CBI
Ministry of Foreign Affairs

CBI Product Factsheet:

Metal parts and components for Compressors in Europe

Introduction

Europe is among the largest manufacturing and processing regions in the world and therefore it is also a large market for compressors. The six leading importing countries in Europe offer good opportunities for Developing Country exporters, although so far they mainly source compressor parts from China and India. For machined steel parts manufacturers from Developing Countries, there are good opportunities in Europe, especially in the area of sub contract work to European compressor producers.

Product description

A gas compressor is a mechanical device that increases the pressure of a gas by reducing its volume. An air compressor is a specific type of gas compressor. An air compressor is a device that converts power (usually from an electric motor, a diesel engine or a gasoline engine) into kinetic energy by compressing and pressurising air, which, on command, can be released in quick bursts. Compressors are applied in process installations in a variety of industries, such as air separation plants, chemical and petro-chemical plants, liquefied natural gas applications, and power utilities.

Compressors are similar to pumps: both increase the pressure on a fluid and both can transport the fluid through a pipe. As gases are compressible, the compressor also reduces the volume of a gas. Liquids are relatively incompressible; while some can be compressed, the main action of a pump is to pressurize and transport liquids.

Compressors consist of a wide range of metal parts. Although compressors all need a same range of parts, such as fasteners, gaskets, bearings, valves, valve heads, pistons, mufflers and blocks, parts, parts generally differ depending on the type of compressor.

Geographic scope

The geographic scope is Europe, however, in certain parts of this survey, the focus is on a selected group of countries: Germany, France, Netherlands, Italy, Belgium and the United Kingdom. These countries are the largest importers of compressor parts in Europe. When 'focus countries' are referred to in this survey, this concerns the selection of these six countries, unless stated otherwise.

Product specifications

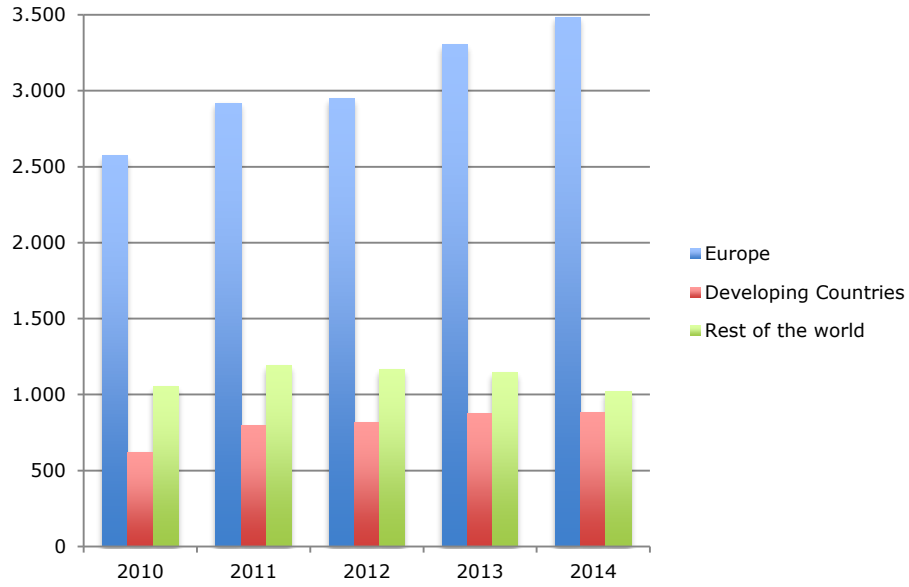
Specifications of compressors as required by European buyers are described below.

- Material and design: The material and design of compressor parts depends on the type of parts and type of compressor. For example, compressor pistons can be made of steel, but also of cast iron, ductile iron or aluminium. Piston design can be one-, two-, or three-piece, or tailor-made. Stainless steel (e.g. 410 or 420) is also often used for compressor parts, such as compressor blades.
- Developing Country manufacturers should be prepared that the following specifications may all be investigated thoroughly: material, hardness specification, mechanical properties, chemical properties, microstructure, surface finish, surface preparation, inspection, packaging, written certification etc.
- Labelling and packaging: Compressor parts can be packed in a carton or a wooden box, depending on the size of the parts. The outer package should include the brand name and type number. The package for ocean transportation is a wooden, steel or plastic pallet, wrapped with plastic sheet and sealed with metal strips. The size of the boxes depends on customer requirements and preferences and is also influenced by the weight per box and handling possibilities.
- Note: If you use wood packaging materials to export products to Europe, you must consider health (phytosanitary) requirements set for these materials; in practice this means that the wood must have undergone heat treatment or been fumigated with methyl bromide.
- Last but not least: packaging is always labelled, not only for the purposes of identification during transport, but also to indicate the quantity, weight, the products themselves and the producer's name.

What is the demand for metal parts and components for compressors in Europe?

Imports

Figure 1-7: Imports of compressor parts to Europe and focus countries, by main origin (2010-2014), in € million Europe


