3 mm above the requested measures, indicated on the drawing.

3. Market structure:
Average prices: (business to business)
Due to the fact that there are many products we refer to the Internet for current material price information. Some price trends are described in Chapter 8 of the EU Market Survey Castings and Forgings. The cost and sales price will be derived by your own configuration of the product and the calculation of material, labour, inspection, overhead and transportation costs.

Main markets:
The main EU markets for Castings and Forgings are Germany, Italy, United Kingdom and France. The main suppliers of Western Europe in the field of castings and forgings are from Germany and Italy. Eastern European countries are upcoming. Complex products or products with for example specific welding constructions come from Western European countries.

Market trends:
Importers tend to focus on suppliers that can supply a complete product, including added value in service. The use of the Internet will be essential in providing information and in the commercial process.

4. Main suppliers:
The leading suppliers of forged components for pressure vessels and related products are in Western Europe (Germany, Italy, United Kingdom, Belgium, Netherlands).

Eastern Europe and Middle and Far East countries (Poland, the Czech Republic, Israel, Singapore and Korea are becoming important new suppliers.

continued

continue

Paint specifications:
One component zinc primer on base of polyurethane anti corrosion quick drying and hardening, waterproof shoprimer for use under and above water. Usable at relative humidity of 90%.
Density: ± 3,30 kg/l
Volume: ± 65% steady metal
Thinner: N-74
Wet layer: 30-60 micron
Dry layer: 20-40 micron
Dust dry: 15 minutes
Repaint: after 4 hours at 20° c. 50 percent humidity

Minimum labelling:
- All parts painted Fortix IH-zinc charge nr., clearly visible near logo
- All parts to be provided with engraved or hammered code correlating with specific measurement document.

Packaging:
According to the contract

Import regulation:
The general import tariff depends on specific agreements between your country and the EU.
Relevant import documents:
- AWB or Bill of Loading
- Pro forma invoice
- EUR 1 form for ACP countries
- FORM A for other countries

5. How to improve the quality:
Material and product: Special emphasis should be given to specific configuration of the product. Create customer specific products out of as much as standard product structure. Define a high quality product engineering and process routing. Organise the quality structure well (procedures, automated testing and document making) and ensure that certificates are in order.

1. Product name: Cylinder 2, 1/2" – 3" – DN 65/80
Specific drawing

2. Market requirements:

General delivery conditions:

- Certification according to ISO-9002
- All deliveries including material certificates in accordance with EN 10204 – 3.1B
- Samples and batch deliveries including inspection reports
- All surfaces to be machined with surface roughness less than 0,8 or 1,6 Ra
- Dimensions without tolerances accordance to ISO-2768-mK
- Sea freight deliveries accordance to Incoterms 2000: CIF-Rotterdam

Material specifications:

Material:	Stainless steel 304
Sizes and dimensions:	See model drawing

Packaging:
According to the contract

Import regulation:
The general import tariff depends on specific agreements between your country and the EU.
Relevant import documents:

- AWB or Bill of Loading
- Pro forma invoice
- EUR 1 form for ACP countries
- FORM A for other countries

3. Market structure:

Average prices: (business to business)
Due to the fact that there are many products, use the Internet for current material price information. Some price trends are described in Chapter 8 of the EU Market Survey Castings and Forgings. The cost and sales price will be derived by your own configuration of the product and the calculation of material, labour, inspection, overhead and transportation costs.

Main markets:
The main EU markets for Castings and Forgings are Germany, Italy, United Kingdom and France. The main suppliers of Western Europe in the field of castings and forgings are from Germany and Italy. Eastern European countries are upcoming. Complex products or products with for example specific welding constructions come from Western European countries.

Market trends:
Importers tend to focus on suppliers that can supply a complete product, including added value in service. The use of the Internet will be essential in providing information and in the commercial process.

4. Main suppliers:
The leading suppliers of forged components for cylinders and related products are in Western Europe: Germany, Italy, United Kingdom, Belgium, Netherlands.

Eastern Europe and Middle and Far East countries (Poland, the Czech Republic, Israel, Singapore and Korea) are becoming important new suppliers.

5. How to improve the quality:
Material and product: Define a high quality product engineering and process routing. Organise the quality structure well (procedures, automated testing and document making) and ensure that certificates are all up to standard.

11 INTERNAL ANALYSIS: COMPANY ASSESSMENT

Chapters 8, 9 and 10 (especially 10.1 and 10.2) will have made clear whether there are real exporting opportunities. In this chapter the market demands and requirements (product, process, organisation and quality) are compared with the existing internal capabilities. The internal examination is an analysis of the manufacturer's strengths and weaknesses. These strengths and weaknesses indicate how well positioned the company is to seize opportunities and cope with threats. The competitive strength of the company has to be measured in relation to the other suppliers in the market, as does the customer's attitude to the developing country exporter. Competitors and customers must be taken into account in the internal analysis, because a manufacturer's strengths and weaknesses are defined as its capabilities relative to those competitors and customers.

In order to ascertain whether your company is able to meet the market demands, it is important to evaluate your company's performance, on the basis of five criteria:

1. Product standards & quality, Strategy & unique selling points, Technology & production capacity
2. Logistics
3. Marketing
4. Financing
5. Capabilities

11.1 Product standards, quality, USP and production capacity

Product standards and quality
In chapters 8 and 9 we described the minimum standards in terms of quality, packaging, labelling etc. you must adhere to in order export to the EU.
The quality standards are no more than a bsic requirement. In general the (product) quality is the order "enabler", and exporters not meeting the requirements are not in business. The basic questions for the different product groups within casting and forging can be roughly divided as follows:

Checklist Market entry thresholds

i System quality of the exporter:
Are ISO, VDA6 or QS 9000 certificate(s) or their equivalents present in the company?
Adequate organisational quality (professional communication with English, French (and German) contacts; methods and procedures defined for important activities; prompt response to complaints

ii Process quality:
How controlled are your production processes and are these demonstrably guaranteed (e.g. SPC measurements)?
What is your waste rate ?

iii Product quality:
Does the product meet the common required standards (e.g. DIN, UL, CE, etc; certificates on time, certificates correct and complete)?
Also, does the product meet the specifications (build to print, visual appearance, dimensional stability, machined surfaces, packing quality)?

Your export starting points are insufficient if you are not (yet) able to give an affirmative answer to each of the above questions.

This means that the first step is:
- to determine to what extent your current product offer is in line with the required standard;
- what actions have to be undertaken and what resources are required to bring the product into line with the standards;
- what investments and running costs are necessary to bring the product up to standard.

Conformity to the standard must be continuous. In practice this will often mean investing in new machinery and in the education and training of operators and quality controllers. You are required to demonstrate that you are able to adhere to the standards in the long term. In an open, positive relationship with a possible importer, he will often be willing to support you in coming up to standard by supplying knowledge transfer.

Once you meet the basic requirements, the added value of your company is the next point of exploration. How much chance does your company have of obtaining a position with the typical potential customer? Exporters already meeting the basic needs should create order "winners" by offering a unique position (strategy, capabilities) and excelling in price and/or logistics. Sales, communication and marketing should be well

organised. The exporter must ask himself which of the organised. The exporter must ask himself which of the above aspects are of particular importance to the importer. The exporter must determine how well the company is performing in each specific area (does the current positioning and performance meet the importer's demands?).

USP
In order to profile yourself favourably to customers in comparison to competitors, you need to specify your unique qualities in the selling proposition: the Unique Selling Points (USP). These aspects can be the quality of the product, the sales price, the delivery time and reliability, etc. or combinations of the above. Formulating USPs will also help you to focus and manage your internal organisation.

A USP has the following characteristics:
- a short sentence
- a clear, understandable statement
- is believable and realistic
- is composed of one benefit (or a combination of benefits) that is/are unique to your company or product

Examples of USPs in the C&F-business are:
- we deliver our products against the lowest total cost within 2 weeks
- we can manufacture our products within xxx tolerance

How do you arrive at your USP? Perform the external analysis, sit down with your market-oriented employees, take a piece of paper and:
❏ brainstorm on challenges and possibilities
❏ list all the benefits your company or product can realistically offer
❏ prioritise those benefits in order, according to what is the strongest and most unique in the business
❏ write one sentence about the benefit tha comes out top of the list

Production capacity
Reliability is of utmost importance to exporters. Entering the EU-market is a difficult process, and if you cannot keep your promises, you will very soon be out of business. Also important is the reliability of your (timely) delivery performance. This means that your production capacity and organisation must be sufficient and prepared to generate the planned increased demand. You must be able to give positive answers to the following questions:
➢ Do we have enough casting or forging capacity (machines and operators) to satisfy the planned extra export demand?
➢ Can we easily increase the capacity, and what will it cost to set this up?
➢ Are the operators well trained?
➢ Can our suppliers deliver enough material on time?
➢ Can our transport companies handle the planned volume on time?
➢ Is the margin of the extra sales positive?

11.2 Logistics

In order to realise the required delivery performance in terms of delivery, time, reliability and cost the internal and external logistics must be well organised.

Internal logistics
Internal logistics entails having the right materials and the right capacity available on time to deliver the products on the promised delivery date. Because casting and forging products are not end products, the customer will have planned production based on your promised delivery dates. Late deliveries causes big problems.

The inclusion of a delivery time in a quotation requires careful thought and planning. You must be sure that the required materials and capacity can be made available on time.
There are basically 3 methods of planning the required production:
➢ Make-to-order: produce only when ordered. This means: low risk; big fluctuations in required capacity; long delivery time.
➢ Make-to-stock: higher risk in stocks; equalised capacity requirement; short delivery times.
➢ Make-to-plan: low risk in stocks; equalised capacity requirement; short delivery times; additional required knowledge and capacity for planning.

In the case of continuous, stable demand it is sensible to produce for stock (shorter delivery times, less risk, more efficiency through bigger production series). If customers are willing to give you a (reliable) forecast of their demand, you can use such forecasts as a basis for decisding when and how much to produce. If you don't have a forecast you must establish per product (group) a minimum inventory level and a replenishment volume. For example, as soon as the inventory falls below 100 we release a production order of 1000. The 100 in inventory must then be sufficient to cover the demand in the period you need to produce the 1000 as replenishment. The same goes for the purchased materials. These are determined in the Bill Of Materials and, taking into consideration their delivery times you must decide whether to hold material stock and, if so, how much.

To ensure the delivery time you can produce for stock or have surplus of production capacity. Both give you flexibility, but both have costs attached. You as entrepreneur have to make the best choice.

External logistics
After production, the next step is transportation. This too has to be planned on time with your transporter. Another important factor for export is the right labelling and packaging of the products. As well as the conservation, corrosion and safety aspects and the protection against damage, the focus of packaging nowadays is on environmentally friendly transport, as well as sales-promotion packaging. This means, for example, that you should ask yourself whether returnable systems can be used on a much greater scale than to date.
In general, the packaging requirements for semi-finished products are laid down by the customer. Packaging must be marked not only to be identifiable during transport, but also to indicate the quantity, the weight, the products themselves and the brand. It is best to identify the customers' expectations and what they are used to and then conform to those requirements. Traders in Europe and local forwarders must be able to advise on suitable packaging. Care should be taken that the product is conserved in a suitable way. The package should not trap too much moisture (this can cause problems in the event ofclimate change). Packaging methods have been developed for cast and forged products. It is in everybody's interest to find the right supplier of the right packaging material (e.g. skids, Europallet, Eurocartons, Nedcontainers and seaworthy wooden crates).

Finally, shipment requires the right documentation, e.g.: AWB or Bill of Loading; Proforma invoice; EUR 1 for ACP countries; FORM A for other countries.
See also sections 9.2, 10.3 and 10.4.

11.3 Marketing and sales

The outside world must be made aware of the products that you offer and that are of interest to them. Certainly for a potential exporter this is a very important aspect of the business. How do you address a possible market or customer for your product? How do you communicate with the decision-makers of a client company thousands of miles away?

One consequence of globalisation is the professionalism of total production networks and of individual companies. Exporter from developing countries form part of such a network, and must therefore follow these developments. This entails awareness of market developments (see Section 10.1) and sales channel structures (see Chapter 7 and Section 10.3) and a careful choice of your types of customers. Per type of customer you should develop a set of marketing and sales tools with which to present your company, its strengths and the way you do business. The result must be that importing companies remember your name and what you have to offer. A separate sales department, trade fair attendance, internet presence and availability of sales material are all needed in order to create awareness of your potential. *The quality of your presentation and promotion material is of crucial importance, because of the impression it gives of the professionalism of your company!*

Depending of the size of the market, you will need to split the market up in specific types of industry (branches) and geographical regions. Ideally the salesperson will be located abroad in the neighbourhood of the branch and region. He /she must be able to understand the clients' needs and interest them in what your organisation has to offer. A relationship must be established, and this requires regular contacts, study of the business developments, meeting in branch seminars etc.

Another often used method is to select an agent, who acts as an advocate of your product and who is familiar with your target market. The starting costs are lower, but you have less control. This makes good selection

Checklist Logistics

1. Most important: **Delivery reliability;**
   What is track record of the exporter in terms of deliveries (planning methods, feed-back loops, past performance)?
   What are normal lead times (crucial for e.g. moulds)?
2. Quantities; What is the average production level, and what is maximum possible production per period per product?
3. Logistics system:
   How professional is the order management system (order entry, forecast, stock control, order progress control, order status reports, shipping details)?
   How are order (requests) handled (paper, fax, EDI)?
   How capable is the exporter in terms of registering land of origin and land of destination?
   How is material availability managed (right kind and quality; price)?
4. Package sorts (e.g. attractive package needed for several types of "parts of transmission" for end consumer markets); what are your possibilities?
5. Delivery conditions
   What type of conditions can be managed (EXW and or DDP)?

strategic. The agent often works on commission. In either situation the entrepreneur must also maintain contact with the market and customers.
See also section 10.3 (sales channel assessment).

The checklist below can be used to help ascertain whether the sales side of the company is ready. In order to succeed in doing business in Europe, you must be able to answer these questions positively.

Marketing and sales

1. Separate sales department ? Which languages ? (minimum requirement is English; German is preferred for Germany, French for France and Italian for Italy) and which departments (Sales, Logistics, Quality) speak a foreign language? Is it evident to customers who the contact persons are?
2. Presence on internet? (necessary), trade fairs (be present once a year in Europe!); availability of clear and complete sales material (company brochure, leaflets, product information; in English and check if other languages are necessary)?, what impression are (potential) customers given of you (by your verbal presentation and available materials)?
3. Presence in Europe (about once a year; combined with trade fair)?
4. Prompt response to queries? Quotes complete and correct? Quotes submitted on time?
5. Easy to contact by phone/fax/e-mail? Information provided on time?
6. Invoice and shipping documents in time and correct?

11.4 Financing

Export marketing is expensive. A new client will often require an adaptation to the product and the production process. This means more and/or new machines and people and a lot of time will have to be invested at the expense of the current business. The required capital can be generated out of the current business, via new investors or from the bank as a loan. Whatever the case a capital expenditure calculation is required (ROI).
Questions that need to be answered are:

- What amount of money can be tied up in setting up new export activities?
- What level of export operating cost can be supported?
- How are the initial expenses of export to be allocated?
- What other new development plans are in the pipeline that may compete with the export plans?
- Is outside capital necessary?
- If financial resources are limited, then marketing plans have to be modest.

Methods and terms of payment
The determination of payment conditions for a regular export transaction is part of the package of negotiations between seller and buyer, who actually have more or less opposing interests. The seller wants the largest possible guarantee of financial coverage for the goods he has to supply according to his sales contracts. The buyer wants to be sure about availability, quantity and quality of the goods he buys, before he pays the agreed price.

This means that in the negotiations you have to come to a method of payment that fits your cash position and covers your risks.

For more details of the applicable methods, see section 10.4.

11.5 Capabilities

Introduction
It still often happens that interested European importers, agents or system suppliers are disappointed by their contacts with potential exporters.

Most frequently heard complaints are:

- they are not responding to any communication;
- communications are very difficult;
- telephone or fax numbers have changed again;
- there is nobody who speaks good English on the phone;
- not everyone shares the same perception of the priorities;
- specifications and drawings are interpreted differently;
- the finish of the products falls below expectations;
- after the first shipment, the quality consistency is not maintained.

When so much effort has been made to generate initial contacts, it is disappointing for all parties involved to encounter such lack of interest and professionalism.

The EU market is not the same throughout. Each country has its own language and culture. Italy, Germany, France and the United Kingdom all have a long tradition in manufacturing. The companies in these countries have always had the total production (including engineering) in their own hands. In addition, the culture favours the “do it yourself if at all possible” approach. It is therefore very hard for outsiders to gain a foothold.
Germany and the United Kingdom have a rather formal culture. This means that obtaining openings requires:

- patience (acquisition normally takes a number of years),
- politeness (correct behaviour) and
- a proven track record.

France and Italy have a more informal culture. Doing business here means taking time for informal events. However, French and Italian companies are difficult to approach because of their closely internally controlled economic structure. Italy has many small companies, often family owned and very internally focused. It is very hard to establish contact without the help of an insider.

Requirements

Commitment to export
It is important to consider whether the company has staff who are able to sell and develop an international business. In-house staff with international experience can facilitate your entry into the international marketplace. If you do not have such people, you can either hire them or train present staff to assume the responsibilities. The company should be able to generate the physical and administrative infrastructure to deal with increases in exporting activities – not only dealing with orders but also processing customs and shipping documentation. If this type of infrastructure is weak, it will limit the development of sustained export activities.

Export experiences
It is important to learn from past experiences. If the company has tried but failed to penetrate an export market previously, the experience can be analysed to determine where things went wrong.

