



Pumps and compressors

A SURVEY OF THE NETHERLANDS
AND OTHER SELECTED MARKETS IN THE EUROPEAN UNION



Centre for the Promotion of Imports from developing countries

PUMPS AND COMPRESSORS
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AND OTHER SELECTED MARKETS
IN THE EUROPEAN UNION

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REPORT SUMMARY

This market survey profiles the Netherlands and the European Union market for pumps and compressors.

Pumps reliably and precisely discharge the most varied tasks in the transport of liquids and gases in factories, plants, public works and elsewhere in our modern economy and without them our entire society would be inconceivable. A **compressor** is a device used to compress gases.

The main pumps and compressors which are dealt with in this survey are:

<i>Pumps for liquids</i>
<ul style="list-style-type: none">● <i>Pumps for dispensing fuel or lubricants, of the type used in filling-stations or in garages</i>● <i>Pumps for use in civil aircraft and other</i>● <i>Hand pumps</i>● <i>Pumps for internal combustion piston engines</i>● <i>Concrete pumps</i>● <i>Reciprocating positive displacement pumps</i>● <i>Rotary positive displacement pumps</i>● <i>Centrifugal pumps, power-driven</i>● <i>Pumps for liquids, power-driven</i>● <i>Parts of pumps</i>
<i>Air or vacuum pumps and compressors</i>
<ul style="list-style-type: none">● <i>Vacuum pumps</i>● <i>Hand- or foot-operated air pumps</i>● <i>Compressors for refrigerating equipment</i>● <i>Air compressors mounted on a wheel chassis for towing</i>● <i>Air pumps, air or other gas compressors</i>● <i>Parts of air or vacuum pumps, air or gas compressors</i>

Consumption

Demand is expanding from the traditional applications of pumps for water management, construction and the chemical industry, into the energy and environmental sector.

Liquid pumps are especially useful for environmental protection and water purification.

Comparing The Netherlands with other EU countries, The Netherlands is one of the smaller markets together with Belgium. The Netherlands is a typical “pumping” country since the western part of the country would be flooded if it were not continuously pumped. Large and reliable pumping stations have been built for this reason in the past, meaning that there is a steady demand for spare parts and replacement pumps all the time.

Well-known national and European pump manufacturers dominate this market. The concentration of oil and chemical industry around Rotterdam represents a highly professional market for special pumps, particularly for aggressive liquids and gases.

The most important compressors on the EU market are the screw compressors, with a 34 percent share of the market and sales in the order of US\$ 1.9 billion in 1996. The market shares of turbo compressors and other rotary compressors are expected to rise, thanks to greater production capacities, improved control systems and growth in the market for central, high-performance compressors.

Generally, both the pumps and compressors markets in Europe are growing, due to economic growth and to stricter environmental regulations which result in new process technologies.

Production

The EU is the largest industrial pump and compressor manufacturing economic entity in the world, with the USA second and Japan third. Within the EU, Germany with its production of US\$ 2.8 billion, is the leading producing country, followed at a far distance by France (US\$ 1.0 billion). Spanish production of pumps and compressors doubled between 1995 and 1996, amounting to US\$ 0.3 billion in 1996. In contrast, the Netherlands production fell by 9 percent from US\$ 0.3 billion in 1995 to US\$ 0.2 billion in 1996. The Netherlands industry specialises in developing and producing types of pumps which meet very specific requirements such as in the field of sealing, safety, anti corrosion-properties and pressure.

Imports

Imports of pumps and compressors into the EU amounted to more than US\$ 13 billion or 1 million tonnes in 1997, which indicated a decrease of 2 percent over 1996. However, imports into Denmark, the UK and Finland increased by respectively 13 percent, 8 percent and 8 percent.

Major importers within the EU were Germany, which accounted for 20 percent of total EU imports in terms of value, France (17 percent), the United Kingdom (15 percent) and Italy (11 percent). Germany play an obvious major role in the market, as it represented the highest import and export figures for the total pumps and compressors market.