3.500
3.000
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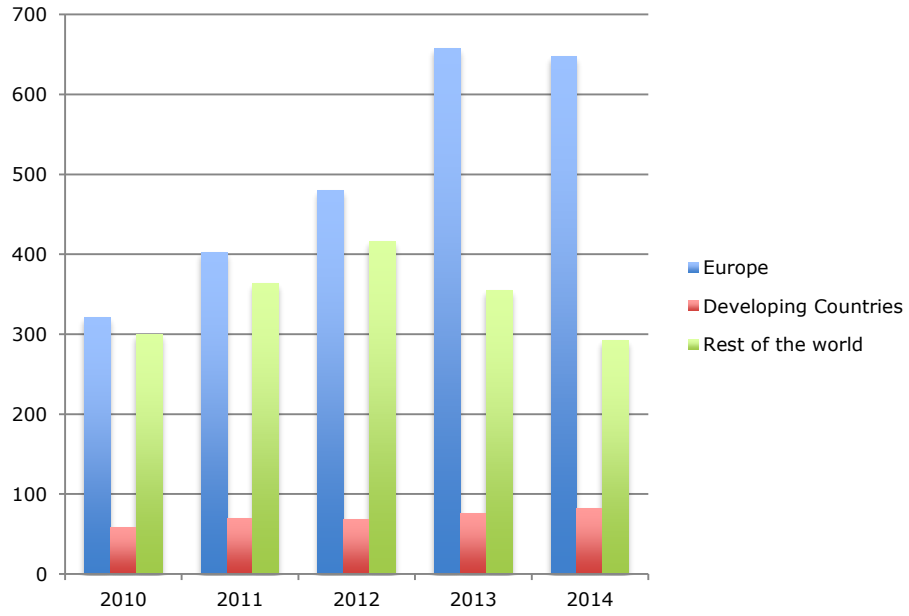
0
2010
2011
2012
2013
2014
Europe
Developing Countries
Rest of the world

Germany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600
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2010
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Europe
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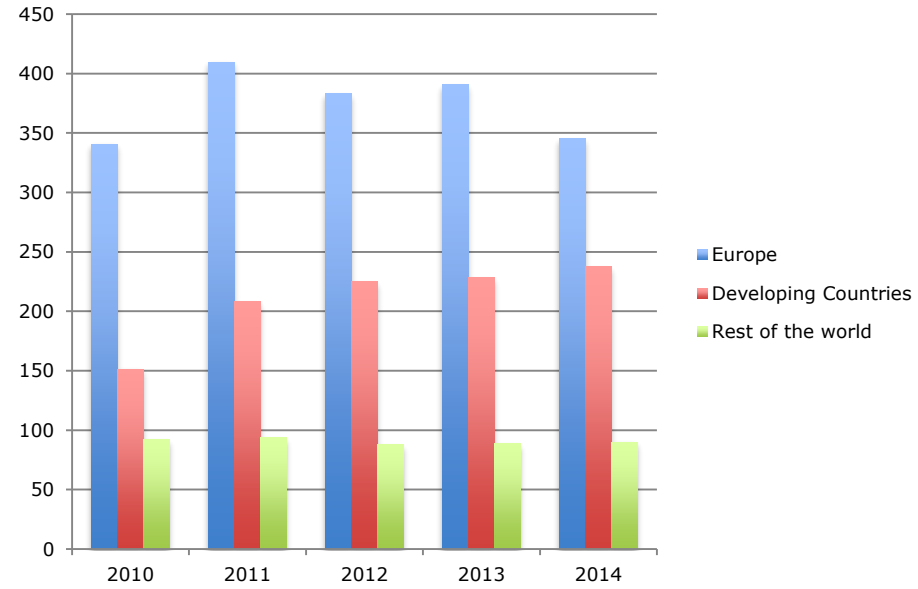
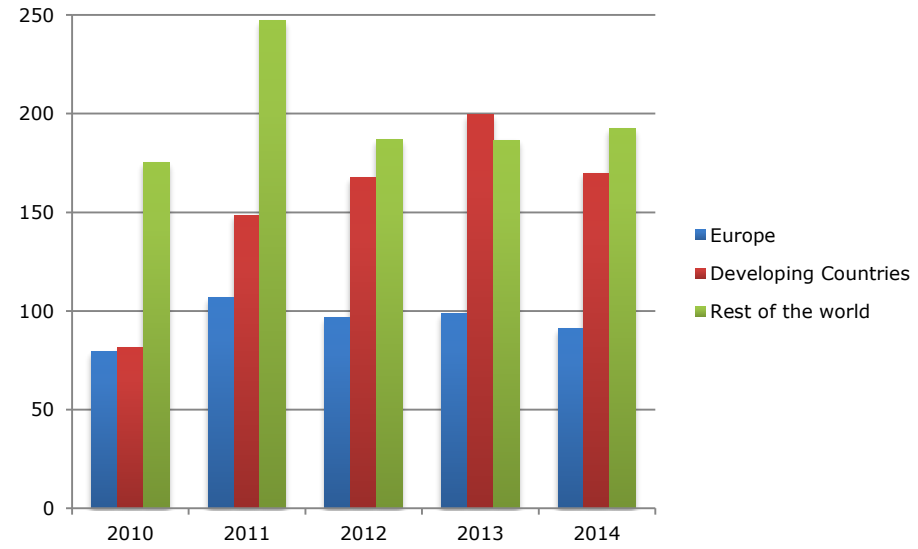
Rest of the world