Language skills
Besides knowing about the products, business, export rules and regulations, it would help your company if your employees were also familiar with your target market's language and culture. Though English is accepted as the universal business language, having the ability to communicate in a customer's native language will give you an advantage over your competitors. Although most European trade partners will not be native speakers themselves, the vast majority speak English fluently. In almost all cases foreign language skills, particularly English, are essential when entering the European market.
In the few case where correspondence and documentation in English will not suffice, exporters can usually find sources of translation capabilities for the more popular European languages. Language ability is an advantage, since it facilitates cultural and social relationships.

Training
Human resources development at top and medium-management level may be necessary to optimise the export marketing policy of a company. The following aspects can be addressed in any additional training:
Product development, product improvement, efficient and effective measures in engineering and production
Logistical concepts, production and inventory control, packaging, customs and documentation
Financial capabilities including contract parts
Communication tools (including those language skills required by the buyer) of middle and top management.

In conclusion, starting exporting companies from developing countries must:
- Focus on a limited number of products, for certain targeted market segments
- Determine clear and reachable goals and commit to them; monitor progress regularly
- Possess good communication skills; be open and clear in presentation, keep appointments (be on time!) and deal with questions and problems adequately.
- Speak English and preferably also German, Italian and/or French
- Become familiar with the required customs formalities, shipping facilities and packaging to guarantee delivery within the contractual time requirements;
- Have patience; it will take time to explore the culture and networks in a country, to create initial contacts and openings at companies. Only after some "bad" experiences will you succeed in building up a business.

12 DECISION MAKING

By conducting the external and internal analysis (Chapters 10 and 11), the company is now able to come to a decision on whether or not to export.

- You have identified products suitable for export development. You also know what modifications, if any, must be made to adapt them to the overseas market;
- You know what countries and market segments you are going to target for sales development and/or cooperation agreements;
- You have identified the best sales channel (direct export or cooperation agreements);
- You investigated the impact of the export activities on the current organisation (financial, sales, production, logistics) and have realistic plans for dealing with them;
- You know what special challenges lie in the selected markets (competition, cultural differences, import controls etc.) and what strategies you plan to use to address them.

Once a company has determined that it has exportable products, it still needs to consider whether the development of an export business is in line with the company's objectives. In order to arrive at this conclusion the management should ask itself the following questions:

- What does the company want to gain from exporting?
- Is the goal of exporting consistent with other company goals?
- Are the benefits worth the cost, or would company resources be better spent developing new domestic business?

Companies can waste a lot of time and money attempting to enter other markets which lack potential or for which their product and/or organisation is not suitable. To be successful in export marketing, exporters need to focus on specific products and markets and be well prepared.

The decision regarding whether your company is capable of exporting casting or forging products should be made in steps, as follows:

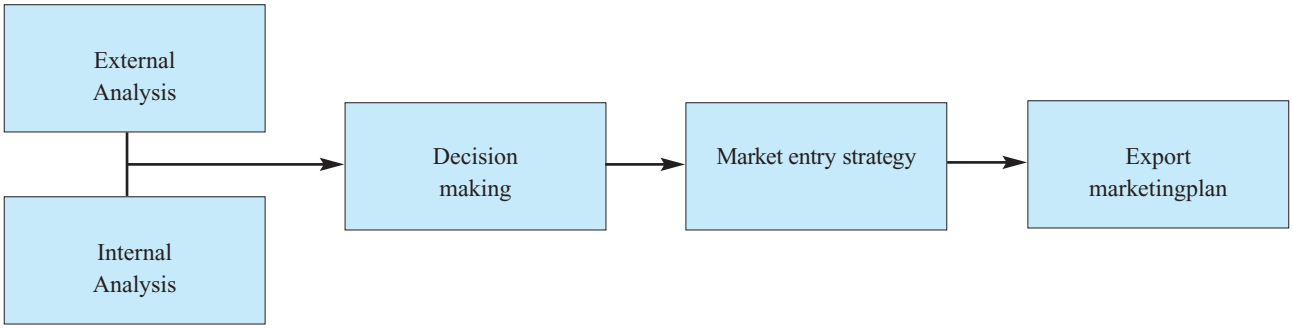
1. **Opportunities and Threats:** based on the **external** analysis, you decide whether or not there is sufficient market potential for your products and capabilities (see sections 10.1 to 10.5). You also ascertain which entity in the sales channel is best to sell your products to;
2. **Strengths and Weaknesses:** the checklists and assessments of the **internal** analyses (see chapter 11) must be answered positively as a prerequisite to becoming a partner for European business;
3. If both analyses (and perhaps the resulting action list) are positive, you then need to decide which product(s) for which market(s) to focus on.

If you have come to the decision to export, the next phase of the export marketing process is to draw up an Export Marketing Plan (EMP) which defines a marketing strategy stating how the company plans to penetrate the identified market. The marketing strategy is based on the information collected in the internal and external analysis. The marketing tools are described in the next chapter.

Formulating an export marketing strategy based on sound information and its proper assessment increases the likelihood that the best options will be selected, that resources will be utilised effectively, and that the strategy will be carried through to completion.

For assistance in writing an EMP and formulating answers to the questions asked in this chapter, please refer to the CBI's *"Export Planner"*. The next section of this chapter deals with this decision and the way(s) in which you could choose to develop further.

One starting position that involves limited risk and is prefered by the majority of starting exporters in developing countries, is to try to acquire fixed orders for products specified by the client. The latter is at home in his market and knows all the "ins and outs" of his permanently changing market place.



13 MARKETING TOOLS

Having made an analysis of the market and products that fit your competencies and ambition level and having concluded that there are profitable business possibilites, you took the decision to enter the EU-market.
Up to now the exercise was mainly on paper. Now you have to enter the real market!
How do you make the market aware of what you have to offer? How do you get to meet possible customers? Which people can you best contact? How do you make on offer and draw up a formal contract in accordance with EU legislation, and how do you deliver the products?

In this chapter we will guide you through the most important obstacles.

13.1 Matching products and the product range

Casting and forging products are usually required in large quantities (car parts; fasteners). Only certain special customer-specific products are demand as a unique product (e,g. vessel heads). Because of their volume and high quality requirements, such products will often be bought in the country itself.

(a) Specifying range, width and depth

Definition
A product range consists of several product groups (range width), each with several different products (range depth). **One product** can consist of **several varieties,** depending on material, size, quality, etc.

- Example: Valve housing
- Type of material: iron, steel, copper
- Size: 12", 16", 20"
- Closing mechanism: mechanical; hydraulic, electric
- Etc.

Reasoning
A supplier can only select a suitable business partner if he/she knows exactly what range he/she can offer. A precise review of the product range, therefore, will help to identify the most **suitable** candidate(s) from among the many **potential** customers.

(b) Specifying the product characteristics

Enter in the following list all products you manufacture, together with their varieties. State their size, the period within which you are able to supply and the packaging method:

Product	Variety/ treatment	Supply period	Packaging	Availabilit

Special remarks:
The reviews must enable potential customers to make an appraisal of your complete product range.
The reviews must therefore always be kept up-to-date.
The products and the range should be flexible so that adjustments and changes can be made if the need arises.

(c) Packaging

Special transport packaging is necessary to ensure that castings and forgings will arrive in perfect condition at their destination. Unsuitable packaging often causes damage to the product. The packaging design should take the following into account:

The following questions are designed to assist you in designing your packaging:

- Proper storage and transport
- Standard packing sizes
- Environmentally friendly materials
- Attractive, sales-promoting design

Proper storage and transport

(1) Have your importers ever complained about the quality of your products?
Possible causes:
→ unsuitable packaging material
→ unclean packaging
→ too many products in each packaging

(2) Do your importers use special transport packaging?
Reasoning:
→ Perhaps you could use this special transport packaging as well.
→ You may also be able to make use of the importer's packaging know-how.

Standard packing sizes and containers for transportation

(1) Does your importer use standard sizes and standard or special containers?
Reasoning:
→ Using the wrong package size can have a negative effect on your business.
→ Using the wrong container can raise your transportation costs and have a negative effect on your business.

(2) Do you use the package sizes 300 x 400 mm or 600 x 400 mm? If you also use pallets, are these Europallets? And are their sizes 1,000 x 1,200 mm or 800 x 1,200 mm?
Reasoning:
→ These are the standard pallet and/or the usual sizes in international transport.

Environmentally friendly materials

(1) Fully recyclable packages must be used when trading with certain business partners. When doing so, please observe the following:
→ Use cardboard and avoid plastic wherever possible.
→ Colouring materials used for printing on the cartons should not be harmful to the environment.
→ Use glue that does not harm the environment or no glue at all.
→ Do not use metal clips for the cartons.
→ Avoid waxed boxes or any combination of packaging materials.

Attractive, sales-promoting design (only applicable for end consumer products, directly sold in stores)

(1) In the case of direct end-consumer use (e.g. household products), castings and forgings stay in the transport package until bought by the user of the product.
In such cases, your package design should therefore be attractive (printing colours, etc.) and have a sales-promoting effect.
Reasoning:
→ A suitable design attracts more customer attention.
→ A suitable design helps customers to recognise your products.
→ Therefore, a suitable design can have a sales promotion effect.

13.2 Building up a relationship with a suitable partner

Definition
Among the many potential customers, you must identify those whose problems, demands and wishes (stated in terms of needed products and translated into required technologies, price, logistics, services and company drive and ambitions) match your own company core competencies, capabilities and product range. These companies are potentially most suited for building up a trading link. Industrial needs and products always require a thorough understanding of the consumer's demands and wishes and of common business practice. Many (generally intermediary) organisations have major problems in understanding exactly what the product is (also trade organisations). Area-specific organisations are normally only interested in the needs of their members. Therefore Internet, trade fairs and an examination of specific countries (business trips) are useful means of select ing potential partners. There the company looking for a partner can determine the required profile, the existing problems, demands and wishes and assess the "hit" results (Internet). The research results can be used to develop a plan for approaching promising companies. They also serve as a useful means of checking on the present strategy and operations of the exporter.

Always check your potential buyers' financial status and credibility once a potential partner has been found. Request a copy of the company's annual reports. Other sources of financial information are business directories, credit rating agencies and chambers of commerce.

At the end of the identification phase, the supplier should have selected the names and addresses of suitable trading partners.

(a) Contacting one or more sources of information
Start by gaining market information from the countries you are aiming to export to. Potential sources for information are internet, country promotion offices (especially local market surveys, list of importers), your Embassy. See also Section 11.3 and Appendices 3.3 and 5.

The next step is to participate in international trade fairs. Trade fairs and exhibitions will become more important (to get a feeling for what people are purchasing and how) as increased use of e-procurement keeps people more office based. Here, the company looking for a partner can determine the required profile, the existing problems, demands and wishes and assess the "hit" results (Internet). Trade fairs are, then, an important means of creating contact with future co-operation partners. It is important to know in advance who your target groups are at the fair. Approach suitable exhibiting importers with written / printed material about your company and products.
Before exhibiting it is often advisable to participate in the fair as a visitor. A well prepared and properly executed visit to a trade fair can constitute a very cost-effective piece of market research. At the fair it is possible to meet both future competitors and potential customers. The important ones take place in Germany (Hannover Messe), Italy (Fluidtrans Compomac) and France (Midest). See Appendix 3.5 for details.

The research and trade fair results can be used to develop a plan for approaching promising companies. They are also a useful means of checking up on the present strategy and operations of the exporter.

At the end of the identification phase, the supplier should have selected the names and addresses of suitable trading partners. It is advisible to fill out a contact exchange form per potential partner. Always check your potential buyer's financial status and credibility once a potential partner has been found.

In the **producer country:**
- **Internet**
- The foreign-trade chamber of commerce of the country of destination.
- The Economic Affairs departments of the official representative (Embassy or Consulate) of the country of destination.

In the **country of destination:**
- **Internet**
- Business support organisation
- Trade associations
- Your own country's public and private trade promotion bodies
- Your own country's diplomatic and consular representatives
- Chambers of commerce
- Trade fair organisers (catalogues)

Points of attention:
- Many sources of information only answer written inquiries!
- As a general rule: a concise but detailed inquiry improves the chances of precise identification.

Request a copy of the company's annual reports. Other sources of financial information are business directories, credit rating agencies and chambers of commerce.

(b) Evaluating the information

Evaluate the names and addresses you receive or find, using the following criteria:

- Is the information complete?
  - full address;
  - telephone and fax number, e-mail;
  - name of the person to contact.
- Is the importer active in the country you have selected?
- Does the importer focus his activities on the corresponding product groups?
- Do you have enough sound information about the reliability of this partner?

Using these criteria, draw up a priority list of the contact addresses you have received.

13.3 Drawing up an offer

There are two different kinds of offers:

1. a general offer, introducing the company, its products and their prices, and delivery times;
2. a specific offer based on a specific request

(a) Drawing up a general offer

- The purpose of a general offer is to make an initial contact with potential trading partners with whom the supplier is not yet personally acquainted.
- A general offer consists of sending a short profile of your own company and a summary of your product range.
- In a personal letter, briefly introduce your company and explain what you have to offer.

(b) Drawing up a specific offer

A specific offer is legally binding for a certain period of time. You must therefore be sure you are capable of fulfilling the terms of contract. You should make up a specific offer only when you know the business partner personally or after you have made the initial contact.

When sending a specific offer, it should consist of three parts:

(1) **written offer:**
- Name of the person responsible in your company;
- Need of the customer and your proposed solution to that need;
- Exact description of the goods offered (preferably using an internationally valid quality standard specification);
- Price of the goods offered in accordance with the Incoterms 2000 (ICC publication; if applicable, split up by delivery quantities or quality); and
- Possible delivery date and terms of delivery.

(2) **product samples:**
- Product samples must correspond to the goods available for delivery (if they do not, this can have a lasting negative effect on business relations);
- State the treatment methods used (if possible, provide quality certificates from an internationally recognised inspection organisation);

(3) **commercial information:**
- a profile of your company including a statement of your policy, also with regard to the quality;
- a reference list of existing customers.

(c) General remarks

Recommended action for both kinds of offer:

- A telephone call to ask whether the offer (and the samples, if applicable) has/have arrived.
- An invitation to visit your company.
- A visit to the customer, in which case:
  - If necessary, hire an interpreter.
  - Ask your own consulate or other intermediaries for assistance.

13.4 Handling the contract

Incoterms 2000 are the standard trade definitions most commonly used in international sales contracts. Devised and published by the International Chamber of Commerce, they are at the heart of world trade. Among the best known Incoterms 2000 are EXW (Ex works), FOB (Free on Board), CIF (Cost, Insurance and Freight), DDU (Delivered Duty Unpaid), and CPT (Carriage Paid To).
See for more details:
www.iccwbo.org/incoterms/understanding.asp

Trading relations between exporter and importer are based on trust and can only be built up by meeting the high expectations of the importer. If an importer finds that the product does not meet his expectations, this will immediately backfire on the business relationship with the exporter.

Be aware that today in Europe logistics are of high importance. Most importers do not want high volume deliveries as these push up their supply costs. They want the amount they ordered in the time agreed upon. This is stressed by almost all important importers in Western Europe.

The contract

1. Details to be included in a contract are:
2. The contract parties: The seller, the buyer, the broker and/or buying/selling agent. Of course all names and addresses must be correctly spelled.
3. The product, price and quality of the product must be sufficiently specified, so that no misunderstandings can arise.
4. The quantities must of course be stated. If the buyer and the seller agree to more or less than the agreed quantity, this has to be specifically mentioned.
5. The delivery terms are defined according to the description specified in the Incoterms 2000 (please refer to www.iccwbo.org/home/incoterms/the_thirteen_incoterms.asp).
6. The payment terms must be spelled out in detail.
7. The delivery time is a vital detail on which the seller and the buyer will have to agree.
8. Packaging details, including measurements and weights.
9. If one of the parties has negotiated special conditions, this should be mentioned in the contract.
10. What is to be done if the two parties disagree with each other? To which arbitration court / district will they turn?

When handling the contract, you should consider both the terms and the fulfilment:

(a) Contract terms

- Draw up the delivery conditions according to international guidelines (e.g. Incoterms 2000)
- When delivering for the first time, it is usual to deliver the goods free on commission and freight-paid.

(b) Contract fulfilment

- Procure the delivery documents in good time.
- Comply strictly with all parts of the supply agreement.
- If you cannot comply with any part of the agreement (e.g. delivery delays or quality problems), inform the customer clearly and in good time, and ask if he is prepared to accept this unforeseen deviation.
- Co-operate on a partnership basis and seek a common solution even if conflicts arise.
- Fulfilling the contract should have a high priority, particularly when delivering for the first time.

13.5 Sales promotion

Sales promotion measures relate to developing and expanding the following:

- customer relations;
- supply quantities.

Developing customer relations:

- Take good care of existing customers. This includes for example expressions of thanks to business partners, regular information on the product range, etc.
- Brochures on your company and the product range can be useful for promoting sales.
- Ask existing customers for letters of reference. Such recommendations are particularly important when approaching new contacts.
- Give your customer the possibility to track the status of his order via the Internet (password guarded).

Expanding supply quantities:

- In some cases, you may be able to increase supply quantities to existing customers.
- The product range should be guided by the demand. Changes to the product range may become necessary.
- If you can increase the present quantities produced, you could look for new sales outlets.
- You can use your existing export experience to trade with other importing countries.
- Always answer a letter of inquiry. If you cannot supply this contact, say so, explaining that you will get in touch with him if/when the supply situation changes.