The main pumps and compressors imported into the EU in 1997, ranked in terms of value and main suppliers, were:

Pumps and compressors imported into the EU	Main suppliers
Pumps for internal comb. piston engines	Germany (50%), France (11%), USA (7%)
Parts of pumps	Germany (22%), USA (11%), France (11%)
Parts of air or vacuum pumps	Germany (14%), Italy (14%), USA (13%)
Compressors for refrigerating equipment	Japan (29%), USA (16%), Germany (12%)
Air pumps, air or other gas compressors	UK (19%), Germany (14%), France (14%)
Centrifugal pumps, power-driven	Germany (24%), France (19%), Denmark (13%)

Source: Eurostat (1998)

Total imports of pumps and compressors into The Netherlands between 1996 and 1997 decreased by 10 percent to US\$ 711 million (or 46 thousand tonnes) in 1997. Particularly, imports of pumps for liquids represented 56 percent of total imports, amounting to US\$ 398 million in that same year. The Netherlands imports of pumps and compressors originated mainly in European countries. The share of developing countries in total imports of pumps and compressors into The Netherlands increased by 11 percent, to US\$ 13 million in 1997 (4 thousand tonnes).

Top 3 suppliers of pumps and compressors to The Netherlands (% of total imports), 1997	
Liquid pumps	→ Germany (39%), USA (12%), UK (10%)
Air or vacuum pumps and compressors	→ Germany (24%), UK (21%), Japan (9%)

Exports

Between 1995 and 1997, the EU exports of pumps and compressors increased by 6 percent to US\$ 18 billion or 1 million ton, making the EU a net exporter. Germany is the leading exporter of pumps and compressors, accounting for 36 percent into it account, followed by Italy, France and the UK.

Major destinations of exports of pumps and compressors from the EU were mainly EU countries (55 percent). 19 percent of EU-exported pumps and compressors went to developing countries. The reason for this is that pumps and compressors are essential for the delivery of basic necessities in developing countries, such as the improvement of hygiene through the supply of potable water.

The Netherlands was a net importer. Total exports of pumps and compressors increased considerably from US\$ 0.5 billion in 1995 to US\$ 0.6 billion in 1997. 54 percent of the exports was destined for other EU markets, which reflects the importance of The Netherlands as a gateway to Europe.

The leading product group is parts of pumps is the leading product group, representing 25 percent of the total exported value (US\$156 million) in 1997.

Developing countries

The role of developing countries in imports into the EU of pumps and compressors is small, as they only supplied 3 percent of total EU imports or 2 percent of total Netherlands imports in 1997.

The imported pumps and compressors from developing countries into the EU consist mainly of hand pumps and hand- or foot-operated pumps. As developing countries are still somewhat less technically developed, they only supply technically rather simple pumps.

Regarding EU level, developing countries supplies are dominated by Brazil, which accounted for 39 percent of total EU imports of pumps and compressors originating in developing countries. South Korea (21 percent) and Slovenia (13 percent) followed in order of importance. The key product group is hand- or foot-operated air pumps, accounting for 26 percent of the total imports of pumps and compressors in 1997.

In 1997, more than US\$ 13 million worth of pumps and compressors originating in developing countries were imported into The Netherlands. In that same year, hand pumps represented 26 percent of the total supply of pumps and compressors from developing countries, of which 96 percent originated in China. India is a newly emerging supplier of pumps for use in civil aircraft and other to The Netherlands.

Leading supplying developing countries of pumps and compressors to The Netherlands (% of total imported value from developing countries), 1997	
Hand pumps	China (96%), India (3%), South Korea (1%)
Hand- or foot-operated pumps	China (84%), India (14%), Pakistan (2%)
Vacuum pumps	South Korea (40%), Brazil (24%), Malaysia (18%)
Pumps for use in civil aircraft and other	India (100%)

Source: Eurostat (1998)

Access to the EU

Companies wishing to export to The Netherlands have to take the trading channels into account. It is recommended to trade through agents, importers or importing wholesalers. Direct trading with Original Equipment Manufacturers (OEMs) or end-users is not advisable, because these normally have little experience with importing and orders will be too small to be profitable. Indirect trading is more recommended as importers will not only import and trade products, but they also will add value to a product by giving advice, information, service, guarantee or stocking the product.

Exporters must also ensure that the standards and requirements for packaging, marking and labelling are met. Pumps and compressors imported into the EU should comply with the minimum European and national legislation.

The European Union applies the Common Customs Tariff to imports from non-EU sources. Imports of pumps and compressors originating in ACP countries or in least developed countries (LDCs) are given import exemptions. All pumps and compressors from those countries enjoy a zero import tariff.

1 INTRODUCTION

This survey analyses the Netherlands and other major markets in the European Union for pumps and compressors.