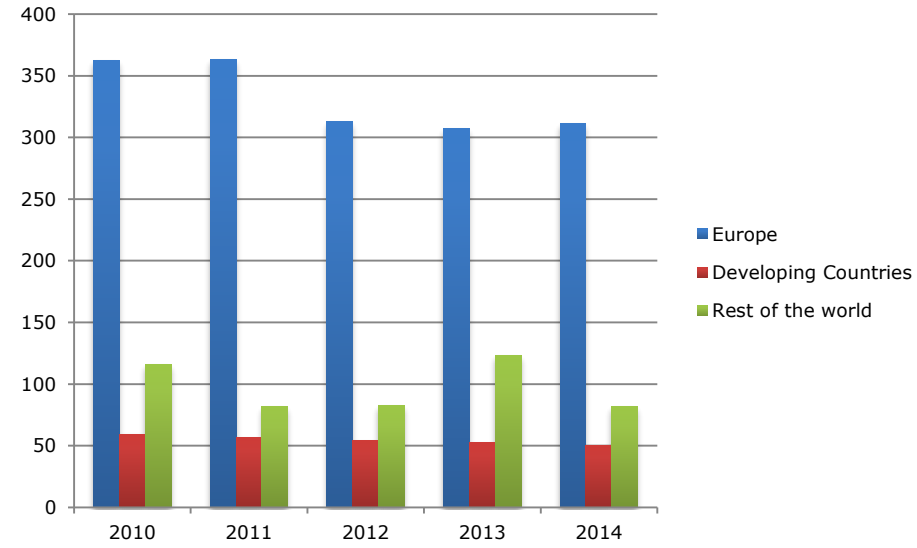
France



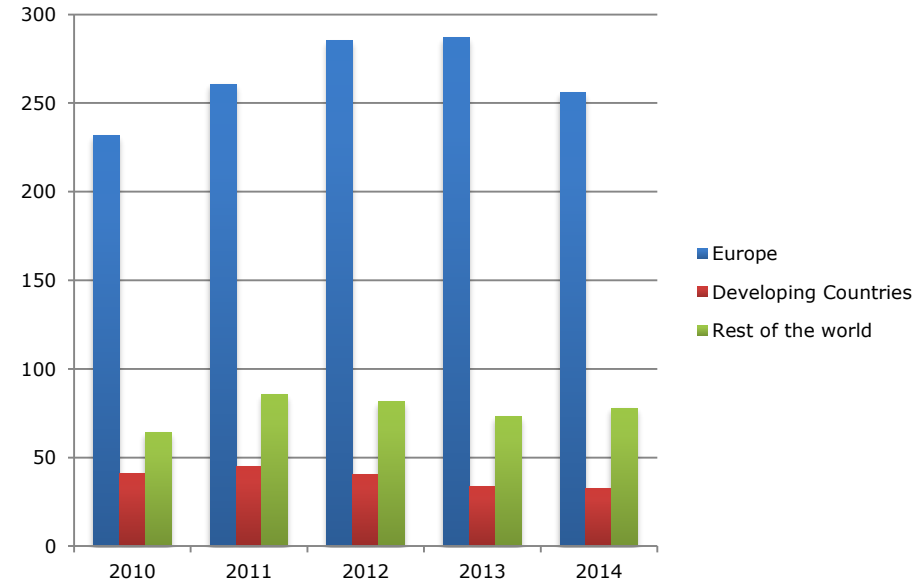
Netherlands



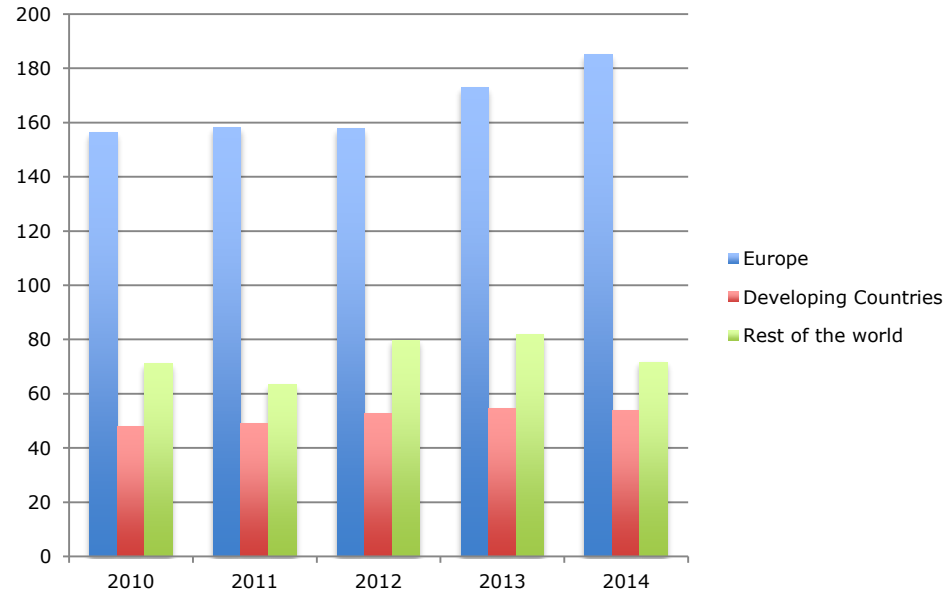
Italy



Belgium

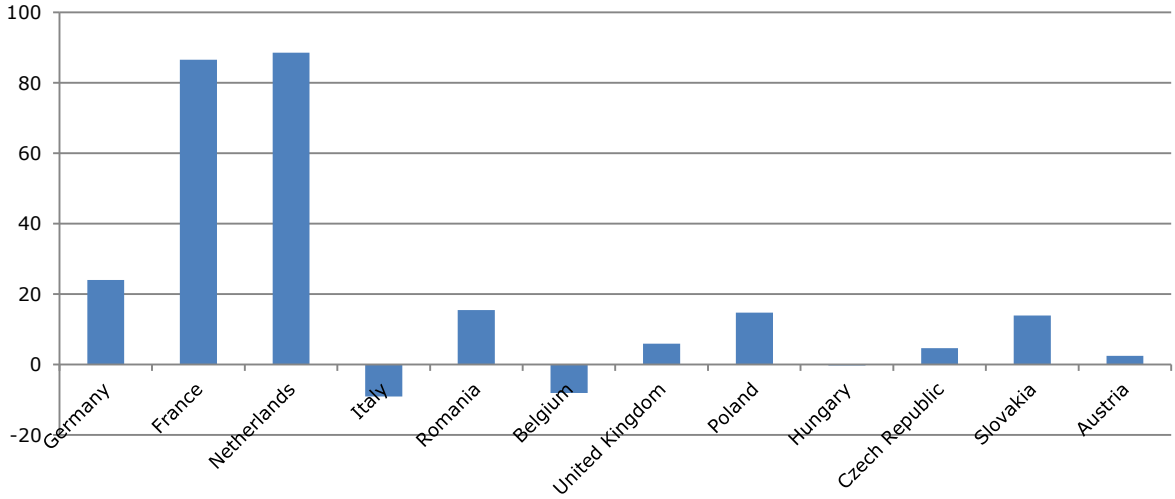


United Kingdom



Source: Trademap

Figure 8: Absolute growth in imports of compressor parts from developing countries (2010-2014), in € million (countries in range of largest importers