(a) Advertising and communication

Definition
Advertising refers to communication measures with the aim of increasing the sales of your products. The pre-requisites for successful communication measures are:

A clearly defined target group	→ "Who buys (wants to buy) my products?"
A well-formulated message	→ "What do I want to tell the customer?"
	→ "How do I want to tell him that?"

Costs and dispersion losses
Two parameters are used to measure the costs of any communication measure:

Cost per contact	→ "How much does it cost to convey the message to one target company/person?"
Total costs	→ "How much does the whole campaign cost?"

It must be borne in mind that not all messages sent actually reach the addressees (target persons). The costs for messages that do not reach the right addressee are called dispersion losses.

Criteria **Measures**	**Target group**	**Amount of planning and co-ordination**	**Cost per contact**	**Total costs**	**Dispersion losses**
Standard printed matter (letterheads etc.)	Existing customers	+	+	+	+
Telephone and mailing campaigns	Existing and potential customers (known by name)	++	++	++	+++
Advertising in trade journals	Existing and potential customers (partly unknown)	+++	++	++	++
Promotion through an Internet site	Existing and potential customers (partly unknown)	+++	+	++	+

+++ = high
++ = medium
+ = low
Source: IPL Consultants

Due to search engines importers find it favourable to use the Internet if they are looking for new producers in a certain region. If you use the Internet be sure that your site will be found by the regular search engines they use or through business directories.

Recommendations
It is advisable to commence with communication measures that only require a small amount of planning and co-ordination, such as revising the company's standard printed matter:

- Standardise all **printed paper** used outside the company (letterheads, visiting cards, fax form, etc.).
- Prepare long-term **sales documentation** (company brochure, product range reviews, catalogue, etc.).
- Prepare product-specific **sales folders.**

If your company has an Internet site, you can make sales documentation and folders available electronically. By doing this, you can reduce the amount of printed documentation you need to send, as well as the related costs.

Constant, prompt and reliable communication is a vital prerequisite for maintaining a long-term business relationship with a customer.

(b) Sales organisation

The term "sales organisation" refers to the organisational system that carries out the sales of the company's products and pursues quality control. A sales organisation usually consists of office personnel and a field force.

Organising sales
Business with partners overseas is often concluded on the telephone, by fax or by e-mail. A well-functioning sales department is therefore an absolute prerequisite for successful market participation.

- The essential tool used in the sales department is a detailed and up-to-date customer database. The customer data base contains the following information:
  → Basic data on the customer (e.g. long-term data such as name, address, telephone number, e-mail, etc.);
  → Changing data on the customer (data resulting from business with the customer such as telephone calls, offers, sales statistics, news on his web site etc.).

- The customer database gives a sales person a quick review of the most important customer data when planning to contact the customer by telephone, fax or e-mail.

- If possible, the customer database should be computerised, because this simplifies changes, updating, sorting and selection procedures, etc. If computerisation is not possible, the customer data should be kept on file cards (see samples).

Office personnel	**Field force**
• Handling correspondence	• Selling
• Handling offers and orders	• Visiting customers
• Issuing forwarding instructions	• Presenting new products
• Issuing and checking invoices	• Discussing and implementing campaigns
• Controlling schedules	• Discussing listings
• Keeping customer records	• Holding yearly reviews with customers
• Expediting product samples	• Implementing selling prices
• Keeping sales statistics	
• Evaluating markets	
• Dispatching goods	
• Quality control	

Customer Data Sheet

Company:

Company: ..... Customer No.: .....

Street: ..... Customer class*: ❑ A ❑ B ❑ C

P.O. Box: ..... First contact date: _ _ / _ _ / _ _

Postal code: ..... Sales person: .....

Town: ..... Customer type: .....

Country: ..... (agent, importer, manufacturer)

Tel.: ..... Sales last year: .....

Fax: ..... Sales planned this year: .....

E-mail: ..... Method of payment: .....

Internet: ..... Delivery conditions: .....

Bank: ..... Remarks: .....

Bank address: ..... Account No.: .....

Business partners:

1 Title: ..... First name: ..... Name: .....

Function: ..... E-mail: ..... Telephone: .....

2 Title: ..... First name: ..... Name: .....

Function: ..... E-mail: ..... Telephone: .....

3 Title: ..... First name: ..... Name: .....

Function: ..... E-mail: ..... Telephone: .....

4 Title: ..... First name: ..... Name: .....

Function: ..... E-mail: ..... Telephone: .....

* Classify customers according to their importance to your company (sales, quality of relationship, etc).

(c) Participation in trade fairs

Participation in national and international trade fairs can be a useful sales promotion tool in the trade of Castings and forgings products. This requires comprehensive and detailed preparation and planning, including:

- selection of a suitable trade fair and preparations for participation;
- participation;
- follow-up.

Trade fairs, like promotion campaigns, require thorough preparation, viz.:

Before the trade fair:

- update your customer files
- prepare all documentation (business cards, company brochures, product range, etc.)
- send a preparatory mailing, informing your present and potential customers of your stand number and inviting them to visit you at the stand and/or proposing to visit them (i.e. existing clients).

During the trade fair:

- register all contacts

After the trade fair:

- enter all your contacts in a database
- answer the contacts to thank them for their visit and send the information (product specifications, tradeoffer, samples, etc.) you promised
- you can send a second mailing several months after the first one, to remind your contact that you are at his disposal to answer any inquiries.

Business Support Organisations in the European Union can be of help in providing information about relevant trade fairs. They can also advise and/or assist exporters with participation in a trade fair.

For more information on this subject, please refer to Section 2.2.1.

(d) Internet

Internet is rapidly changing the way business is done. Every industry is under the influence of rapidly developing insights into the new ways companies can position themselves. It is tempting to focus on the technical side of the world wide network of computers but what really matters is how this influences the expectations your customers have of your company. Applied to the promotion of the company image, Internet offers you the possibility to serve your (prospective) buyers one-on-one. Your customer will expect to be able to find all the information he needs quickly on a well developed, clear and up-to-date website.

All the questions your customer has should be answered by your Internet presence (company background, an overview of the staff, the products and their full specifications etc.).
Not only the direct sales promotion is of importance. The demand for online support is also growing quickly: the customer with questions expects at least a first line of support.
The fact that it has become easy and technically possible to publish massive amounts of information places a burden on your company to actually provide the relevant information to your customer in an organised way.
As more and more new buyers do their background checks by means of checking the suppliers websites it is clear that your presence on the Internet needs to be planned and executed very carefully. It should reflect, be consistent with and form an integral part of the company image as formulated in the other promotion methods.

B-to-B portals
One practical development is that suppliers of casting and forgings are participating more and more in global sites promoting these products. Often these sites are the initiatives of private companies supported by government bodies. In this way a number of “country” sites are being developed, the aim of which is to promote the national industry. These do not always take the form of a marketplace, with direct buy-sell possibilities, but often take the form of brokering trade leads or b-to-b portals. At these sites all kinds of additional services such as consultancy, trade information etc. are provided. Each of these sites aims to serve as a gathering place for customers and suppliers, quite often for more than one industry.
It is therefore worth considering the development of a promotion policy whereby a short list of these market sites is compiled and used to promote (a part of) your product range.

A relevant site for the forging industry:
www.forgefinder.com

Alibaba.com is the world’s largest marketplace for global trade and is the leading provider of online marketing services for importers and exporters. Alibaba.com is the number one destination for buyers and sellers looking for trading opportunities and seeking to promote their businesses online.
www.alibaba.com, keyword e.g. transmission.

A good Internet marketing policy can present your company to every potential client in any country with access to the Internet. You must realise, however, that this means your organisation must be thoroughly prepared for requests from all over the world.

As well as the Internet, there are other electronic media which can be used in export marketing such as video, CD-ROM and diskette. In the box below, an overview of the value of a number of carriers is presented. For further information about electronic media in export marketing, please refer to the CBI News Bulletins.

Value Carrier	Multimedia	Interactivity	Multi-lingual	Capacity	Compatibility	Penetration of market	Price
Diskette	++	++	++	—	+	++	+
Video	-	—	—	+	—	++	0
CD-ROM	++	++	++	+	++	+	-
DVD	++	++	++	++	-	—	—
Hard disc	++	++	++	++	++	++	0
Internet	+	++	++	++	++	+	+

DVD: Digital Versatile Disc
++ = very good
+ = good
0 = reasonable
- = average
— = poor
Source: CBI News Bulletin, No. 263, March 1999

Appendices

APPENDIX 1 DETAILED HS CODES

HS Code	Description
732211	radiators for central heating, not electrically heated, and parts thereof, of iron or steel (excl. parts, elsewhere specified or included, and central-heating boilers)
732391	table, kitchen or other household articles, and parts thereof, of cast iron, not enamelled (excl. cans, boxes and similar containers of heading 7310; waste baskets; shovels, corkscrews and other articles of the nature of a work implement; articles of cutl
732393	table, kitchen or other household articles, and parts thereof, of stainless steel (excl. cans, boxes and similar containers of heading 7310; waste baskets; shovels, corkscrews and other articles of the nature of a work implement; articles of cutlery, spoo
732510	articles of iron or steel, of non-malleable cast iron, n.e.s.
732599	cast articles of iron or steel, n.e.s. (excl. articles of non-malleable cast iron, and grinding balls and similar articles for mills)
732619	articles of iron or steel, forged or stamped, but not further worked, n.e.s. (excl. grinding balls and similar articles for mills)
741991	articles of copper, cast, moulded, stamped or forged, but not further worked, n.e.s.
76169910	articles of aluminium, cast, n.e.s.
830110	padlocks of base metal
830120	locks of a kind used for motor vehicles, of base metal
830140	locks of base metal (excl. padlocks and locks for motor vehicles or furniture)
841182	gas turbines of a power > 5 000 kw (excl. turbo-jets and turbo-propellers)
841199	parts of gas turbines n.e.s.
842091	cylinders for calendering or other rolling machines (other than for metals or glass)
843120	parts of machinery of heading no 8427 n.e.s.
843131	parts of lifts, skip hoists or escalators n.e.s.
843139	parts of machinery of heading no 8428 n.e.s.
843143	parts for boring or sinking machinery of subheading nos 8430.41 or 8430.49 n.e.s.
843149	parts of machinery of heading nos 8426, 8429 and 8430 n.e.s.
843290	parts of agricultural, horticultural or forestry machinery for soil preparation or cultivation; lawn or sports-ground rollers n.e.s.
843999	parts of machinery for making or finishing paper or paperboard n.e.s.
848310	transmission shafts - incl. cam shafts and crank shafts - and cranks
848320	bearing housings, incorporating ball or roller bearings, for machinery
848330	bearing housings for machinery, not incorporating ball or roller bearings; plain shaft bearings for machinery
848340	gears and gearing for machinery, other than toothed wheels, chain sprockets and other transmission elements presented separately; ball screws; gear boxes and other speed changers, including torque converters
848350	flywheels and pulleys, including pulley blocks
848360	clutches and shaft couplings, incl. universal joints, for machinery
848390	parts of transmission shafts, ball screws, couplings and other articles of heading no 8483, n.e.s.

APPENDIX 2 DETAILED IMPORT/EXPORT STATISTICS

Import of castings and forgings into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	volume	value €	volume	value €	volume
Total	**19,641,262**	**4,040,048**	**23,020,784**	**4,490,729**	**23,989,273**	**4,668,220**
Extra-EU	**7,494,728**	**1,577,669**	**9,266,085**	**1,802,260**	**9,985,820**	**2,017,150**
Developing countries	**1,237,182**	**530,345**	**1,618,103**	**620,318**	**1,778,147**	**694,450**
Major suppliers:						
Germany	3,642,498	755,650	4,027,156	741,678	4,227,586	733,703
United States	2,652,767	122,083	3,301,600	108,437	3,605,607	113,548
Italy	1,797,506	384,241	2,152,070	498,439	2,130,308	450,855
France	1,618,559	443,199	1,739,424	449,263	1,821,203	439,336
United Kingdom	1,096,280	180,027	1,205,261	193,152	1,298,961	184,614
Belgium	791,723	122,135	984,792	142,505	917,394	182,264
China	589,626	334,184	768,076	383,169	837,702	445,728
the Netherlands	771,202	112,667	797,044	134,190	833,438	137,380
Japan	704,134	66,662	950,605	77,720	828,263	89,142
Switzerland	668,840	53,269	810,275	59,617	828,008	57,699
Sweden	707,943	108,434	819,949	114,457	721,277	111,947
Czech Republic	466,103	249,135	567,167	306,797	705,399	342,790
Spain	533,310	146,224	702,733	177,986	698,245	184,882
Austria	501,994	93,386	587,603	103,538	569,117	85,372
Finland	349,919	46,329	382,685	54,415	412,738	58,767
Poland	274,863	203,726	322,584	232,641	400,059	269,940
Canada	318,088	11,218	339,444	12,421	330,026	11,693
Hungary	147,582	62,536	180,192	75,146	233,918	83,739
Norway	256,367	33,933	256,981	34,580	225,214	42,411
Denmark	183,080	43,329	210,558	49,160	193,115	45,037
Slovakia	109,489	47,795	155,782	67,226	190,607	78,063
Slovenia	126,799	55,850	140,662	62,057	154,540	65,755
Taiwan	98,143	16,553	131,539	20,014	135,390	19,189
Turkey	78,184	37,684	111,877	46,243	132,776	51,093
South Korea	129,038	29,500	144,740	28,710	128,138	19,913

Export of castings and forgings by the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**24,353,489**	**3,565,718**	**28,242,551**	**4,140,382**	**30,401,145**	**4,141,210**
Extra-EU	**11,348,818**	**1,166,499**	**13,560,290**	**1,443,622**	**15,192,190**	**1,455,701**
Developing countries	**3,234,864**	**298,858**	**3,832,805**	**332,224**	**4,881,423**	**407,139**
Major destinations:						
United States	3,170,088	318,444	3,994,815	359,651	4,133,945	333,324
Germany	2,818,168	607,557	3,062,714	659,309	3,201,189	678,592
France	2,033,769	380,710	2,404,907	453,898	2,343,468	447,072
Spain	1,074,215	167,870	1,296,817	201,447	1,633,338	207,610
United Kingdom	1,536,670	236,471	1,669,853	239,485	1,565,957	223,416
Italy	1,047,408	196,326	1,233,685	221,991	1,250,350	219,900
Netherlands	928,716	134,505	978,304	155,568	976,198	150,128
Belgium	939,069	186,444	1,028,479	218,700	974,294	203,854
Austria	653,501	140,305	822,408	157,928	876,398	158,801
Switzerland	708,423	78,460	883,527	209,917	852,747	93,117
Sweden	736,303	144,785	786,445	164,511	807,476	158,747
Norway	536,311	41,659	495,859	38,254	556,043	44,907
Canada	605,162	38,239	571,534	33,579	548,302	33,109
China	276,329	28,551	383,076	35,518	511,754	49,252
Denmark	436,648	55,619	418,227	61,560	469,257	63,603
Brazil	222,570	22,351	301,215	31,870	444,857	38,550
Japan	261,306	17,143	376,190	23,464	428,712	25,657
Finland	293,772	47,382	371,820	55,792	409,300	57,444
Poland	296,484	36,372	336,694	55,537	393,682	74,469
Czech Republic	239,938	85,688	315,035	107,312	374,573	121,052
Australia	320,596	26,807	289,018	25,507	348,765	27,621
Hungary	251,391	62,411	324,780	72,630	339,521	78,326
U,A,Emirates	275,645	22,293	278,191	18,099	335,610	24,697
Singapore	203,542	17,828	313,680	20,243	317,312	22,098
Saudi Arabia	189,467	12,404	221,268	12,918	297,450	19,955

Imports of households articles into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**857,616**	**174,792**	**971,919**	**169,696**	**965,640**	**166,270**
Extra-EU	**529,897**	**121,095**	**617,855**	**119,839**	**619,088**	**121,442**
Developing countries	**357,249**	**94,023**	**452,807**	**96,988**	**476,807**	**103,327**
Major suppliers:						
China	309,914	83,680	385,141	82,432	392,338	85,720
Italy	89,306	17,382	88,339	10,771	77,870	8,926
Germany	69,348	8,375	73,940	8,355	72,948	7,973
Belgium	47,975	6,432	58,825	10,232	58,410	8,635
Switzerland	37,218	2,014	46,074	2,283	45,915	2,124
Taiwan	30,690	7,572	40,980	8,838	41,689	8,455
India	14,215	3,744	23,386	5,701	31,794	7,545
France	27,684	6,455	33,091	4,689	30,443	3,461
Spain	23,380	4,600	30,864	5,726	28,125	4,583
Netherlands	41,979	6,029	26,447	4,839	27,476	4,540
Turkey	16,822	4,083	20,454	5,415	26,427	6,381
South Korea	45,244	8,713	37,123	5,893	21,537	3,026
Portugal	19,018	2,472	17,027	2,148	21,494	2,993
Thailand	7,698	938	14,965	1,890	14,567	1,737
Hong Kong	20,596	3,900	14,608	2,129	14,045	1,987
United Kingdom	9,518	1,410	10,578	1,198	10,750	1,349
United States	11,409	1,358	9,454	901	9,199	872
Sweden	5,319	641	6,955	866	7,444	912
Finland	4,433	551	5,034	700	4,378	644
Vietnam	3,489	601	2,677	434	4,187	688
Denmark	2,641	224	3,414	334	3,716	392
Japan	2,030	128	4,101	214	2,502	120
Austria	1,142	103	1,471	137	2,433	278
Indonesia	0	0	0	0	1,898	291
Norway	5,758	1,092	4,901	918	1,706	340