Source: Trademap

- European imports of parts for compressors reached €5.4 billion in 2014. Average annual growth in 2010-2014 was 6.0%.
- The share of European imports from developing countries has remained relatively stable at just above 16% since 2012. Most imports originate from intra-European sources (65% of all imports). For the coming years, the share of imports from developing countries is expected to remain stable.
- The six focus countries represent 61% of European imports in 2014.
- The leading importer is Germany, followed by France, the Netherlands, Italy, Romania, Belgium and the United Kingdom. France is the leader in imports from developing countries, followed by the Netherlands and, at some distance, by Slovenia, Germany, the United Kingdom, Italy and Belgium.
- Imports of parts for compressors are expected to grow slightly in the next few years, in the range of 0%-2%.

Leading suppliers

- Germany, Italy, France, Belgium, the Netherlands, Switzerland and United Kingdom are in the top 10 leading suppliers.

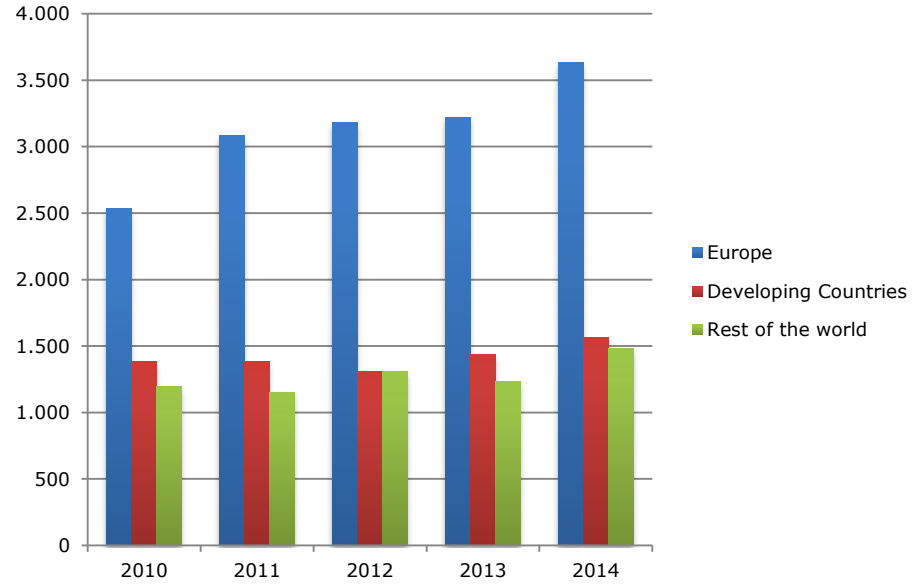
- Japan is by far the largest supplier in the category 'rest of the world', followed by the USA and South Korea.
- Imports from developing countries are dominated by China, followed at a considerable distance by India, Thailand and Bosnia and Herzegovina.

Tip:

- Benchmark your company against your peers from China and also those from European countries. Several factors can be taken into account, such as market segments served, perceived price and quality level, countries served, etc. One source that could be used to find exporters of parts for compressors per country is ITC Trademap.

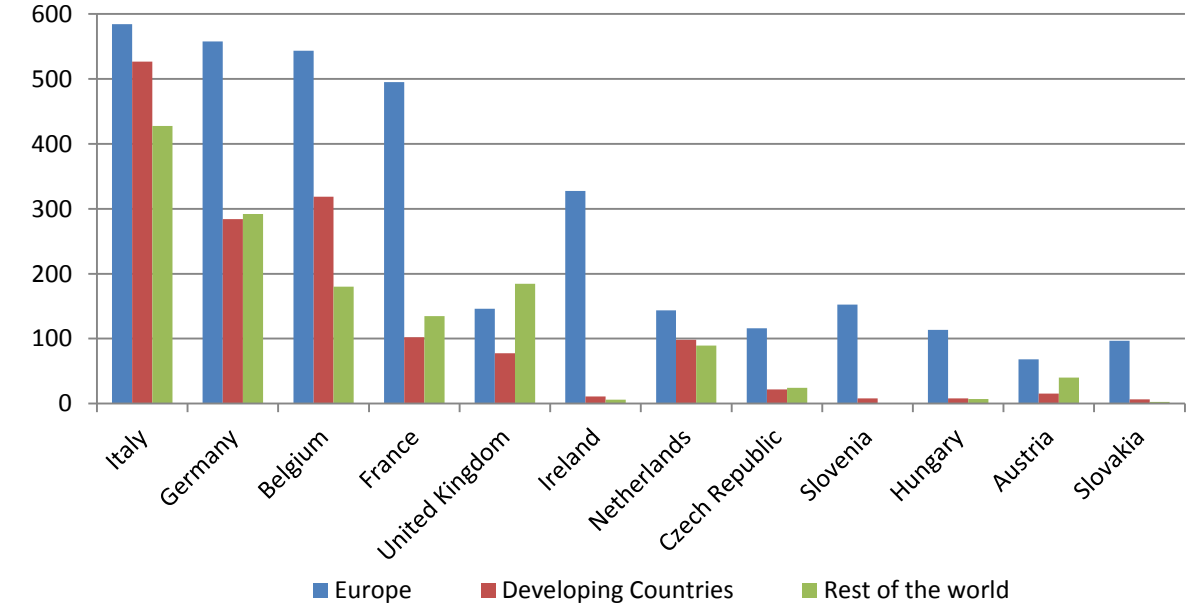
Exports

Figure 9: Exports of compressor parts from Europe, by main destination (2010-2014), in € million



Source: Trademap

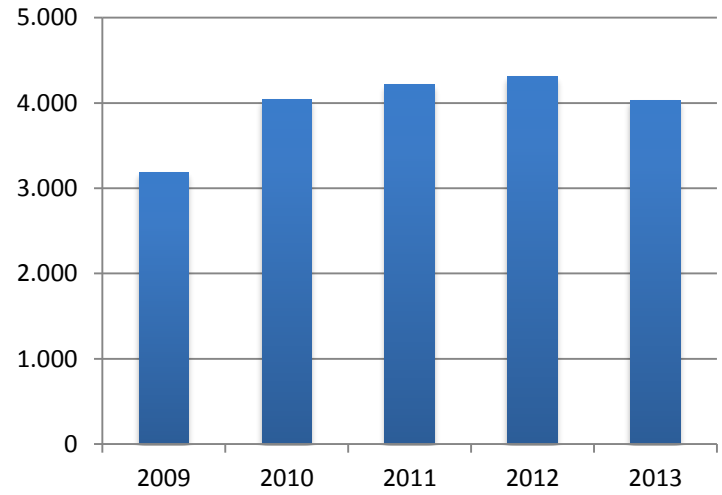
Figure 10: Leading exporters of compressor parts (2014), in € million



- European exports of parts for compressors reached €6.7 billion in 2014. Average annual growth in 2010-2014 was 7%.
- The share of European exports to developing countries decreased from 27% in 2010 to 23% in 2014. Most trade originates from intra-European sources (54% of all imports). For the coming years, the share of exports to developing countries is predicted to grow slightly, in the range of 0%-2%.
- The six focus countries represented 78% of all European exports in 2014.
- The leading exporter is Italy, accounting for 23% of total exports from Europe, followed by Germany (17%) and Belgium (16%). France is in the fourth position (11%), followed by the United Kingdom (6%), Ireland (5%) and the Netherlands (5%).
- Italy is the leading exporter to developing countries, accounting for 34% of all European exports to developing countries. Belgium is in the second position, followed by Germany.
- The European export of parts for compressors is expected to grow slightly in the next few years, in the range of 0%-2%.

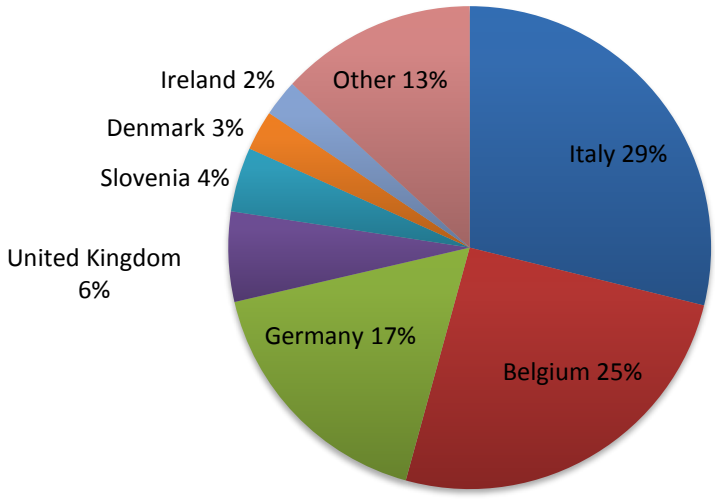
Production and apparent demand

Figure 11: European production of compressor parts (2009-2013), in € million



Source: Eurostat Prodcom

Figure 12: Leading European producers of compressor parts (2013)



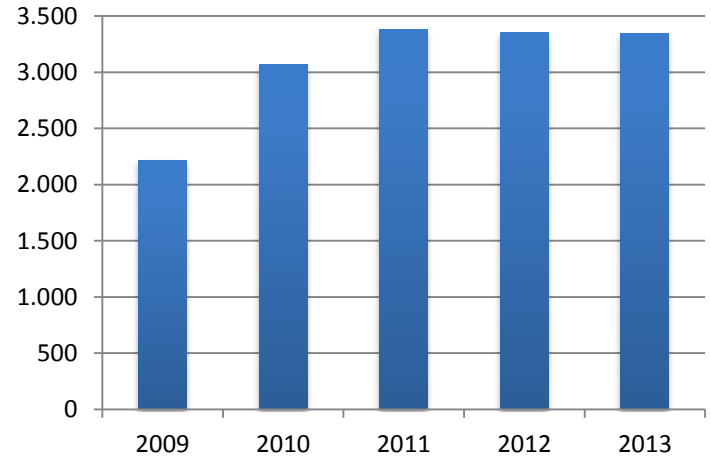
Source: Eurostat Prodcom

- European production totalled €4.0 billion in 2013, after an average annual increase of 6.2% in the period 2009-2013 (note that this was partly due to the weak reference year 2009).
- Italy accounted for almost 29% of total European production in 2013, followed by Belgium (25%).

Tip:

- Figure 12 reveals that in addition to Italy and Belgium, there is also considerable production output in Germany. The presence of producers in these countries offers subcontracting opportunities to Developing Country exporters.