Imports of cast articles of iron or steel into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**965,008**	**881,507**	**1,108,233**	**993,287**	**1,166,257**	**1,067,153**
Extra-EU	**428,941**	**513,357**	**524,354**	**574,858**	**610,365**	**631,586**
Developing countries	**155,730**	**233,760**	**196,784**	**261,521**	**239,048**	**305,386**
Major suppliers:						
China	94,875	173,223	125,530	199,703	154,970	234,860
France	149,438	118,994	154,297	135,508	135,757	109,914
Germany	127,153	74,805	137,776	81,750	134,448	82,837
Czech Republic	86,665	82,681	100,933	98,884	113,075	98,216
Poland	83,277	98,587	94,146	108,118	109,735	117,679
Spain	47,393	34,446	65,868	47,741	54,295	40,586
United Kingdom	43,460	37,830	50,724	40,509	51,760	39,117
Italy	46,651	22,711	40,860	21,359	46,997	24,853
Belgium	37,099	19,502	37,965	23,693	36,142	66,699
Netherlands	24,859	15,260	27,546	18,212	29,780	25,455
India	17,906	20,737	23,847	21,507	26,254	22,805
Norway	14,921	11,919	23,829	13,803	26,078	14,601
United States	18,038	4,928	22,560	4,207	24,582	4,439
Turkey	14,834	15,950	16,011	15,849	21,334	19,792
Finland	17,649	11,243	20,647	13,865	20,091	13,963
Slovenia	16,191	16,111	17,717	16,282	18,904	15,887
Romania	10,234	13,170	13,129	15,225	16,410	17,806
Switzerland	14,253	8,107	18,194	11,189	16,005	8,404
Austria	16,703	11,989	14,198	11,662	15,623	8,538
Denmark	11,914	12,756	18,169	15,955	14,696	13,598
Brazil	6,227	3,937	7,239	4,113	11,611	7,918
Slovakia	6,509	8,284	8,253	9,950	11,570	12,932
South Korea	5,374	2,995	8,810	4,279	9,871	4,217
Hungary	5,341	3,404	5,393	2,795	7,454	2,860
Lithuania	5,564	12,313	5,685	12,206	6,575	14,094

Imports of forged articles of iron or steel into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**424,459**	**328,837**	**465,843**	**295,774**	**489,429**	**220,709**
Extra-EU	**123,123**	**47,177**	**135,818**	**56,547**	**158,059**	**61,911**
Developing countries	**18,268**	**10,814**	**24,026**	**15,279**	**39,790**	**18,647**
Major suppliers:						
Germany	83,012	175,302	92,450	120,323	87,731	36,193
Italy	79,429	44,360	78,288	48,052	86,637	56,217
France	47,646	17,472	56,028	22,424	61,762	25,645
United States	45,457	6,908	53,699	8,967	50,007	5,681
United Kingdom	33,938	19,726	38,924	22,770	27,855	15,242
Sweden	13,381	3,906	16,348	3,663	18,856	6,017
Spain	16,282	11,327	14,811	10,302	14,462	8,134
Netherlands	8,997	3,443	12,512	5,238	14,445	5,369
Czech Republic	12,461	8,062	12,362	8,759	13,727	10,013
Poland	10,302	8,829	11,841	9,664	13,303	11,323
Turkey	2,306	619	2,859	848	12,112	1,470
China	7,432	5,213	11,139	8,380	11,885	8,726
Switzerland	8,368	3,271	7,180	3,070	9,041	3,953
Japan	11,159	1,303	9,055	1,973	8,182	1,801
Hungary	3,304	1,718	4,913	1,911	7,742	2,592
Slovenia	2,365	1,767	3,248	2,777	5,871	4,922
India	2,420	1,387	3,345	1,629	5,585	2,049
Austria	6,888	2,169	6,541	2,162	5,238	1,436
Belgium	5,039	1,700	5,205	1,775	4,907	1,483
Slovakia	4,194	3,025	4,507	3,420	4,830	3,786
Denmark	3,101	554	3,432	597	3,580	687
Portugal	2,777	1,567	2,847	1,377	2,631	1,513
Norway	893	208	411	115	1,941	191
Taiwan	1,145	186	1,584	235	1,835	473
Canada	3,674	594	2,309	1,100	1,474	350

Imports of articles of copper into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**42,575**	**10,010**	**44,402**	**8,183**	**58,477**	**9,962**
Extra-EU	**18,946**	**4,505**	**18,116**	**4,162**	**29,367**	**5,773**
Developing countries	**5,121**	**1,978**	**5,076**	**1,851**	**5,539**	**1,686**
Major suppliers:						
South Korea	3,934	1,073	4,736	1,042	13,232	2,202
France	4,437	1,911	5,300	960	8,782	1,186
Germany	8,775	1,846	5,670	815	5,906	866
Italy	2,583	435	3,761	750	4,838	786
Switzerland	3,473	367	2,350	252	3,501	388
Morocco	1,397	1,137	1,512	1,252	2,358	1,259
Denmark	2,513	329	2,584	368	2,133	299
United States	2,361	65	2,285	63	1,863	59
Portugal	1,236	140	2,259	264	1,791	202
Slovenia	739	180	1,078	166	1,738	219
Belgium	1,858	379	2,752	351	1,468	243
Canada	2,497	627	1,287	411	1,452	431
United Kingdom	1,008	264	2,399	361	1,420	179
Spain	510	67	891	80	1,276	181
Russia	68	17	91	32	1,102	425
Czech Republic	199	22	370	69	850	158
Luxembourg	64	2	2	0	717	154
Romania	542	258	709	316	615	233
China	611	41	756	47	597	36
Taiwan	281	28	431	39	462	56
India	1,399	405	638	193	448	105
Poland	97	12	248	41	364	84
Netherlands	306	32	494	52	314	33
Japan	79	4	261	5	273	37
Ireland	3	0	11	0	218	22

Imports of articles of aluminium into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**347,818**	**69,475**	**425,214**	**81,669**	**495,165**	**95,331**
Extra-EU	**114,669**	**23,196**	**147,924**	**29,549**	**168,683**	**32,114**
Developing countries	**24,161**	**6,372**	**29,750**	**6,996**	**30,576**	**6,978**
Major suppliers:						
Italy 77,547	17,488	93,444	20,726	99,785	24,969	
France	16,164	2,723	21,657	3,449	63,330	11,449
Germany	48,922	8,816	53,502	9,231	51,887	7,558
Czech Republic	23,820	5,623	27,457	6,960	28,124	6,298
Spain	22,921	5,066	25,627	5,665	27,853	5,453
Austria	20,167	5,110	30,767	5,581	27,769	5,683
Netherlands	20,392	2,432	22,264	3,045	23,396	3,103
Poland	8,207	1,651	14,187	2,951	22,433	4,734
Slovakia	6,461	1,624	16,802	4,259	20,939	4,489
Hungary	14,897	2,966	17,275	3,080	19,280	3,254
Slovenia	12,603	3,007	14,925	3,558	16,400	3,767
United States	11,622	1,313	12,301	1,192	13,839	1,425
Switzerland	14,114	1,642	13,575	1,320	13,410	1,173
United Kingdom	9,344	1,227	9,183	902	9,371	998
Belgium	4,526	743	6,951	903	7,475	1,171
Turkey	4,480	1,136	7,390	1,558	6,511	1,283
Norway	1,217	371	2,073	463	6,345	1,422
Portugal	4,638	737	5,196	902	5,087	744
Sweden	2,729	485	3,886	647	3,784	528
South Korea	3,738	379	4,888	574	3,345	335
China	2,156	416	2,775	469	2,779	555
Finland	835	197	1,689	394	2,423	541
Denmark	3,179	484	1,978	310	2,282	458
Israel	1,637	290	3,194	421	2,261	256
Croatia	1,452	383	1,459	442	2,211	675

Imports of locks and padlocks into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**1,052,351**	**87,808**	**1,171,850**	**97,547**	**1,187,849**	**95,148**
Extra-EU	**306,538**	**37,404**	**392,875**	**44,531**	**430,260**	**43,602**
Developing countries	**89,814**	**19,311**	**116,940**	**24,424**	**112,860**	**21,954**
Major suppliers:						
Germany	334,719	18,607	332,896	20,726	308,325	16,742
France	117,475	6,660	119,629	6,504	134,015	8,130
Czech Republic	61,424	6,997	78,119	7,760	104,949	9,573
China	71,771	16,447	94,620	20,667	88,828	18,267
Spain	69,532	6,220	101,003	7,106	80,782	6,440
Italy	67,352	6,885	72,662	7,320	69,109	8,325
United States	43,883	2,835	52,610	2,559	49,646	1,542
United Kingdom	46,980	3,003	41,632	3,033	47,032	3,592
Portugal	36,166	3,197	33,555	2,651	37,371	2,469
Taiwan	27,280	3,227	35,306	3,640	33,487	3,250
Japan	15,162	973	23,307	959	31,861	1,774
Switzerland	18,904	320	20,653	330	21,634	396
Netherlands	17,175	2,134	19,146	2,575	21,338	2,629
Austria	14,751	561	15,697	587	16,792	569
Poland	6,582	573	11,449	728	15,044	1,011
Norway	13,371	351	17,101	410	15,015	382
Finland	13,006	529	13,284	528	14,372	484
South Korea	10,364	438	11,439	624	14,201	746
Belgium	11,121	859	12,512	888	12,175	1,009
Hong Kong	5,479	779	10,503	1,246	10,364	1,287
Sweden	12,044	1,343	10,415	603	9,258	674
Canada	3,772	230	4,057	141	8,675	230
Denmark	3,883	296	4,611	337	4,447	337
Hungary	3,924	868	4,524	1,103	4,142	732
Turkey	2,150	455	2,703	593	3,559	673

Imports of (parts of) gas turbines into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**3,318,568**	**34,686**	**4,292,184**	**44,771**	**4,546,415**	**58,934**
Extra-EU	**2,347,534**	**19,752**	**3,137,805**	**26,552**	**3,240,681**	**35,018**
Developing countries	**147,793**	**2,880**	**221,165**	**4,398**	**238,429**	**4,307**
Major suppliers:						
United States	1,520,826	5,955	2,098,208	7,227	2,216,462	12,340
United Kingdom	252,713	3,242	296,496	4,626	382,967	5,431
Switzerland	204,108	3,144	275,552	3,924	274,567	4,098
Germany	199,851	3,911	190,969	3,855	263,553	6,594
France	197,034	4,125	236,004	3,113	219,135	3,530
Canada	200,525	629	189,622	732	171,863	866
Italy	78,483	833	116,606	2,421	151,470	3,256
Netherlands	105,667	1,451	82,466	1,775	136,255	1,677
Japan	78,475	1,952	120,004	2,155	78,369	756
Venezuela	5,313	29	23,504	49	42,896	58
U,A,Emirates	32,053	253	31,901	244	35,448	315
Singapore	14,178	49	13,335	72	35,176	104
Australia	11,250	66	41,447	176	34,865	319
Spain	14,104	60	21,290	323	31,466	906
Czech Republic	5,208	622	9,608	3,136	31,276	7,044
Belgium	33,541	195	106,765	778	29,307	365
Norway	57,613	836	66,330	1,238	27,386	247
Hungary	5,184	438	10,880	686	25,219	1,419
Saudi Arabia	25,359	120	14,205	174	24,369	227
Sweden	42,742	517	49,263	289	23,945	73
Ireland	13,898	12	16,624	25	21,974	53
Austria	12,411	360	12,915	624	21,542	1,620
Bahrain	235	20	3,448	10	19,927	29
India	11,783	117	17,226	466	17,510	140
Malaysia	18,642	118	18,668	89	17,505	52

Imports of cylinders for calendering into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**167,547**	**34,486**	**172,757**	**34,121**	**188,429**	**35,684**
Extra-EU	**36,611**	**7,354**	**37,182**	**6,485**	**41,028**	**6,837**
Developing countries	**9,967**	**1,712**	**11,689**	**1,966**	**9,846**	**1,838**
Major suppliers:						
Germany	46,794	9,508	47,559	9,624	54,819	11,541
Austria	19,658	4,074	24,801	4,656	24,778	3,635
France	15,844	2,932	17,348	3,121	17,453	3,324
United Kingdom	10,520	2,572	11,516	2,444	10,754	2,756
Finland	5,314	1,433	6,640	1,420	9,204	1,581
Italy	9,885	2,141	8,082	1,988	9,051	2,076
Switzerland	5,292	941	4,862	904	8,437	1,214
Belgium	6,457	916	4,904	815	6,399	844
United States	4,502	312	5,083	329	5,774	350
Sweden	8,208	1,699	6,413	1,712	4,845	1,021
Netherlands	4,005	1,166	3,221	1,066	4,817	1,118
Norway	4,494	838	4,633	877	4,141	796
Spain	3,032	609	3,720	722	2,887	529
Brazil	1,000	88	1,381	336	2,213	211
Canada	894	67	206	88	2,169	272
Japan	2,382	158	1,885	148	1,832	124
Australia	900	115	715	74	1,647	214
Turkey	1,134	217	2,781	277	1,431	264
Czech Republic	1,254	321	779	269	1,181	340
Poland	931	292	753	252	1,137	447
Slovenia	2,186	448	1,575	402	1,129	273
Portugal	1,572	222	1,252	279	1,072	195
Taiwan	252	69	415	90	1,013	144
Indonesia	0	0	0	0	995	305
South Africa	1,794	223	1,082	212	974	216

Imports of parts of machinery into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**7,317,342**	**1,602,467**	**8,352,504**	**1,868,035**	**8,587,859**	**1,936,151**
Extra-EU	**1,959,102**	**527,828**	**2,273,651**	**642,754**	**2,565,636**	**733,541**
Developing countries	**208,301**	**78,754**	**253,911**	**107,447**	**291,477**	**124,125**
Major suppliers:						
Germany	1,352,022	236,174	1,521,653	249,118	1,580,522	308,188
Italy	731,429	173,830	928,834	274,361	847,844	204,150
France	657,688	233,249	692,489	216,481	711,482	215,166
United States	505,757	50,483	500,990	46,413	643,112	48,347
Sweden	507,990	74,594	608,451	82,161	533,673	79,058
Belgium	429,861	69,166	512,712	79,490	517,277	78,513
Netherlands	428,010	66,688	454,071	79,771	444,627	78,134
United Kingdom	406,600	64,958	406,731	66,505	418,075	66,185
Japan	271,079	32,383	378,541	38,984	314,068	32,276
Austria	264,464	52,438	317,042	57,688	301,421	46,566
Finland	253,901	27,553	284,220	33,133	284,241	35,151
Switzerland	195,378	16,649	231,364	18,191	246,206	19,903
Czech Republic	162,369	109,038	207,121	140,554	242,279	159,375
Spain	168,816	45,373	213,379	55,093	241,626	60,922
Poland	113,229	73,291	130,829	92,035	165,525	109,243
Hungary	95,071	48,401	109,227	58,230	129,086	63,248
Norway	135,267	16,519	110,493	14,560	122,767	22,676
Denmark	108,218	21,151	118,879	22,026	109,767	21,409
Slovenia	68,452	25,110	73,487	27,550	78,154	27,985
Slovakia	48,362	27,284	63,080	38,591	74,556	43,278
China	22,111	18,655	37,419	29,871	51,463	46,257
Ireland	30,212	3,462	39,503	5,187	49,703	6,077
Canada	35,209	4,847	44,674	4,878	42,007	4,609
Romania	19,064	12,837	23,861	15,991	34,263	20,011
South Korea	40,781	12,325	51,433	12,202	33,342	6,231

Imports of parts of transmission into the EU by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**5,147,978**	**815,980**	**6,015,878**	**897,646**	**6,303,753**	**982,878**
Extra-EU	**1,629,367**	**276,001**	**1,980,505**	**296,983**	**2,122,653**	**345,326**
Developing countries	**220,778**	**80,741**	**305,955**	**99,448**	**333,775**	**106,202**
Major suppliers:						
Germany	1,371,902	218,306	1,570,741	237,881	1,667,447	255,211
Italy	614,841	98,176	721,194	110,691	736,707	117,297
United States	488,912	47,926	544,410	36,579	591,123	38,493
France	385,149	48,678	403,581	53,014	439,044	57,531
Japan	322,670	29,591	412,534	32,708	390,478	52,132
United Kingdom	282,199	45,795	337,078	50,804	338,977	49,765
Belgium	214,246	22,243	236,201	23,580	243,834	23,302
Spain	167,340	38,456	225,280	45,228	215,473	57,148
Switzerland	167,732	16,814	190,471	18,154	189,292	16,046
Czech Republic	111,925	35,622	129,682	40,245	169,246	51,667
Austria	145,803	16,582	164,131	20,437	153,495	17,046
Netherlands	119,812	14,032	148,877	17,617	130,990	15,322
China	75,720	36,238	98,367	41,266	121,132	49,984
Sweden	110,935	22,181	112,526	21,577	112,818	21,560
Canada	68,538	3,746	94,368	4,493	99,920	4,618
Slovakia	43,045	7,441	58,725	10,778	78,098	13,440
Brazil	39,180	11,522	71,919	20,995	69,338	17,154
Finland	50,875	4,645	43,422	3,942	66,636	6,068
Poland	38,680	18,210	47,807	16,873	65,922	23,943
Denmark	38,932	7,425	49,542	9,084	47,208	7,676
Hungary	19,039	4,408	26,731	6,932	39,955	9,454
Taiwan	25,873	3,207	36,482	4,277	37,375	4,053
Liechtenstein	25,635	5,906	31,731	5,828	34,557	6,851
Slovenia	21,818	8,732	24,957	10,837	27,277	11,927
India	13,394	2,878	17,053	3,679	25,774	5,851

Imports of castings and forgings into the Netherlands by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**1,221,147**	**175,091**	**1,343,735**	**191,874**	**1,432,182**	**193,786**
Extra-EU	**512,517**	**78,480**	**647,563**	**98,074**	**681,412**	**101,128**
Developing countries	**54,966**	**18,925**	**70,332**	**25,432**	**84,689**	**29,127**
Major suppliers:						
United States	201,838	6,354	288,050	8,811	333,087	8,441
Germany	318,469	38,576	272,988	33,296	323,119	39,312
United Kingdom	77,574	11,009	87,082	9,986	97,912	10,355
Japan	90,380	7,820	83,844	7,627	90,024	7,829
France	69,001	12,247	74,252	15,561	79,668	10,180
Belgium	77,867	11,189	86,171	11,542	76,045	9,042
Italy	56,514	9,417	63,526	7,895	61,624	8,098
Sweden	71,476	8,942	67,459	9,233	54,147	7,166
China	32,821	12,770	45,149	16,411	52,816	19,426
Switzerland	40,662	2,553	63,859	2,518	50,306	2,261
Czech Republic	21,492	10,755	28,033	16,374	26,054	14,636
Finland	12,977	929	25,773	3,210	25,773	3,808
South Korea	26,856	4,916	27,810	4,750	21,730	3,238
Poland	10,153	10,933	16,218	19,570	19,989	21,345
Norway	11,929	550	18,751	539	15,856	1,638
Spain	10,508	2,007	11,889	1,986	13,531	2,345
Turkey	5,560	1,761	5,984	2,920	11,525	4,012
Taiwan	7,642	1,442	8,015	1,597	9,452	1,635
Austria	9,909	1,137	7,396	848	8,998	773
Denmark	5,303	1,251	5,650	903	6,415	1,596
Hungary	4,572	1,823	4,906	2,434	6,037	3,081
India	3,794	1,155	5,006	1,739	5,942	2,204
Canada	7,840	1,159	7,776	914	4,379	337
Portugal	1,383	307	1,870	291	2,942	235
Senegal	1	0	0	0	2,679	54

Imports of castings and forgings into France by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**2,716,588**	**699,763**	**3,300,410**	**752,000**	**3,495,978**	**677,356**
Extra-EU	**692,795**	**121,477**	**877,088**	**130,917**	**949,153**	**142,970**
Developing countries	**84,909**	**34,915**	**109,320**	**40,998**	**131,967**	**47,021**
Major suppliers:						
Germany	709,044	288,079	837,752	267,602	853,128	168,893
Italy	441,962	118,006	520,690	136,683	558,102	142,494
United States	350,150	19,073	447,550	15,181	497,900	16,408
United Kingdom	228,653	42,577	257,823	53,848	283,431	57,127
Belgium	196,872	41,520	304,390	56,694	274,728	58,744
Spain	144,374	38,715	178,058	48,162	189,799	50,194
Netherlands	105,407	13,070	105,269	12,740	164,040	13,046
Japan	68,987	9,363	99,584	11,132	79,775	10,179
Sweden	94,427	10,579	105,506	16,046	74,168	10,655
Switzerland	64,738	5,942	81,458	6,617	72,630	5,512
China	37,291	20,162	47,669	21,245	60,893	24,375
Austria	39,684	9,203	33,369	9,223	41,814	7,313
Finland	21,322	2,932	29,568	3,501	38,295	3,365
Poland	27,414	28,641	31,596	30,615	35,240	31,570
Portugal	21,057	7,980	24,417	11,120	33,185	12,421
Hungary	10,084	4,669	10,824	4,412	19,732	4,900
Canada	12,151	773	15,518	928	18,774	842
Denmark	16,031	4,007	16,980	3,788	17,752	4,391
Slovenia	10,045	4,988	14,185	6,916	17,296	8,715
Czech Republic	5,610	3,064	8,509	3,770	17,001	6,218
Turkey	7,520	3,206	12,796	4,833	15,100	6,391
Taiwan	13,529	2,178	15,955	2,468	14,690	2,118
Ireland	2,640	800	4,971	784	14,470	4,842
Romania	5,450	3,932	6,641	4,802	11,052	5,531
Slovakia	2,646	2,145	5,452	3,377	9,893	4,983

Imports of castings and forgings into Germany by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**4,842,549**	**1,116,239**	**5,735,279**	**1,338,840**	**5,967,905**	**1,294,093**
Extra-EU	**2,380,726**	**631,765**	**2,944,243**	**720,534**	**3,305,197**	**782,223**
Developing countries	**374,970**	**156,062**	**445,137**	**166,367**	**491,546**	**180,234**
Major suppliers:						
United States	717,551	23,412	896,092	20,813	956,558	21,677
Italy	514,049	111,740	620,011	185,632	546,822	118,380
France	469,185	128,811	503,227	144,674	535,733	138,466
Czech Republic	324,840	171,864	398,141	213,750	483,597	232,203
Switzerland	299,298	27,217	374,570	32,050	398,154	32,005
United Kingdom	309,280	35,473	349,195	39,729	358,556	32,369
Austria	268,399	43,849	316,962	55,991	293,955	44,228
China	183,385	98,261	230,742	100,368	226,185	111,588
Netherlands	240,696	36,293	256,200	48,974	225,813	40,224
Poland	142,682	106,740	170,115	119,465	209,627	135,289
Japan	132,229	12,553	193,718	15,968	207,453	16,313
Belgium	191,174	31,617	213,581	33,963	201,699	31,842
Sweden	184,110	37,971	205,708	39,526	194,507	34,589
Spain	126,881	34,795	171,576	43,851	149,610	43,050
Hungary	88,466	37,239	109,541	44,911	145,400	51,925
Slovakia	71,725	26,135	100,575	37,153	124,943	42,661
Canada	35,906	2,197	67,222	2,686	103,925	3,556
Slovenia	49,765	17,854	49,906	19,199	57,717	22,220
Denmark	53,823	12,436	59,515	15,454	53,601	13,816
Finland	86,291	7,518	55,845	4,631	52,156	6,944
Turkey	28,597	11,505	39,846	15,503	43,877	15,051
Brazil	27,523	11,597	34,042	13,735	41,122	12,581
Portugal	28,317	5,123	27,662	4,760	33,571	5,660
Taiwan	25,825	4,558	33,369	5,153	30,038	4,366
Liechtenstein	20,216	4,890	24,252	5,079	26,140	6,050

Imports of castings and forgings into Italy by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**1,695,375**	**401,311**	**2,091,427**	**462,921**	**2,261,931**	**497,849**
Extra-EU	**679,510**	**211,842**	**936,173**	**255,515**	**981,732**	**284,418**
Developing countries	**165,095**	**116,660**	**220,912**	**144,536**	**250,002**	**149,781**
Major suppliers:						
Germany	338,255	43,549	389,290	53,662	414,646	56,207
United States	234,043	5,959	339,670	6,773	337,571	7,360
France	222,472	59,867	225,547	64,464	245,109	63,873
United Kingdom	91,774	14,400	118,255	12,124	170,456	13,656
China	86,442	65,188	120,291	85,915	131,417	90,925
Spain	74,457	27,718	128,570	35,571	125,131	36,645
Japan	67,816	5,663	111,822	7,702	100,154	8,487
Belgium	74,986	10,340	81,117	8,788	85,191	8,478
Austria	77,832	16,411	76,271	13,625	72,297	13,974
Switzerland	64,150	4,421	63,519	4,193	71,948	5,547
Netherlands	62,471	5,622	54,397	7,112	63,762	8,552
Finland	31,856	3,772	37,133	4,121	47,580	4,725
Sweden	31,177	3,383	36,486	3,521	40,518	4,226
Poland	26,839	16,072	27,905	13,242	38,538	22,476
Czech Republic	29,572	22,781	34,382	27,474	37,853	30,155
Romania	19,482	14,515	24,423	18,008	32,727	22,979
Turkey	19,336	17,191	20,690	17,288	26,350	15,928
Slovenia	21,225	19,016	22,157	19,100	22,522	18,509
Canada	16,472	1,094	23,735	831	21,696	1,165
India	7,016	3,918	11,793	5,321	15,219	5,354
South Korea	6,038	1,349	13,141	3,804	15,215	3,373
Taiwan	8,906	894	12,378	1,115	14,949	1,271
Slovakia	6,103	4,285	10,126	7,691	12,824	9,378
Brazil	4,673	2,061	7,253	6,045	11,623	5,735
Denmark	7,962	4,352	10,839	5,193	10,696	4,862

Imports of castings and forgings into the United Kingdom by country of origin, 1999 - 2001
EUR 1,000 / tonnes

	1999		2000		2001	
	value €	**volume**	**value €**	**volume**	**value €**	**volume**
Total	**3,406,443**	**475,579**	**3,866,733**	**464,715**	**4,065,379**	**648,226**
Extra-EU	**1,709,796**	**157,677**	**1,972,551**	**184,532**	**2,199,255**	**244,916**
Developing countries	**294,334**	**81,736**	**392,886**	**98,208**	**451,822**	**119,972**
Major suppliers:						
United States	657,030	23,015	726,887	25,096	955,888	28,380
Germany	596,781	98,730	633,591	96,589	648,547	158,530
Italy	258,213	44,356	314,394	54,604	348,918	59,568
France	271,679	86,971	288,044	48,549	270,010	54,324
Japan	200,903	17,064	279,975	20,129	210,053	34,673
China	105,701	52,155	146,160	63,098	167,778	79,921
Netherlands	157,861	26,827	158,143	30,403	155,871	28,788
Canada	212,573	2,880	186,903	2,907	142,684	2,953
Sweden	106,096	18,116	163,875	12,767	94,536	13,858
Belgium	92,109	9,758	105,887	9,109	92,519	53,693
Switzerland	72,408	2,322	88,725	1,917	83,195	1,322
Norway	83,895	3,605	74,396	4,026	73,342	3,820
Austria	32,525	9,312	32,843	3,718	67,874	5,869
Spain	55,484	9,914	53,742	9,682	58,133	13,645
India	30,270	16,831	47,017	18,845	56,364	24,194
Ireland	36,250	4,412	44,040	5,586	47,017	5,912
Venezuela	4,652	117	21,785	142	42,961	91
Finland	35,042	2,746	40,065	3,744	34,700	4,728
Australia	16,766	651	42,201	662	34,641	893
Singapore	12,865	802	16,168	406	34,551	14,769
Taiwan	22,017	3,801	33,708	4,970	34,180	4,666
U,A,Emirates	30,355	401	21,859	339	32,278	361
Saudi Arabia	31,551	162	25,906	207	31,311	588
Brazil	17,246	1,585	25,622	2,845	27,852	2,742
Denmark	32,621	5,722	34,876	4,800	25,426	2,913

APPENDIX 3 USEFUL ADRESSES

3.1 Standards organisations

INTERNATIONAL:

International Organisation for Standardisation (ISO)
Address: 1, Rue de Varembé, P.O. Box 56, CH-1211 Geneva 20, Switzerland
Telephone: + 41 (0)22 7490111
Fax: + 41 (0)22 7333430
E-mail: central@iso.ch
Internet: www.iso.ch

American Petroleum Institute (API)
Adress: 1220 L Street, NW, Washington, DC 20005-4070, United States
Telephone: +1 (0)202 6828000
Fax: -
E-mail: -
Internet: www.api-ep.api.org

American National Standards Institute (ANSI)
Address: 1819 L Street, NW, 6th Fl., Washington, DC 20036, United States
Telephone: +1 (0)212 6424900
Fax: +1 (0)202 2939287
E-mail: -
Internet: www.ansi.org

American Society for Testing and Materials (ASTM)
Address: 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, United States
Telephone: +1 (0)610 8329585
Fax: +1 (0)610 8329555
E-mail: service@astm.org
Internet: www.astm.org

ASME International
Address: Three Park Avenue, New York, NY 10016-5990, United States
Telephone: +1 (0)973 8821167
Fax: -
E-mail: infocentral@asme.org
Internet: www.asme.org

EUROPEAN UNION:

Comité Européen de Normalisation (CEN)
Address: Rue de Stassart 36, B-1050 Brussels, Belgium
Telephone: + 32 (0)2 25500811
Fax: + 32 (0)2 25500819
E-mail: infodesk@cenorm.be
Internet: www.cenorm.be

THE NETHERLANDS:

Nederlands Normalisatie-instituut (NEN)
Address: P.O. Box 5059, NL-2600 GB DELFT, The Netherlands
Telephone: +31 (0)15 2690390
Fax: +31 (0)15 2690190
E-mail: info@nen.nl
Internet: www.nen.nl

Lloyd's Register Stoomwezen
Address: P.O. Box 769, NL-3000 AT Rotterdam, The Netherlands
Telephone: +31 (0)10 2014200
Fax: +31 (0)10 4117580
E-mail: breda@stoomwezen.nl
Internet: www.stoomwezen.nl

FRANCE:

Association Française de Normalisation (AFNOR)
Address: 11, Avenue Francis de Pressensé, F-93571 Saint-Denise La Plaine Cedex, France
Telephone: +33 (0)1 41628000
Fax: +33 (0)1 49179000
E-mail: norminfo@afnor.fr
Internet: www.afnor.fr

GERMANY:

Deutsches Institut für Normung e.V. (DIN)
Address: Burggrafenstrasse 6, D-10787 Berlin, Germany
Telephone: +49 (0)30 26010
Fax: +49 (0)30 2601123
E-mail: webmaster@din.de
Internet: www.din.de

RAL Deutsches Institut für Gütesicherung und Kennzeichnung e.V.
Address: Siegburger Strasse 39, D-53757 Sankt Augustin, Germany
Telephone: + 49 (0)2241 16050
Fax: + 49 (0)2241 160511
E-mail: ral-institut@t-online.de
Internet: www.ral.de

ITALY:

Ente Nazionale Italiano de Unificazione (UNI)
Address: Via Battistotti Sassi 11b, I-20133 Milano MI, Italy
Telephone: +39 (0)2 700241
Fax: +39 (0)2 70106106
E-mail: uni@uni.com
Internet: www.uni.com

UNITED KINGDOM:

British Standards Institution (BSI)
Address: 389 Chiswick Highroad, London W4 4 AL, United Kingdom
Telephone: +44 (0)20 89969000
Fax: +44 (0)20 89967400
E-mail: info@bsi-global.com
Internet: www.bsi-global.com

BM TRADA Certification Limited
Address: Chiltem House, Stocking Lane Hughenden Valley, High Wycombe, Buckinghamshire HP14 4NB, United Kingdom
Telephone: +44 (0)1494 569700
Fax: +44 (0)1494 565487
E-mail: enquiries@bmtrada.com
Internet: www.bmtrada.com

3.2 Sources of price information

Price information can be obtained through trade organisations, trade press or trade fairs. Other possibilities include checking for prices on the Internet, asking for prices at distributors, agents and other distribution channels. Please refer to the other appendices for details.

The London Metal Exchange Limited
Information: various metal prices
Address: 56 Leadenhall Street, London EC3A 2DX, United Kingdom
Telephone: +44 (0)207 2645555
Fax: +44 (0)207 6800505
E-mail: info@lme.co.uk
Internet: www.lme.co.uk

Iron and Steel Statistics Bureau (ISSB)
Information: iron and steel statistics
Address: 1 Carlton House Terrace, London SW1Y 5DB, United Kingdom
Telephone: +44 (0)20 7343 3900
Fax: +44 (0)20 7343 3902
E-mail: phil.hunt@issb.co.uk
Internet: www.issb.co.uk

Japan Metal Bulletin
Information: iron, steel and non-ferrous metal market prices
Publisher: Media Project Agency, Sangyo Press Co., Ltd.
Address: P.O. Box 550, Daini-Fuji Building, 1-5-15, Utsubo-honmachi, Nishi-ku, Osaka City, Japan
Telephone: +81 (0)6 4438551
Fax: +81 (0)6 4433828
E-mail: jmb@sangyo.co.jp
Internet: www.japanmetalbulletin.com

3.3 Trade associations

EUROPEAN UNION:

Association of the International Federation of Steel, Tube and Metal Merchants
Address: 65, Avenue Victor Hugo, F-75116 Paris, France
Telephone: +33 (0)1 45007250
Fax: +33 (0)1 45007137
E-mail: -
Internet: -

European Committee of Industrial Furnace and Heating Equipment Manufacturers (CECOF)
c/o VDMA, FV TPT
Address: P.O. Box 710864, D-60498 Frankfurt, Germany
Telephone: +49 69 6603 1278
Fax: +49 69 6603 1692
E-mail: cecof@vdma.org
Internet: www.cecof.org

Comite de Liaison des Industries Europeennes de l'Estampage et de la Forge (Euroforge)
Address: Goldene Pforte 1, D-58093 Hagen, Germany
Telephone: +49 23 31 95 88 13
Fax: +49 23 31 5 10 46
E-mail: -
Internet: www.euroforge.org

Comittee of Associations of European Foundries (CAEF)
Address: P.O. Box 101961, D-40010 Düsseldorf, Germany
Telephone: +49 (0)211 68 71 215
Fax: +49 (0)211 68 71 205
E-mail: info@caef-eurofoundry.org
Internet: www.caef-eurofoundry.org

Esaform
Address: Ecole des Mines de Paris/CEMEF, BP 207, F-06904 Sophia Antipolis Cedex, France
Telephone: +33 (0)4 93 95 75 75
Fax: +33 (0)4 92 38 97 52
E-mail: esaform@esaform.org
Internet: www.esaform.org

European Association of Machine Tool Merchants (EAMTM)
Address: Villalaan 83, B-1190 Brussels, Belgium
Telephone: +32 (0)2 5341515
Fax: +32 (0)2 5381214
E-mail: info@eamtm.org
Internet: www.eamtm.org