Figure 13: Apparent demand for compressor parts in Europe (2009-2013), in € million



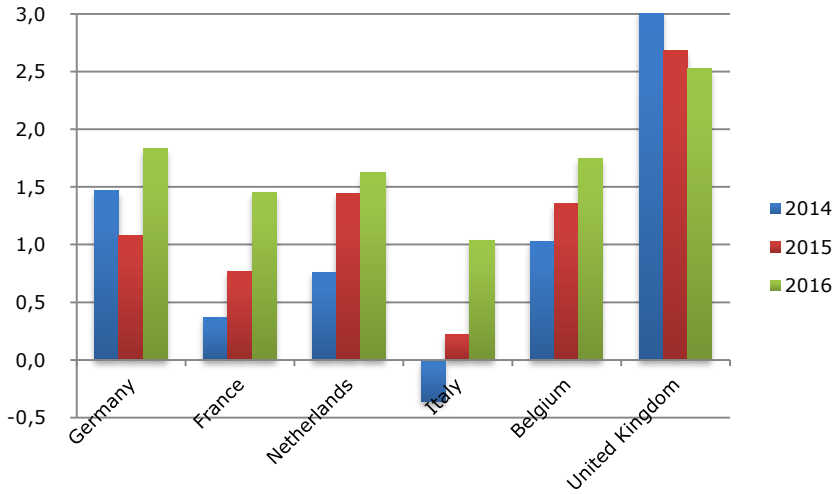
Source: Eurostat Prodcom

- European apparent demand totalled €3.5 billion in 2013, after an average annual increase of 11% in the period 2009-2013 (note that this was partly due to the weak reference year 2009).
- The compressor industry (and thus also the demand for parts for compressors) experienced growth in production and exports up until 2008, when it was hit by the economic turmoil, which led businesses to postpone new machinery purchases. The demand for compressors however improved quickly in 2010 and showed continuous growth until 2012, because of fundamental need for investments in power generation and liquefied natural gas installations across Europe.

Most of the world's leading compressor producers[1] also run production facilities in Europe.

Macro-economic indicators

Figure 14: Real GDP, % change from previous year



Source: OECD Economic Outlook 96 database (May 2015)

The major determinant of compressor parts demand is spending activity in the end-user industries. Compressor parts demand depends both on the demand for replacement parts as well as demand for new equipment/ compressors.[2]

- In turn, this demand is stimulated by economic growth. In each focus country GDP is expected to show continued growth year on year in the years to come. Evidently, it is a profound basis for continuous demand and import growth in the coming years.

Tip:

- Although GDP growth forecasts are improving, pricing is and will continue to be a leading influential competitive factor. Competitive pricing is elementary for Developing Country exporters planning to enter the European market.

- The profitability of compressor parts imports is influenced by the exchange rate between the euro and the US dollar, as products that are sourced globally are paid in US dollars. While earlier forecasts predicted that this exchange rate would not surpass 0.80 until 2020, it reached this point in 2015, with an exchange rate of 0.90 in June 2015. This is having a major effect on the price of imports. Particularly if it persists for several years, this situation is likely to have a negative impact on the level playing field of European imports paid in US dollars, relative to local European production.

Tip:

- If the value of the euro remains at its current low level, producers from developing countries should increasingly focus on reducing costs in order to remain competitive in the European market.

What trends offer opportunities on the European market for metal parts and components for compressors?

The main trend in the compressor industry is the strive for energy efficiency gains. Energy savings, energy recovery and reduction of CO_2 emissions have become important requirements among customers in recent years.

[1] *Among them are General Electric (GE), Siemens, Atlas Copco, Elliott Group and Dresser-Rand, Ingersoll-Rand, Kaeser, Hitachi, Gardner Denver, Cameron, Sullair, and Parker Hannifin.*

[2] *The two main demand drivers that are covered here are investments in new machinery and industrial production output. Industrial production output can be used as indicator for sales of replacement parts. A third demand driver is energy costs, this factor is discussed in the section Market trends.*

Environmental drivers

- Energy efficiency of compressor operation is an increasingly important issue, however, possible gains are not so much about the compressor itself, but about improved control (application of a VSD or variable speed drive), and energy efficient motors to drive the compressor shaft. As a result, European companies focus more and more on a total solution and total lifecycle costs, instead of the lowest initial purchasing costs.
- Although energy efficiency improvements have already been realised by voluntary investments by compressor manufacturers, an Ecodesign Directive is planned to be introduced sooner or later.

Technological drivers

- Further improvement of compressor techniques must enable lower energy costs and longer operation life even under difficult operating conditions. For example, compressor valves are improved in design, with optimised shape and material selection of both sealing element and springs. It must result in a compressor valve with the efficient flow characteristics of shaped ring type valves having the safe kinematics of plate type valves.
- Customer's requirements of the compressor's air production are becoming increasingly strict, especially in the food and beverage, pharmaceutical and electronics industries. The screw compressors must produce air which is clean and meets the most stringent air purity standards (e.g. ISO 8573-1 Class Zero), thus eliminating the risk of contamination of the product or equipment. One way to realise this is the involvement of a closed loop oil system in the air end.

Economic drivers

- The outlook for 2015-2016 is relatively good. Europe is expected to recover from the economic downturn, and the power generation sector is forecast to invest significantly in new equipment, including compressors. As long as oil prices remain at the low levels observed in 2015, however, the oil and gas sectors will not drive the compressor market.
- It is expected that turbo compressors continue to keep a significant share of production and demand (35-40% share), followed by rotating displacement compressors (15-25%), vacuum pumps (10-20%) and parts at 10-15%.
- In addition to the power generation segment, the market will continue to be driven by the relatively 'new' market segments, which are for example medical (including production of vaccines, medicines, drugs, breathing and theatre air, and oxygen concentration), industrial manufacturing (foodstuffs, packaging, nitrogen generation, PET containers and beverages), and the 'green' industry (hydrogen generation, CNG powered vehicles and CO_2-sequestration.

With which requirements should metal parts and components for compressors comply in order to be allowed on the European market?

Requirements can be divided into: (1) legal requirements you must meet in order to enter the market and (2) additional requirements, which are those most of your competitors have already implemented, in other words, the ones you need to comply with in order to keep up with the market.

You can find a general overview of the EU buyer requirements for metal parts on the Market Intelligence Platform of CBI. in addition, refer to the EU Export Helpdesk, the ITC Market Access Map and the ITC Standards Map for more information on gaining access to the European market.

Legal requirements

For compressor parts in general, there are no specific legal requirements applicable. As soon as the 'part' is part of a finished product, the exporter has an evident obligation: to export a safe product to Europe.

Also the 'Liability for defective products (Directive 85/374/EEC)' in fact refers to finished products. The Product Liability Directive states that the European importer is liable for the products put on the European market. The European importer, however, can in principle pass on a claim to the producer/exporter.

Other, general legislation that must be taken into account:

- Wood packaging materials used for transport (including dunnage) (Directive 2000/29/EC): Europe sets requirements for wood packaging materials such as packing cases, boxes, crates, drums, pallets, box pallets and dunnage (wood used to wedge and support non-wood cargo).
- Another packaging related directive is the general directive about packaging and packaging waste (Directive 94/62/EC). This directive prescribes the marking of the kind of packaging material used, and the maximum levels of heavy metals in the packaging material.

For compressor parts a 2.2% duty is levied on European imports from third countries, which also cover China. Several countries benefit from a preferential 0% tariff, for example Indonesia, Pakistan, Vietnam, the Philippines, Bosnia and Egypt. The TARIC database shows more details for Chapter 8414. Note that it is only possible to claim a preferential tariff treatment with a Certificate of Origin[3].

Tips:

- Refer to European legislation: Liability for defective products for more information.
- Make sure that your wood packaging material qualifies for the European market. If you are not sure, ask your wood packaging material supplier, or your freight forwarder, for clarity. Your wood packaging material supplier should take any further action required in order to comply with the Directive.
- Exporters from a country with a preferential 0% tariff have a small competitive advantage versus competitors from countries without such a preferential tariff.

Additional requirements

The customer's main requirements will be related to the part itself; design, material, dimensions and finishing must meet the customer's specifications. Customers often require a sound Quality Assurance and Control system, in which testing (see also below) and assurance of part specifications like hardness, surface finish and dimensional accuracy are of crucial importance.

Furthermore, certification according to ISO 9001 is a minimum which European buyers expect when searching for new suppliers. Other certification, such as ISO 14000 (environment) and OHSAS 18001 (health and safety), can be beneficial when promoting your company and products to potential customers. There are several ISO and EN standards applying to compressors, but there are no standards for specific compressor parts.

Meeting all relevant supplier criteria is key in the sample phase. If the customer accepts the samples and all other conditions are agreed upon, the contract can be signed. After that, the main challenges of the suppliers are to deliver the products according to the agreed specifications, delivery times and volumes.

For material requirements, the following can be said in general: the metal that is used must be covered by an (international) standard and approved with a material certificate, which can be stated in an EN10204 - type 3.1 certificate. This type of certificate is internationally accepted.

In addition, the customer may also have testing requirements, such as NDT (non-destructive testing) surface (MTI or magnetic testing, PTD or penetrant testing) and section (UT or ultrasonic testing and RT or X-ray testing) tests.

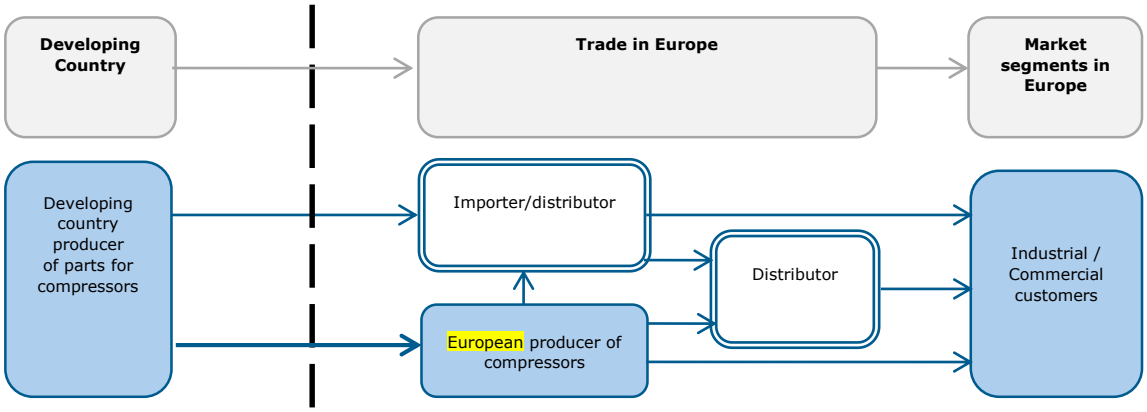
What do the trade channels and interesting market segments for metal parts and components for compressors look like in Europe?

Potential buyers in Europe may be compressor producers and importers/distributors. For more information also refer to CBI's 1) Market Channels and Segments and 2) Competition for Metal Parts and Components.

An explanation of the types of prospects is given below, including a few examples per type. Sources to find prospects are included in the section "Useful sources".

[3] *The Certificate of Origin document must be part of the export documentation package.*

Figure 15: Trade structure for compressor parts in Europe



Europe is home to several interesting players. As each company is unique, with its own customers, market segments and products, the profile of the potential partner is very important. You are very likely, however, to find a match.

Producers

- Germany: Aerzen, Almig, BORSIG, Compair, Renner Kompressoren, SCHWARZER
- France: Howden BC compressors, Prodif
- The Netherlands: Air Conet, Creemers Compressors, Grass Air Compressors
- Italy: D.V.P. Vacuum Technology, Newco, Pneumofore, Rivacold, Ventos compressors
- Belgium: AF Compressors, Atlas Copco, De Bruyne NV
- United Kingdom: Atlas Copco, Avel Air, Gas Compressors, Parker Hannifin, Utile Engineering

Some of the producers in this list have a purchasing section on their website. One example is the German company Aerzen. Download, for example, their supplier self-assessment. Also note that the large companies in this industry have a global manufacturing and sourcing footprint which often also includes production facilities or sourcing offices in China and India. Supplying to these production facilities can be a good starting point for your international expansion strategy.