European Confederation of Iron and Steel Industry (EUROFER)
Address: Rue du Noyer 211, B-1000 Brussels, Belgium
Telephone: +32 (0)2 7387920
Fax: +32 (0)2 7363001
E-mail: -
Internet: www.eurofer.org

European Federation of Association of Steel, Tube and Metal Merchants (EUROMETAL)
Address: Boulevard de la Woluwe 46 B7, B-1200 Brussels, Belgium
Telephone: +32 (0)2 7715340
Fax: +32 (0)2 7721977
E-mail: contact@eurometal.net
Internet: www.eurometal.net

International Cold Forging Group
ICFG Secretary's office Erlangen c/o Alexander Putz
Chair of Manufacturing Technology, University of Erlangen-Nuremberg
Address: Egerlandstr. 11, D-91058 Erlangen, Germany
Telephone: +49 (0)9131 85-27140
Fax: +49 (0)9131 930142
E-mail: icfg@lft.uni-erlangen.de
Internet: www.icfg.info

International Council of Sheet Metal Presswork Associations (ICOSPA)
Address: Goldene Pforte 1, D-58093 Hagen, Germany
Telephone: +49 2331 958819
Fax: +49 2331 51046
E-mail: klehmann@ibu.wsu.de
Internet: www.icospa.com

ORGALIME
Liaison group of the european mechanical, electrical, electronic and metalworking industries
Address: Boulevard Auguste Reyers 80, B-1030 Brussels, Belgium
Telephone: +32 (0)2 7068235
Fax: +32 (0)2 7068250
E-mail: secretariat@orgalime.org
Internet: www.orgalime.org

World Foundrymen Organization
Address: Bordesley Hall, The Holloway, Alvechurch, Birmingham B48 7QA, United Kingdom
Telephone: +44 (0)1527 596100
Fax: +44 (0)1527 596102
E-mail: wfo@icme.org.uk
Internet: -

THE NETHERLANDS:

Algemene Vereniging van Nederlandse Gieterijen (AVNEG)
Address: P.O. Box 190, NL-2700 AD Zoetermeer, The Netherlands
Telephone: +31 (0)79 353 12 52
Fax: +31 (0)79 353 13 65
E-mail: jke@fme.nl
Internet: www.fme.nl/frames/branches/avneg.html

Federatie Het Instrument (FHI) – Industriële Automatisering
Address: P.O. Box 2099, NL-3800 CB Amersfoort, The Netherlands
Telephone: +31 (0)33 4657507
Fax: +31 (0)33 4616638
E-mail: info@fhi.nl
Internet: www.fhi.nl

METAALUNIE/MGB
Address: P.O. Box 2600, NL-3430 GA Nieuwegein, The Netherlands
Telephone: +31 (0)30 605 33 44
Fax: +31 (0)30 605 32 08
E-mail: info@metaalunie.nl
Internet: www.mkbnet.nl/sector/industrie/metaalunie

NEVAT
Address: P.O. Box 190, NL - 2700 Zoetermeer, The Netherlands
Telephone: +31 (0)79 3531147
Fax: +31 (0)79 3531365
E-mail: info@nevat.nl
Internet: www.nevat.nl

Staalfederatie
Address: P.O. Box 30447, NL-2500 GK The Hague, The Netherlands
Telephone: +31 (0)70 3450200
Fax: +31 (0)70 3636681
E-mail: info@staalfederatie.nl
Internet: www.staalfederatie.nl

Vereniging FME-CWM
Address: P.O. Box 190, NL-2700 AD Zoetermeer, The Netherlands
Telephone: +31 (0)79 353 11 00
Fax: +31 (0)79 353 13 65
E-mail: alg@fme.nl
Internet: www.fme.nl

AUSTRIA:

Fachverband der Maschinen- und Stahlbauindustrie Österreichs (FMS)
Address: Wiedner Hauptstr. 63, A-1045 Wien, Austria
Telephone: +43 (0)1 5 02 25 34 79
Fax: +43 (0)1 5 05 10 20
E-mail: rankl@fms.at
Internet: www.fms.at

BELGIUM:

The Multisector Federation for the Technology Industry AGORIA
Address: Diamant Building, Boulevard Auguste Reyers 80, B-1030 Brussels, Belgium
Telephone: +32 (0)2 7067800
Fax: +32 (0)2 7067801
E-mail: info@agoria.be
Internet: www.agoria.be

AGORIA Foundries Group
Address: Diamant Building, Boulevard Auguste Reyers 80, B-1030 Brussels, Belgium
Telephone: +32 (0)2 7067959
Fax: +32 (0)2 7067966
E-mail: hilde.vermeulen@agoria.be
Internet: www.agoria.be/gieterij

CZECH REPUBLIC:

Svaz Kóvaren
Address: Vídenská 127, CZ-619 00 Brno, Czech Republic
Tel.ephone: +42 05 471 35339
Fax: +42 05 471 35330
E-mail: sekretariat@svazkovaren.cz
Internet: www.svazkovaren.cz

DENMARK:

Dansk Industri - Danske Støberiers Brancheforening
Address: H. C. Andersens Boulevard 18, DK-1787 Kobenhavn V, Denmark
Telephone: +45 (0)33 773377
Fax: +45 (0)33 773300
E-mail: tr@di.dk
Internet: www.di.dk

FINLAND:

Federation of Finnish Metal, Engineering and Electrotechnical Industries (MET)
Finnish Foundry Group
Address: Eteläranta 10, P.O. Box 10, FIN-00131 Helsinki, Finland
Telephone: +358 (0)9 1923292
Fax: +358 (0)9 624462
E-mail: pentti.kangasmaa@met.fi
Internet: www.met.fi

FRANCE:

Association Technique de Fonderie
Address: 45 Rue Louis Blanc, F-92400 Courbevoie, France
Telephone: +33 (0)1 47 17 68 09
Fax: +33 (0)1 47 17 68 10
E-mail: hourlier@atf.asso.fr
Internet: www.atf.asso.fr

Association Zinc Fonderie
Address: 45 Rue Louis Blanc, F-92400 Courbevoie, France
Telephone: +33 (0)1 43 34 76 67
Fax: +33 (0)1 43 34 76 37
E-mail: webmaster@zinc-fonderie.asso.fr
Internet: www.zinc-fonderie.asso.fr

Fédération des Industries Mécaniques (FIM)
Address: 39-41 Rue Louis Blanc, F-92400 Courbevoie, France
Telephone: +33 1 47176000
Fax: -
E-mail: info@mail.fimeca.com
Internet: www.fim.net

Les Fondeurs de France
Address: 45 Rue Louis Blanc, F-92400 Courbevoie, France
Telephone: +33 (0)1 43 34 76 30
Fax: +33 (0)1 43 34 76 31
E-mail: contact@fondeursdefrance.org
Internet: www.fondeursdefrance.org

Groupement Français des Industries Transformatrices des Metaux en Feuilles Minces (GIMEF)
Address: 39/41, Rue Louis-Blanc, F-92400 Courbevoie, France
Telephone: +33 1 47176410
Fax: +33 1 47176360
E-mail: gimef@gimef-france.com
Internet: www.gimef-france.com

Mouvement des Entreprises de France (MEDEF)
Address: 31 av Pierre 1er de Serbie, F-75784 Paris Cédex 16, France
Telephone: +33 1 40694444
Fax: +33 1 47234732
E-mail: -
Internet: www.medef.fr

SNEF
Address: F-92038 Paris la Defense Cedex, France
Telephone: +33 1 47176417
Fax: +33 1 47176423
E-mail: forgesnef@wanadoo.fr
Internet: www.mecanet.net

GERMANY:

Deutscher Giessereiverband (DGV)
Address: P.O. Box 10 19 61, D-40010 Düsseldorf, Germany
Telephone: +49 (0)211 68 71 215
Fax: +49 (0)211 68 71 205
E-mail: info@dgv.de
Internet: www.dgv.de

Fachverband Dampfkessel-, Behälter- und Rohrleitungsbau e.V. (FDBR)
Address: P.O. Box 320420, D-40419 Düsseldorf, Germany
Telephone: +49 (0)211 498700
Fax: +49 (0)211 4987036
E-mail: info@fdbr.de
Internet: www.fdbr.de

Gesamtverband Deutscher Metallgiessereien (GDM)
Address: P.O. Box 10 54 63, D-40045 Düsseldorf, Germany
Telephone: +49 (0)211 47 96 152
Fax: +49 (0)211 47 96 409
E-mail: info@gdm-metallguss.de
Internet: www.gdm-metallguss.de

Gütegemeinschaft Kupferrohr e.V.
Address: Am Bonneshof 5, P.O. Box 105463, D-40045 Düsseldorf, Germany
Telephone: +49 (0)211 47960
Fax: +49 (0)211 4796400
E-mail: zilkens@ne-metalnet.de
Internet: www.guete-kupferrohr.de

Industrieverband Blechumformung (IBU)
Address: P.O. Box 944, D-58093 Hagen, Germany
Telephone: +49-2331-958831
Fax: +49-2331-51046
E-mail: klehmann@ibu.wsu.de
Internet: www.ibu.wsm-net.de

Industrieverband Deutscher Schmieden e. V. (IDS)
Address: Goldene Pforte 1, D-58093 Hagen, Germany
Telephone: +49 (0)2331 9588-0
Fax: +49 (0)2331 51046
E-mail: ids@ids.wsm-net.de
Internet: www.ids-wsu.de

Verband Deutscher Machinen und Anlagenbau e.V. (VDMA)
German Engineering Assocation
Address: Lyoner Strasse 18, P.O. Box 710864, D-60498 Frankfurt am Main, Germany
Telephone: +49 (0)69 66031394
Fax: +49 (0)69 66031421
E-mail: vtma@vdma.org
Internet: www.vdma.org

Wirtschaftsverband Stahl- Und Metallverarbeitung E.V. (WSM)
Address: P.O. Box 4009, D-58040 Hagen, Germany
Telephone: +49 (0)2331 9588 0
Fax: +49 (0)2331 958717
E-mail: mschlieper@fpm.wsm-net.de
Internet: www.wsm-net.de

Wirtschafts Vereinigung Metalle (WVM)
Address: Haus der Metalle, Am Bonneshof 5, D-40474 Düsseldorf, Germany
Telephone: +49.(0)211.4796 0
Fax: +49.(0)211.4796 400
E-mail: info@wvmetalle.de
Internet: www.wvmetalle.de

IRELAND:

Irish Business and Employers Confederation (IBEC)
Address: Confederation House, 84/86 Lower Baggot Street, Dublin, Ireland
Telephone: +353 (0)1 6601011
Fax: +353 (0)1 6601717
E-mail: info@ibec.ie
Internet: www.ibec.ie

ITALY:

Associazione Italiana Fornitori Macchine E Materiali Per Fonderi (AMAFOND)
Address: Milano Corso Venezia, 47/49/51
Telephone: +39-02-7750219
Fax: +39-02-7750470
E-mail: info@amafond.com
Internet: www.amafond.com

ASSOFOND
Address: Via Copernico 54, I-20090 Trezzano s/N (MI), Italy
Telephone: +39 (0)2 48 40 09 67
Fax: +39 (0)2 48 40 12 82
E-mail: ponzini@assofond.it
Internet: www.assofond.it

Comitato Italiano Costruttori Forni Industriali (CICOF)
Address: Via Battistotti Sassi 11, I-20133 Milano, Italy
Telephone: +39 (0)2 7397 1
Fax: +39 (0)2 7397 316
E-mail: anima@anima-it.com
Internet: www.anima-it.com

Federazione delle Associazioni Nazionali della Industria Meccanica Varia ed Affine (ANIMA)
Address: Via Luisa Battistotti Sassi 11/b, I-20133 Milano, Italy
Telephone: +39 (0)2 73971
Fax: +39 (0)2 7397316
E-mail: anima@anima-it.com
Internet: www.anima-it.com

Unione Nazional e Italiana Stampatori Acciaio (UNISA)
Address: Via Le Sarca 336, I-20126 Milano, Italy
Telephone: +39-02 66114431
Fax: +39-02 66114431
E-mail: unisa@unisa.org
Internet: www.unisa.org

Luxembourg:

Fédération des Industriels Luxembourgeois (FEDIL)
Address: P.O. Box 1304, L-1013 Luxembourg, Luxembourg
Telephone: +352 (0)43 53661
Fax: +352 (0)43 2328
E-mail: fedil@fedil.lu
Internet: www.fedil.lu

POLAND:

Polish Forging Association (ZKP)
Address: Al. Mickiewicza 30, PL-30-059 Kraków, Poland
Telephone: +48 12 6172908
Fax: +48 12 6338421
E-mail: zkp@zkp.pl
Internet: www.zkp.pl

PORTUGAL:

Associação Nacional das Empresas Metalúrgicas e Metalomecânicas (ANEMM)
Address: Estrada do Paço do Lumiar, Pólo Tecnológico de Lisboa, Lote 13,
PT-1600 Lisboa, Portugal
Telephone: +351 (0)21 7152172
Fax: +351 (0)21 7150403
E-mail: anemm@anemm.pt
Internet: www.anemm.pt

Associação Portuguesa de Fundição (APF)
Address: Rua do Campo Algre 672 - 2°Esq.,
P-4150 Porto, Portugal
Telephone: +351 (0)22 609 06 75
Fax: +351 (0)22 600 07 64
E-mail: apf@esoterica.pt
Internet: -

SPAIN:

Asociación Española de Exportadores de Fundición (Fundigex)
Address: Alameda Recalde, 50, E-48008 Bilboa, Spain
Telephone: +34 944706506
Fax: +34 944220061
E-mail: fundigex@camaranet.com
Internet: www.fundigex.es

Asociación Nacional de Fabricantes de Bienes de Equipo (SERCOBE)
Address: P.O. Box 1313, E-28001 Madrid, Spain
Telephone: +34 (0)91 4357240
Fax: +34 (0)91 5770910
E-mail: sercobe@sercobe.es
Internet: www.sercobe.es

Confederación Española de Organizaciones Empresariales del Metal (CONFEMETAL)
Address: Príncipe de Vergara 74, E-28006 Madrid, Spain
Telephone: +34 (0)91 5625590
Fax: +34 (0)91 5635758
E-mail: confemetal@confemetal.es
Internet: www.confemetal.es

Federción Española de Asociaciones de Fundidores (FEAF)
Address: Alda. Urquijo, 33-1°D, E-48008 Bilbao, Spain
Telephone: +349 (0)4 470 07 07
Fax: +349 (0)4 421 19 88
E-mail: feaf@feaf.es
Internet: www.feaf.es

SIFE
Address: General Concha, 22-2°, E-48010 Bilbao, Spain
Telephone: +34-94-4433450
Fax: +34-94-4433454
E-mail: sife@coiib.es
Internet: -

SWEDEN:

Svenska Gjuteriföreningen
Address: P.O. Box 2033, S-550 02 Jönköping, Sweden
Telephone: +46 36) 30 12 00
Fax: +46 36) 16 68 66
E-mail: info@gjuteriforeningen.se
Internet: www.gjuteriforeningen.se

Sveriges Verkstads Industrier (VI) - Smidesgruppen
Address: P.O. Box 5510, S-11485 Stockholm, Sweden
Telephone: +46 (0)8 7820800
Telefax: +46 (0)8 7820966
E-mail: per.westerhult@vi.se
Internet: www.vibab.se/smidesgruppen

SWITZERLAND:

Aluminium-Verband Schweiz
Address: Dufourstrasse 31, CH-8024 Zürich, Switzerland
Telephone: +41 (0)1 251 29 52
Fax: +41 (0)1 252 72 88
E-mail: info@alu.ch
Internet: www.alu.ch

Giesserei-Verband der Schweiz (GVS)
Address: P.O. Box 7190, CH-8023 Zürich, Switzerland
Telephone: +41 (0)1 271 90 90
Fax: +41 (0)1 271 92 92
E-mail: gvs@jgp.ch
Internet: www.jgp.ch/gvs/

Schweizer Maschinen-, Elektro- und Metall-Industrie (SWISSMEM)
Address: Kirchenweg 4, CH-8008 Zürich, Switzerland
Telephone: +41 (0)1 3844111
Fax: +41 (0)1 3844242
E-mail: info@swissmem.ch
Internet: www.swissmem.ch

UNITED KINGDOM:

British Cold Forging Group (BCFG)
Address: School of Mechanical, Materials, Manufacturing Engineering and Management, University of Nottingham, University Park, Nottingham NG7 2RD, United Kingdom
Telephone: +44 (0)115 9514061
Fax: +44 (0)115 9514062
Email: peter.standring@nottingham.ac.uk
Internet: www.bcfg.co.uk

British Foundry Association (BFA)
Address: 6th Floor, McLaren Building, 35 Dale End, Birmingham B4 7LN, United Kingdom
Telephone: +44 (0)121 200 2100
Fax: +44 (0)121 200 1306
E-mail: admin@bfa.co.uk
Internet: www.bfa.co.uk

British Industrial Furnace Construction Association (BIFCA)
Address: The McLaren Build., 6th Floor, 35 Dale End, Birmingham B4 7LN, United Kingdom
Telephone: +44 (0)121 200-2100
Fax: +44 (0)121 200-1306
Email: enquiry@bifca.org.uk
Internet: www.bifca.org.uk

Cast Metals Federation
Address: National Metalforming Centre, 47 Birmingham Road, West Bromwich B70 6PY, United Kingdom
Telephone: +44 (0)121 601 6390
Fax: +44 (0)121 601 6391
E-mail: admin@cmfed.co.uk
Internet: www.castmetalsfederation.com