Importers/distributors

- Germany: Filcom, Mader, Sommer Kompressoren, Stürmer Maschinen
- France: Air Energie, Air Pn, COMPRIM'AIR, Enerfluid, Groupe Alphitan, Interpec
- The Netherlands: Berko, Geveke Persluchttechniek, V.R.B. Friesland BV
- Italy: Arinord, BOGE Italia, Gpa-Tecma
- Belgium: Airservices Benelux, Compair Geveke, De Bruyne NV, Maes Compressoren, NV Fribel
- United Kingdom: Absolute Air & Gas, AQ Central, AxFlow, Thorite

What are the end-market prices for metal parts and components for compressors?

To establish an export price, you need to consider many of the factors involved in pricing for the domestic market:

- Aim to charge the price the market will bear and keep in mind the quality-price ratio of your products. It should be in line with competitor prices;
- Pricing is a mix of knowing your domestic costs and calculating costs you will incur in delivering and supporting your activities in a foreign market;
- Use contracts with variable material costs. It is important to set the reference-index for the fluctuations in agreement with the buyer. Use, for example, the steel index of the London Metal Exchange.
- Fluctuations often vary from country to country due to differences in import taxes (not yet complying with WTO regulations) and European buyers will not pay extra simply because of fluctuations in one particular country;
- Bear in mind that it is not easy to increase prices once you have agreed to deliver at a certain price. The negotiated price should never be below your cost price (except for the first order; in this context you may accept a loss if larger quantities and thus lower costs are expected for the following orders). No European buyer will accept an unreasonable/unexpected price increase after the first order;
- The negotiated price depends on the delivery conditions, the means of payment, credit terms and currency risks, quantities and the means of transport;
- Exchange rates fluctuate. Cover this risk by including the currency risk in the contract. This practice has been accepted in international business transactions for a few years.

Tips:

- Use contracts with variable material costs.
- Include the currency risk in the contract.

Another very important issue is the responsibilities and rights relating to the pattern and tooling. The following pattern and tooling issues should all be covered in the contract: financing manufacture and possible repairs, guaranteed life time, ownership and storage.

In general, the more common the product, the more competition there will be and the lower the margin for the producer. On the other hand, the more sophisticated the product, the higher the labour factor in the landed cost price and the greater the interest of European companies in sourcing in Developing Countries. This is due to the fact that manufacturers in Developing Countries have a competitive edge in terms of labour compared to European manufacturers. This provides an opportunity in relation to labour-intensive products, as up to 50% of the European manufacturer's cost price may be made up of labour. See Table 1 for a comparison of cost price elements in Europe and Developing Countries.

Table 1: Price level of cost price elements in Europe and Developing Countries, in €

	Europe		Developing Countries
Labour (per hour)	35-40		0.7-1
CNC machining (per hour)	50-120		5-12
Set of tooling (example)	10,000		1,000-2,000

Source: Lichthart Solutions and Globally Cool (2014)

The difference in labour costs is partly compensated by higher labour productivity (or: manufacturing efficiency) in the countries under review, however, a difference of about 30-40% in cost price is possible in many cases. Of course, cost price calculations depend on the amount of labour necessary to make a specific part. For example, parts that need a great deal of CNC machining are labour intensive and therefore the price difference between European manufacturers and those from developing countries can exceed 200%. Experienced buyers in Europe consider a difference of 30% necessary to cover all costs involved in global sourcing (such as inspection costs, transport costs, costs on maintaining overseas relations including visits, higher stock levels because of longer delivery times, import duties, extra quality assurance costs).

Tip:

- Exploit your advantageous low labour costs by specialising in labour-intensive processes.

Useful sources

Trade fairs

- Germany: Chillventa, Compressor Users International Forum, IFAT
- France: SEPEM Industries
- The Netherlands: Industrial Processing
- United Kingdom: AirTech

There are only few compressor-technology specific trade fairs in the world. Compressor technology is often integrated in market segment oriented trade fairs, e.g. food technology, power generation, oil and gas, etc.

Trade Press

- Germany: Industrie, Maschinen Markt, Springer VDI Verlag
- France: Axes Industries, Industrie & Technologies
- The Netherlands: Products 4 Engineers
- International: COMPRESSORtech2, Hydraulics & Pneumatics

Trade and Industry Associations

- Germany: VDMA
- France: FIM, Profluid
- Italy: COMPO
- United Kingdom: BCAS

- Belgium: Belgian Federation of the Technology Industry
- European: CEIR, Pneurop, RECIP

Trade directories

- Germany: German Commercial Agents Directory, Sachon, Wer liefert was?
- France: Federation of French Commercial Agents
- Belgium/France: ABC Business Directories
- Italy: Azienda in fiera, Confindustria, Italy Business
- United Kingdom: Applegate Directory, Hotfrog, Manufacturers' Agents' Association (MAA)

Other useful sources

- Eurostat, Eventseye, Export Helpdesk, ITC International Trade Statistics, Kwintessential, Orgalime

CBI Market Intelligence

P.O. Box 93144
2509 AC The Hague
The Netherlands

www.cbi.eu/market-information

marketintel@cbi.eu

This survey was compiled for CBI by Globally Cool – Creative Solutions for Sustainable Business in collaboration with CBI sector expert Peter Lichthart

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Annex

Three codes have been selected for compressor parts, they all belong to the CN paragraph 841490. Also refer to Table 1 below for the classification. Table 1 also shows the Prodcom code used for the production statistics of compressor parts.

Table 1: Selected products, based on CN and Prodcom nomenclature

Subsector and product groups	CN code	Prodcom code	Description
Compressors			
	8414-9000, 9010, 9090	28133200	Parts of air and vacuum pumps, of air and gas compressors, of fans, and of hoods.

Source: CN and Prodcom Nomenclature