Confederation of British Metalworking
Address: The National Metalforming Centre, 47 Birmingham Road, West Bromwich B70 6PY, United Kingdom
Telephone: +44 (0)121 601 6350
Fax: +44 (0)121 601 6373
E-mail: info@britishmetalforming.com
Internet: www.britishmetalforming.com

Foundry Equipment & Supplies Association (FESA)
Address: Queensway House, 2 Queensway, Redhill, Surrey RH1 1QS, United Kingdom
Telephone: +44 (0)1737 855280
Fax: +44 (0)1737 855469
E-mail: marywhite@uk.dmgworldmedia.com
Internet: -

Mechanical and Metal Trades Confederation (METCOM)
Address: Savoy Tower, 77 Renfrew Street, Glasgow G2 3BZ, United Kingdom
Telephone: +44 (0)141 332 0826
Fax: +44 (0)141 332 5788
E-mail: mikegregory@metcom.org.uk
Internet: www.metcom.org.uk

Metalforming Machinery Makers' Association
Address: 6th Floor, The McLaren Building, 35 Dale End, Birmingham B4 7LN, United Kingdom
Telephone: +44 (0)121 200 2100
Fax: +44 (0)121 200 1306
E-mail: dbrotherton@mmma.org.uk
Internet: www.mmma.org.uk

Business support organisations

INTERNATIONAL:

Eurochambres
Association of European Chambers of Commerce and Industry
Address: Rue Archimède 5, Box 4, B-1000 Brussels, Belgium
Telephone: +32 (0)2 2820850
Fax: +32 (0)2 2300038
E-mail: eurochambers@eurochambers.be
Internet: www.eurochambers.be

International Chamber of Commerce (ICC)
Address: 38, Cours Albert 1er, F-75008 Paris, France
Telephone: +33 (0)1 491532828
Fax: +33 (0)1 491532859
E-mail: icc@iccwbo.org
Internet: www.iccwbo.org

International Trade Centre UNCTAD/WTO (ITC)
Address: Palais des Nations,
54-56 Rue de Montbrillant,
CH-1211 Geneva 10, Switzerland
Telephone: +41 (0)22 7300111
Fax: +41 (0)22 7334439
E-mail: itcreg@intracen.org
Internet: www.intracen.org

AUSTRIA:

Wirtschaftskammern Österreichs-Austrian Economic Chamber
Address: P.O. Box 150, A-1045 Vienna, Austria
Telephone: +43 (0)1 501054194
Fax: +43 (0)1 50105
E-mail: callcenter@wko.at
Internet: www.wko.at

Österreichische Forschungsstiftung für Entwicklungshilfe (ÖFSE)
Address: Berggasse 7, A-1090 Vienna, Austria
Telephone: +43 (0)1 3174010
Fax: +43 (0)1 3174015
E-mail: office@oefse.at
Internet: www.oefse.at

BELGIUM:

Belgian Foreign Trade Board (BFTB)
Address: World Trade Center-Tower 1,
Boulevard du Roi Albert II 30-b36,
B-1000 Brussels, Belgium
Telephone: +32 (0)2 206 35 11
Fax: +32 (0)2 203 18 12
E-mail: info@obcebdbh.be
Internet: www.obcebdbh.be

DENMARK:

Danish Import Promotion Office for Products from Developing Countries (DIPO)
Address: Børsen, DK-1217 Kopenhagen K, Denmark
Telephone: +45 (0)33 950500
Fax: +45 (0)33 120525
E-mail: dipo@commere.dk
Internet: www.dipo.dk

FINLAND:

Ministry for Foreign Affairs-Department for International Development Cooperation
Address: P.O. Box 176, FIN-00161 Helsinki, Finland
Telephone: +358 (0)9 13416370
Fax: +358 (0)9 13416375
E-mail: kyoinfo@formin.fi
Internet: www.global.finland.fi

FRANCE:

Agence française de Développement (AfD)
Address: 5, rue Roland Barthes,
F-75598 Paris Cedex 12, France
Telephone: +33 (0)1 53443131
Fax: +33 (0)1 44879939
E-mail: com@afd.fr
Internet: www.afd.fr

GERMANY:

Deutsche Gesellschaft für Technische Zusammenarbeit (DTZ)
German Agency for Technical Cooperation
Address: Dag-Hammerskjöld-Weg 1-5,
D-65726 Eschborn, Germany
Telephone: +49 (0)61 96790
Fax: +49 (0)61 96791115
E-mail: -
Internet: www.gtz.de

Bundesagentur für Aussenwirtschaft (BfAI)
Federal Office of Foreign Trade Information
Address: P.O. Box 100522, D-50455 Cologne, Germany
Telephone: +49 (0)221 20570
Fax: +49 (0)221 2057212
E-mail: info@bfai.de
Internet: www.bfai.de

GREECE:

Hellenic Foreign Trade Board (HEPO)
Address: 86 Mar. Antypa Str, GR-16346 Helioupolis,
Greece
Telephone: +30 (0)1 9982100
Fax: +30 (0)1 9969100
E-mail: infocenter@hepo.gr
Internet: www.hepo.gr

ICELAND:

Trade Council of Iceland
Address: Hallveigarstígur 1, IS-101 Reykjavík, Iceland
Telephone: +354 (0)5114000
Fax: +354 (0)5114040
E-mail: icetrade@icetrade.is
Internet: www.icetrade.is

The Icelandic International Development Agency (ICEIDA)
Address: P.O. Box 5330, IS-125 Reykjavik, Iceland
Telephone: +354 (0)545 8980
Fax: +354 (0)545 8985
E-mail: iceida@utn.stjr.is
Internet: www.iceida.is

ITALY:

Istituto nazionale per il Commercio Estero (ICE)
Address: Via Liszt 21, I-00144 Rome, Italy
Telephone: +39 (0)6 59921
Fax: +39 (0)6 59647382
E-mail: dirtecn@ice.it
Internet: www.ice.it

THE NETHERLANDS:

Centre for the Promotion of Imports from Developing Countries (CBI)
Address: P.O. Box 30009, NL-3001 DA Rotterdam, The Netherlands
Telephone: +31 (0)10 2013434
Fax: +31 (0)10 4114081
E-mail: cbi@cbi.nl
Internet: www.cbi.nl

NORWAY:

Norwegian Agency for Development Cooperation (Norad)
Address: P.O. Box 8034 Dep, N-0030 Oslo, Norway
Telephone: +47 (0)22 242030
Fax: +47 (0)22 242031
E-mail: postmottak@norad.no
Internet: www.norad.no

SPAIN:

Agencia Española de Cooperación Internacional (AECI)
Address: Avenida De Los Reyes Católicos 4, E-28040 Madrid, Spain
Telephone: +34 (0)91 5838100
Fax: +34 (0)91 5838310
E-mail: -
Internet: www.aeci.es

SWEDEN:

Swedish International Development Cooperation Agency (SIDA)
Address: S-10525 Stockholm, Sweden
Telephone: +46 (0)8 6985000
Fax: +46 (0)8 208864
E-mail: info@sida.se
Internet: www.sida.se

SWITZERLAND:

Direktion für Entwicklung und Zusammenarbeit (DEZA)
Swiss Agency for Development and Cooperation (SDC)
Address: Freiburgstrasse 130, Bern, Switzerland
Telephone: -
Fax: -
E-mail: info@deza.admin.ch
Internet: www.deza.admin.ch

Swiss Import Promotion Programme (SIPPO)
Address: P.O. Box 492, CH-8035 Zürich, Switzerland
Telephone: +41 (0)1 3655151
Fax: +41 (0)1 3655221
E-mail: info@sippo.ch
Internet: www.sippo.ch

UNITED KINGDOM:

Department for International Development (DFID)
Address: 94 Victoria Street, London SW1E 5JL, United Kingdom
Telephone: +44 (0)1355 843132
Fax: +44 (0)1355 843632
Email: enquiry@dfid.gov.uk
Internet: www.dfid.gov.uk

3.4 Trade fair organisers

THE NETHERLANDS:

ESEF
Item: European subcontracting and engineering fair
Date: January-February 2004
Location: Utrecht
Frequency: Every two years
Organiser: Jaarbeurs Exhibitions & Media
Address: P.O. Box 8500, NL-3503 RM Utrecht, The Netherlands
Telephone: +31 (0)30 295 57 93
Fax: +31 (0)30 295 58 68
E-mail: esef@jaarbeursutrecht.nl
Internet: www.esef.nl

Maintenance en Techniek
Item: Maintenance and technology trade fair
Date: 3-5 February 2004
Location: Maastricht
Frequency: Every two years
Organiser: MECC Exhibitions
Address: P.O. Box 1630, NL-6201 BP Maastricht, The Netherlands
Telephone: +31 (0)43 3838383
Fax: +31 (0)43 3838300
E-mail: info@mecc.nl
Internet: www.mecc.nl

BELGIUM:

Maintenance

Item:	Industrial maintenance fair
Date:	23-25.03. 2004
Location:	Antwerp
Frequency:	Every two years
Organiser:	IMEXO b.v.b.a.
Address:	Jan van Rijswijcklaan 275, B-2020 Antwerpen, Belgium
Telephone:	+32 3 2388583
Fax:	+32 3 2376781
E-mail:	schellekens@imexo.be
Internet:	www.imexo.be

FRANCE:

MIDEST

Item:	International sub-contracting exhibition
Date:	-
Location:	Paris
Frequency:	Every year
Organiser:	Reed Exhibitions France
Address:	70 Rue Rivay, F-92532 Levallois Perret Cedex, France
Telephone:	+33 (0)1 47562131
Fax:	+33 (0)1 47562140
E-mail:	info@midest.com
Internet:	www.midest.com

GERMANY:

ALUMINIUM

Item:	World fair for aluminium
Date:	22-24.09. 2004
Location:	Essen
Frequency:	Every two years
Organiser:	Reed Exhibitions Deutschland GmbH
Address:	Völklinger Straße 4, D-40219 Düsseldorf, Germany
Telephone:	+49 (0)211-90191-202
Fax:	+49 (0)211-90191-193
E-mail:	info@aluminium-messe.com
Internet:	www.aluminium-messe.com

AMB

Item:	International exhibition for metalworking
Date:	14-18.09. 2004
Location:	Stuttgart
Frequency:	Every two years
Organiser:	Stuttgarter Messe- und Kongressgesellschaft mbH
Address:	Am Kochenhof 16, D-70192 Stuttgart, Germany
Telephone:	+49 (0)711 25890
Fax:	+49 (0)711 2589440
E-mail:	info@messe-stuttgart.de
Internet:	www.messe-stuttgart.de

EUROGUSS

Item:	International trade show for pressure die casting
Date:	March 2004
Location:	Sindelfingen/Stuttgart
Frequency:	Every two years
Organiser:	FHS Messeorganisation GmbH
Address:	Neuffener Weg 6, D-70794 Filderstadt, Germany
Telephone:	+49 (0)7158 60058
Fax:	+49 (0)7158 69958
E-mail:	info@euroguss.de
Internet:	www.euroguss.de

GIFA / METEC / NEWCAST

Item:	International castings and metallurgy trade fairs
Date:	-
Location:	Düsseldorf
Frequency:	Every four years
Organiser:	Messe Düsseldorf GmbH
Address:	P.O. Box 101006, D-40001 Düsseldorf, Germany
Telephone:	+49 (0)211 45 60 01
Fax:	+49 (0)211 45 60 668
E-mail:	-
Internet:	www.gifa.de / www.metec.de / www.newcast-online.de

HANNOVER MESSE

Item:	Trade fair on mechanical engineering, electrical engineering, information technology
Date:	19-24.04.2004
Location:	Hannover
Frequency:	Every year
Organiser:	Deutsche Messe AG
Address:	Messegelände, D-30521 Hannover, Germany
Telephone:	+49 (0)511 890
Fax:	+49 (0)511 8932626
E-mail:	info@messe.de
Internet:	www.hannovermesse.de

METAV

Item:	International fair for manufacturing technology and automation
Date:	15-19.06.2004
Location:	Düsseldorf
Frequency:	-
Organiser:	Verein Deutscher Werkzeugmaschinenfabriken e.V. (VDW)
Address:	Corneliusstrasse 4, D-60325 Frankfurt, Germany
Telephone:	+49 (0) 69/ 756081-54
Fax:	+49 (0) 69/ 7411574
E-mail:	j.roedelbronn@vdw.de
Internet:	www.messe-duesseldorf.de/metav/

ICELAND:

Anode Rodding Conference 2003

Item:	International conference on anode rodding plants for primary aluminium smelters
Date:	-
Location:	Reykjavik
Frequency:	Every two years
Organiser:	dmg world media
Address:	Queensway House, 2 Queensway, Redhill, Surrey RH1 1QS United Kingdom
Telephone:	+44 (0) 1737 855152
Fax:	+44 (0) 1737 855474
E-mail:	clairechacksfield@uk.dmgworldmedia.com
Internet:	www.dmgworldmedia.com

ITALY:

Lamiera

Item:	Machines and plant equipment for work involving sheet metal, pipes, bars and wires
Date:	-
Location:	Bologna
Frequency:	Every two years
Organiser:	Fiera Internazionali di Bologna
Address:	Viale della Fiera 20, I-40128 Bologna, Italy
Telephone:	+39 (0)51 282111
Fax:	+39 (0)51 282332
E-mail:	dir.com@bolognafiere.it
Internet:	www.lamiera.com

METEF

Item:	International expo of equipment, technologies and applications of aluminium
Date:	21-24.04.2004
Location:	Brescia
Frequency:	Every two years
Organiser:	Alupromotion S.p.A.
Address:	Via Corfu 102, I-25124 Brescia, Italy
Telephone:	+39 (0)30 2421043
Fax:	+39 (0)30 223802
E-mail:	info@metef.com
Internet:	www.metef.com

PORTUGAL:

EMAF

Item:	International machines-tool and accessories exhibition
Date:	-
Location:	Porto
Organiser:	EXPONORT - Feira Internacional do Porto
Address:	4450 Leca da Palmeira
Telephone:	+351 22 9981400
Fax:	+351 22 995749
E-mail:	info.uk@exponor.pt
Internet:	www.exponor.pt

INTERGÁS

Item:	Fair of products, equipment and services for natural gas
Date:	-
Location:	Porto
Frequency:	-
Organiser:	EXPONOR - Feira Internacional do Porto
Address:	4450-617 Leça da Palmeira, Portugal
Telephone:	+351 (0)229 981400
Fax:	+351 (0)229 957499
E-mail:	info@exponor.pt
Internet:	www.exponor.pt

PORTUGAL METAL

Item:	Metal and metallurgical products exhibition
Date:	-
Location:	Porto
Organiser:	EXPONORT - Feira Inernacional do Porto
Address:	4450 Leca da Palmeira
Telephone:	+351 22 9981400
Fax:	+351 22 995749
E-mail:	info.uk@exponor.pt
Internet:	www.exponor.pt

SUBCONTRATO

Item:	International subcontracting exhibition
Date:	-
Location:	Porto
Frequency:	-
Organiser:	EXPONOR - Feira Internacional do Porto
Address:	4450-617 Leça da Palmeira, Portugal
Telephone:	+351 (0)229 981400
Fax:	+351 (0)229 957499
E-mail:	info@exponor.pt
Internet:	www.exponor.pt

SPAIN:

CUMBRE INDUSTRIAL Y TECNOLOGICA:

- **Subcontratación:** Subcontracting and inter-company co-operation.
- **Soldadura:** International welding fair.
- **Siderometalúrgica:** International fair for the iron and steel metallurgy industry.
- **Trasmet:** International fair of equipment and supplies for the foundry, forging, rolling and surface treatment sectors.
- **Mantenimiento:** International maintenance fair.
- **Automacion:** International fair of components and systems for machinery.

Date: -
Location: Bilbao
Frequency: Every three years
Organiser: Feria de Bilbao
Address: Basterrechea, 2, ES-48013 Bilbao, Spain
Telephone: +34 (0)94 428 54 00
Fax: +34 (0)94 442 42 22
E-mail: visicumbre@feriadebilbao.com
Internet: www.feriadebilbao.com

UNITED KINGDOM:

Furnaces
Item: Thermal processing and heat treatment
Date: -
Location: Stoneleigh Park
Frequency: Every two years
Organiser: dmg world media
Address: Queensway House, 2 Queensway, Redhill, Surrey RH1 1QS United Kingdom
Telephone: +44(0)1737 855165
Fax: +44(0)1737 855474
E-mail: stephenkeeble@uk.dmgworldmedia.com
Internet: www.dmgworldmedia.com

MACH
Item: International exhibition of machine tools, tooling & manufacturing technology
Date: 26-30 April 2004
Location: Birmingham
Frequency: Every two years
Organiser: The Machine Tool Technologies Association
Address: 62 Bayswater Road, London W2 3PS United Kingdom
Telephone: +44 (0) 20 7298 6400
Fax: +44 (0) 20 7298 6430
E-mail: mach@mtta.co.uk
Internet: www.mtta.co.uk

Subcon
Item: International exhibition on subcontracting
Date: 19-22.04.2004
Location: Birmingham
Frequency: Every two years
Organiser: Centaur Engineering Media Group
Address: St. Giles House, 50 Poland Street, London W1F 7AX, United Kingdom
Telephone: +44 (0)20 79704000
Fax: +44 (0)20 79704099
E-mail: -
Internet: www.subconshow.co.uk

Welding & Metal Fabrication Show
Item: National exhibition of welding and fabrication technology
Location: Birmingham
Frequency: Every 2 years
Organiser: The Machine Tool Technologies Association (MTTA)
Address: 62 Bayswater Road, London W2 3PS United Kingdom
Telephone: +44 (0) 20 7298 6400
Fax: +44 (0) 20 7298 6430
E-mail: mtta@mtta.co.uk
Internet: www.mtta.co.uk

3.5 Trade press

Aluminium International Today
Publisher: dmg world media (uk) ltd
Address: Queensway House, 2 Queensway, Redhill, Surrey, RH1 1QS United Kingdom
Telephone: +44 (0)1737 855524
Fax: +44 (0)1736 855474
E-mail: aluminium@uk.dmgworldmedia.com
Internet: www.aluminiumtoday.co.uk
Contents: aluminium production and processing industry
Language: English
Distribution: world-wide
Frequency: 8 times per annum

The Fabricator / Practical Welding Today
Publisher: The Croydon Group Ltd.
Address: 833 Featherstone Road, Rockford, Illinois 61107, 6302 USA
Telephone: +1 (0)815 3998700
Fax: +1 (0)815 3997279
E-mail: info@thefabricator.com
Internet: www.thefabricator.com
Contents: hydroforming, bending, welding, cutting, sawing, coil and material handling, end forming and preparation, testing and quality control, and tooling
Language: English
Distribution: world-wide
Frequency: 12 / 6 times per annum

Forging Magazine

Publisher: Penton Media Europe
Address: Penton House, 288-290 Worton Road, Isleworth, Middlesex TW7 6EL England, United Kingdom
Telephone: +44 ()011 44 208 232 1600
Fax: +44 ()011 44 208 232 1650
E-mail: information@penton.com
Internet: www.forgingmagazine.com
Contents: forging equipment and supplies, new plants or additions, new process developments, case histories, and industry news
Language: English
Distribution: world-wide
Frequency: 6 times per annum

FOUNDRY Management & Technology Online

Publisher: Penton Media Europe
Address: Penton House, 288-290 Worton Road, Isleworth, Middlesex TW7 6EL England, United Kingdom
Telephone: +44 ()011 44 208 232 1600
Fax: +44 ()011 44 208 232 1650
E-mail: information@penton.com
Internet: www.foundrymag.com
Contents: technical developments, foundry management problems and operating practices in metal casting
Language: English
Distribution: world-wide
Frequency: 12 times per annum

Foundry Trade Journal

Diecasting World (bi-monthly supplement)

Publisher: dmg world media (uk) ltd
Address: Queensway House, 2 Queensway, Redhill, Surrey, RH1 1QS United Kingdom
Telephone: +44 (0)1737 855524
Fax: +44 (0)1736 855474
Email: annmontgomery@uk.dmgworldmedia.com
Internet: www.dmgworldmedia.com
Contents: technical features, company and regional profiles, news specials and previews of the industry's key exhibitions and conferences
Language: English
Distribution: world-wide
Frequency: 12 times per annum

The Foundry Yearbook and Castings Buyers'Directory

Publisher: dmg world media (uk) ltd
Address: Queensway House, 2 Queensway, Redhill, Surrey, RH1 1QS United Kingdom
Telephone: +44 (0)1737 855391
Fax: +44 (0)1736 855369
Email: cathyberghofer@uk.dmgworldmedia.com
Internet: www.dmgworldmedia.com
Contents: detailed information on UK foundries and their capabilities, plus a guide to international suppliers of foundry equipment, consumables and services to the foundry industry
Language: English
Distribution: world-wide
Frequency: annually

International Journal of Forming Processes

Publisher: Esaform
Address: Ecole des Mines de Paris / CEMEF, BP 207, F-06904 Sophia Antipolis Cedex,France
Telephone: +33 (0)4 93 95 75 75
Fax: +33 (0)4 92 38 97 52
E-mail: esaform@esaform.org
Internet: www.esaform.org
Contents: computational and physical methods for forming processes and materials
Language: English
Distribution: world-wide
Frequency: 4 times per annum

Iron & Steel International Directory

Publisher: dmg world media (uk) ltd
Address: Queensway House, 2 Queensway, Redhill, Surrey, RH1 1QS United Kingdom
Telephone: +44 (0)1737 855524
Fax: +44 (0)1736 855474
Email: annmontgomery@uk.dmgworldmedia.com
Internet: www.dmgworldmedia.com
Contents: list of companies that supply goods and services to the metallurgical industry
Language: English
Distribution: world-wide
Frequency: 1 time per annum

Konstruktion + Engineering

Publisher: verlag moderne industrie AG & Co. KG
Address: Justus-von-Liebig-Straße 1, D-86899 Landsberg, Germany
Telephone: +49 (0)8191 1250
Fax: +49 (0)8191 125339
E-mail: ke@mi-verlag.de
Internet: www.k-e.de
Contents: trends and developments in products and processes, implementation of components and systems, as well as organisational aspects of design engineering management
Language: German
Frequency: 12 times per annum

METAL INDUSTRIES
Publisher: Metal Industries
Address: 81 rue de Fontenay, F-94300 Vincennes, France
Telephone: +33 (0)1 41 74 69 69
Fax: +33 (0)1 41 74 89 91
E-mail: info@metal-industries.com
Internet: www.metal-industries.com
Contents: sheet metal, wire, structural steel and tube work
Language: English and French
Distribution: world-wide
Frequency: 12 times per annum

MPT Metallurgical Plant and Technology International
Publisher: Verlag Stahleisen GmbH
Address: P.O. Box 105164, D-40042 Düsseldorf, Germany
Telephone: +49 (0)211 67070
Fax: +49 (0)211 6707517
Language: Chinese, English and Russian
Contents: branch orientated international magazine for metallurgical processing
E-mail: mpt@stahleisen.de
Internet: www.stahleisen.de
Distribution: world-wide
Frequency: 6 times per annum

Oil, Gas & Petrochem Equipment
Publisher: PennWell Publishing Company
Address: P.O. Box 1260, Tulsa OK 74101-1260, United States
Telephone: +1 (0)918 9329351
Fax: +1 (0)918 9329201
E-mail: jba@penwell.com
Internet: www.ogpe.com
Contents: oil industry equipment, products, systems, and services
Language: English
Distribution: world-wide
Frequency: 12 times per annum

Protective Coatings Europe Magazine
Publisher: Technology Publishing Company
Address: H.A. Lorentzstraat 4, NL-3331 EE Zwijndrecht, The Netherlands
Telephone: +31 (0)78 620 2833
Fax: +31 (0)78 620 2834
E-mail: jlagrand@paintsquare.com
Internet: www.paintsquare.com
Contents: Coatings for steel and concrete in industrial and marine environments
Language: English
Distribution: world-wide
Frequency: 12 times per annum

PT Industrie
Publisher: Ten Hagen & Stam uitgevers
Address: P.O. Box 34, NL-2501 AG Den Haag, The Netherlands
Telephone: +31 (0)70 3045700
Fax: +31 (0)70 3045797
E-mail: info@ptindustrie.nl
Internet: www.ptindustrie.nl
Contents: technical and industrial management
Language: Dutch
Distribution: the Netherlands
Frequency: 12 times per annum

Stainless Steel World
Publisher: KCI Publishing B.V.
Address: P.O. Box 396, NL-7200 AJ Zutphen, The Netherlands
Telephone: +31 (0)575 585270
Fax: +31 (0)575 511099
E-mail: vw@kci-world.com
Internet: www.stainless-steel-world.net
Contents: stainless steel and corrosion resistant alloys
Language: English
Distribution: world-wide
Frequency: 10 times per annum

Steel Times International
Publisher: dmg world media
Address: Equitable House, Lyon Road, Harrow HA1 2EW, United Kingdom
Telephone: +44 (0)20 8515 2000
Fax: +44 (0)20 8515 2169
E-mail: timsmith@uk.dmgworldmedia.com
Internet: www.steeltimesint.com
Contents: developments in the industry from raw materials to semi-finished product
Language: Chinese, English, Russian, Spanish
Distribution: world-wide
Frequency: 10 times per annum

Steel Week
Publisher: Cru International
Address: 31 Mount Pleasant, LONDON WC1X 0AD, United Kingdom
Telephone: +44 (0)20 7903 2150
Fax: +44 (0)20 7903 2172
E-mail: info@steelweek.com
Internet: www.steelweek.co.uk / www.cru.co.uk
Contents: production and trade information in the European market
Language: English
Distribution: world-wide
Frequency: 50 times per annum

Subcon

Publisher:	Centaur Engineering Media Group
Address:	St. Giles House, 50 Poland Street, London W1F 7AX, United Kingdom
Telephone:	+44 (0)20 79704000
Fax:	+44 (0)20 79704099
E-mail:	-
Internet:	www.centaur.co.uk
Contents:	subcontracting in the manufacturing industry
Language:	English
Distribution:	world-wide
Frequency:	6 times per annum

3.6 Other useful addresses

AccessGuide

CBI's database on non-tariff trade barriers

Address:	PO Box 30009, 3001 DA Rotterdam , The Netherlands
Telephone:	+31 (0)10 2013434
Fax:	+31 (0)10 4114081
E-mail:	accessguide@cbi.nl
Internet:	www.cbi.nl/accessguide

Ministry of Development Cooperation

Ministry of Foreign Affairs- Directorate General for International Cooperation

Address:	P.O. Box 20061, NL-2500 EB The Hague, The Netherlands
Telephone:	+31 70 3486486
Fax:	+31 70 3484848
E-mail:	minbuza@minbuza.nl
Internet:	www.minbuza.nl

Economische Voorlichtingsdienst (EVD)

Netherlands Foreign Trade Agency

Address:	Bezuidenhoutseweg 181, NL-2594 AH The Hague, The Netherlands
Telephone:	+31 (0)70 3798933
Fax:	+31 (0)70 3797878
E-mail:	eic@evd.nl
Internet:	www.evd.nl

Financierings Maatschappij voor Ontwikkelingslanden (FMO)

Netherlands Development Finance Company

Address:	Koningskade 40, NL-2596 AA The Hague, The Netherlands
Telephone:	+31 70 3149696
Fax:	+31 70 3246187
E-mail:	fmo@wxs.nl
Internet:	www.fmo.nl

Commission of the European Union

Directorate General for Communities (CEC) DG VIII Development and Cooperation

Address:	Wetstraat 200, B-1449 Brussels, Belgium
Telephone:	+32 22 991111
Fax:	+32 22 993002
E-mail:	info@dg8.cec.be
Internet:	www.europa.eu.int/comm/dg08/index.htm

Eurostat

Address:	5 Rue Alphonse Weicker, L-2721 Luxembourg, Luxembourg
Telephone:	+35 2430134567
Fax:	+35 232594
E-mail:	media.support@eurostat.cec.be
Internet:	www.europa.eu.int/comm/eurostat

APPENDIX 4 LIST OF DEVELOPING COUNTRIES

Please note that the OECD list of developing countries, as applied in this market survey, may include countries that are usually not considered as developing countries.

Afghanistan
Albania
Algeria
Angola
Anguilla
Antigua and Barbuda
Argentina
Armenia
Azerbaijan
Bahrain
Bangladesh
Barbados
Belize
Benin
Bhutan
Bolivia
Bosnia & Herzegovina
Botswana
Brazil
Burkina Faso
Burundi
Cambodia
Cameroon
Cape Verde
Central African rep.
Chad
Chile
China
Colombia
Comoros
Congo
Cook Islands
Costa Rica
Côte d'Ivoire
Croatia
Cuba
Djibouti
Dominica
Dominican republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Ethiopia
Fiji
Gabon
Gambia
Georgia
Ghana
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
India
Indonesia
Iran
Iraq
Jamaica
Jordan
Kazakstan
Kenya
Kiribati
Korea, Rep. of
Kyrgistan
Laos
Lebanon
Lesotho
Liberia
Macedonia
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Marshall Islands
Mauretania
Mauritius
Mayotte
Mexico
Micronesia, Fed. States
Moldova
Mongolia
Montserrat
Morocco
Mozambique
Myanmar
Namibia
Nauru
Nepal
Nicaragua
Niger
Nigeria
Niue
Oman
Pakistan
Palau Islands
Palestinian Admin. Areas
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Rwanda
São Tomé & Principe
Saudi Arabia
Senegal
Seychelles
Sierra Leone
Slovenia
Solomon Islands
Somalia
South Africa
Sri Lanka
St. Helena
St. Kitts-Nevis
St. Lucia
St. Vincent and Grenadines
Sudan
Surinam
Swaziland
Syria
Tajikistan
Tanzania
Thailand
Timor
Togo
Tokelau
Tonga
Trinidad & Tobago
Tunisia
Turkey
Turkmenistan
Turks & Caicos Islands
Tuvalu
Uganda
Uruguay
Uzbekistan
Vanuatu
Venezuela
Vietnam
Wallis & Futuna
Western Samoa
Yemen
Yugoslavia, Fed. Rep.
Zaire
Zambia
Zimbabwe

Note: Eurostat figures do not include figures of Cook Islands, Niue, St. Kitts-Nevis, Timor and Tokelau.

Countries falling under the groups mentioned in the EU Strategic Marketing Guide “Castings and forgings”.

SPGA
Afghanistan, Angola, Bangladesh, Burkina Faso, Burundi, Benin, Bhutan, Congo, Central African Republic, Cape Verde, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Equatorial Guinea, Guinea-Bissau, Haiti, Cambodia, Kiribati, Comoros (excl. Mayotte), Laos, Liberia, Lesotho, Madagascar, Mali, Myanmar, Mauritania, Maldives, Malawi, Mozambique, Niger, Nepal, Rwanda, Salomon Islands, Sudan, Sierra Leone, Somalia, Sao Tomé & Principe, Chad, Togo, Tuvalu, Tanzania, Uganda, Vanuatu, Samoa, Yemen, Zambia.

SPGE
Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Nicaragua, Panama, Peru, El Salvador, Venezuela

SPGI
United Arab Emirates, Antigua and Barbuda, Anguilla, Armenia, Netherlands Antilles, Antarctica, Argentina, American-Samoa, Aruba, Azerbaijan, Barbados, Bahrain, Bermuda, Brunei, Brazil, Bahamas, Bouvet Island, Botswana, Belarus, Belize, Cocos Islands, Congo (Republic), Ivory Coast, Cook Islands, Chile, Cameroon, China, Cuba, Christmas Island, Cyprus, Dominica, Dominican Republic, Algeria, Egypt, Fiji, Falkland Islands, Micronesia, Gabon, Grenada, Georgia, Ghana, Gibraltar, Greenland, South Georgia and the South Sandwich Islands, Guam, Guyana, Heard and McDonald Islands, Indonesia, India, British Oceania, Iraq, Iran, Jamaica, Jordan, Kenya, Kyrgyz Republic, St. Kitts-Nevis, Kuwait, Cayman Islands, Kazakhstan, Lebanon, St. Lucia, Sri Lanka, Libya, Morocco, Moldavia, Marshall Islands, Mongolia, Macao, Montserrat, Mauritius, Mexico, Malaysia, Namibia, New Caledonia, Norfolk, Nigeria, Nauru, Niue Island, Oman, French Polynesia, Papua-New-Guinea, Philippines, Pakistan, St Pierre and Miquelon, Pitcairn, Palau, Paraguay, Qatar, Russia, Saudi-Arabia, Seychelles, St Helena, Senegal, Surinam, Syria, Swaziland, Turks & Caicos Islands, French Southern Areas, Thailand, Tajikistan, Tokelau Islands, Turkmenistan, Tunisia, Tonga, Trinidad and Tobago, Ukraine, Uruguay, Uzbekistan, St Vincent (VC), British Virgin Islands, Virgin Islands (USA), Vietnam (VN), Wallis and Futuna Islands, Republic of South Africa, Zimbabwe

APPENDIX 5 USEFUL INTERNET SITES

Most trade associations have excellent websites with numerous links and a lot of information about their markets. The details of these associations, including their web address are listed in Appendix 3.

Other useful internet sites are:

Best Manufacturing Practices (BMP)
www.bmpcoe.org
The BMP Programme is a US industry and government cooperative technology transfer effort and has become a resource in helping organizations benchmark with the best, learn from others' attempts, and avoid costly and time- consuming duplication.

EU Directorate-General for Taxation and the Customs Union
europa.eu.int/comm/taxation_customs/index_en.htm
General EU taxation and Customs information including links to national taxation and Customs sites and databases with tariff quotas and ceilings, and the integrated Community tariff.

EU Market access sectoral and trade barriers database
mkaccdb.eu.int
A market access sectoral and trade barriers database per country with trade figures between the European Union and selected countries.

European Internet Foundry Network
eurofine.reflexe.fr
This database gives information on energy use in the foundry industry. The articles it contains are organised into groups corresponding to a particular aspect of energy use in foundries. The articles are written by a European consortium of technical centres.

Forge-Net
www.bath.ac.uk/departments/Eng/fsu/
European thematic network for modelling tools for the forging industry.

Kompass
www.kompass.com
Business-to-business search engine with address and contact details, board of directors, key figures and financial information.

Metals Forming Forum
www.industrycommunity.com/myforum/antonio_gorni.html
A forum for discussion about technological, industrial practice and theoretical aspects of hot and cold forming of metals.

New Approach
www.newapproach.org
EU website about the New Approach standardization in the internal market with information on directives and standards per product families.

TICQA
www.ticqa.eotc.be
TICQA provides reports on more than 3,200 European providers of Testing, Calibration, Inspection and Certification services located in 29 European countries (EU, EFTA, Eastern Europe). TICQA is a project of the European Organisation for Conformity Assessment, an independent and non-profit making European body.

STEELYNX
www.steelynx.net
Website with more than 7,500 links to steelmaking and steel-related technologies.