The report describes the key characteristics and trends in demand created both by the domestic consumer market and by the Netherlands and European trade in pumps and compressors. The import and export trade are examined with greater focus on the import trade and the major sources of imports, particularly developing countries. The report is divided into five chapters and structured as follows:

Chapter two deals with the major product characteristics. It focuses on the different pump and compressor products and their characteristics.

Chapter three outlines the Netherlands market for pumps and compressors. Attention is given to demand and supply, trends, import and export figures for pumps and compressors, and the role of developing countries in the trade of these products in The Netherlands. Furthermore, the trade structure is described: the infrastructure of importers and exporters, and the retail trade. This chapter ends with a description of the prices and margins of pumps and compressors.

In Chapter four, a description is given of the European Union market for pumps and compressors and the characteristics of the main national markets.

Background information on quality and packaging standards, market access (Customs duties, environmental regulations, etc.), terms of trade and promotion is provided in Chapter five. This final chapter ends with a checklist so that (potential) exporters can review the most important topics.

On 1 January 1999, the euro (EUR) became the legal currency within eleven EU member states participating in the euro area: Austria, Belgium, Finland, France, Germany, Italy, Ireland, Luxembourg, The Netherlands, Spain, and Portugal. Their national currencies have become subdivisions of the euro, but will continue to circulate as legal tender until 2002. Circulation of euro coins and banknotes begins 1 January 2002 replacing gradually national currency notes and coins, which must be withdrawn by 1 July 2002 at the latest. Currently, banking is possible both in euro and national currency.

The most recent Eurostat trade statistics described in this survey date from 1998. In that year, the European Currency Unit (ECU) was still used as a monetary instrument by financial institutions to simplify financial procedures. On 1 January 1999, statistical and contractual values in ECU were converted into euro on a 1:1 exchange rate. The EUR / US\$ exchange rate currently (June 1999) stands at US\$ 1.07 for one euro.

In this export guide, the US\$ is the basic currency used to indicate values. Values dating after 1 January 1999 are also expressed in euro.

Exchange rates of EU currencies in US\$							
Country	Currency	1994	1995	1996	1997	1998	June 1999
European Union	ECU	1.18	1.29	1.25	1.13	1.12	–
	EUR	–	–	–	–	–	1.07
Austria	Ash	0.0876	0.0988	0.0943	0.0820	0.0809	0.0779
Belgium	Bfr	0.0309	0.0339	0.0322	0.0279	0.0276	0.0265
Denmark	Dkr	0.157	0.178	0.172	0.151	0.149	0.144
France	Ffr	0.180	0.200	0.195	0.171	0.170	0.164
Finland	FM	0.192	0.228	0.217	0.193	0.187	0.180
Germany	DM	0.616	0.696	0.663	0.577	0.569	0.548
Greece	GRD	0.00412	0.00429	0.00414	0.00364	0.003383	0.00329
Ireland	I£	1.49	1.60	1.60	1.52	1.42	1.36
Italy	L	0.000620	0.000613	0.000647	0.000588	0.000577	0.000554
Netherlands	NLG	0.549	0.621	0.592	0.513	0.505	0.487
Portugal	Esc	0.00604	0.00665	0.00645	0.00569	0.00556	0.00535
Spain	Ptas	0.00747	0.00801	0.00787	0.00682	0.00672	0.00645
Sweden	Skr	0.130	0.140	0.149	0.131	0.126	0.121
United Kingdom	GB£	1.53	1.57	1.56	1.64	1.66	1.61

Source: CBS Statline (July 1999)

A note has to be made with respect to the use and interpretation of the trade figures. Since the establishment of the single market on 1 January 1993, the collection of data regarding trade flows has become more difficult. Before the establishment of the single market, trade was registered through compulsory Customs procedures at border crossings. Due to the removal of the intra-EU borders, this is no longer the case. Therefore, statistical bodies like Eurostat can no longer 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 value annually. This threshold varies considerably per country, but on average it amounts to about US\$ 100,000. As a consequence, one must be careful when interpreting statistical information, because trade within the EU is consequently underestimated.

2 PRODUCT CHARACTERISTICS

2.1 Product groups

This report analyses the market for pumps and compressors traded in The Netherlands and the European Union market.

Pumps reliably and precisely discharge the most varied tasks in the transport of liquids and gases in factories, plants, public works and elsewhere in our modern economy and without them our entire society would be inconceivable.

Pumps for liquids

- radial rotodynamic pumps
- axial rotodynamic pumps
- reciprocating displacement pumps
- rotary displacement pumps
- other pumps

A compressor is a device used to compress gases.

Air or vacuum pumps and compressors

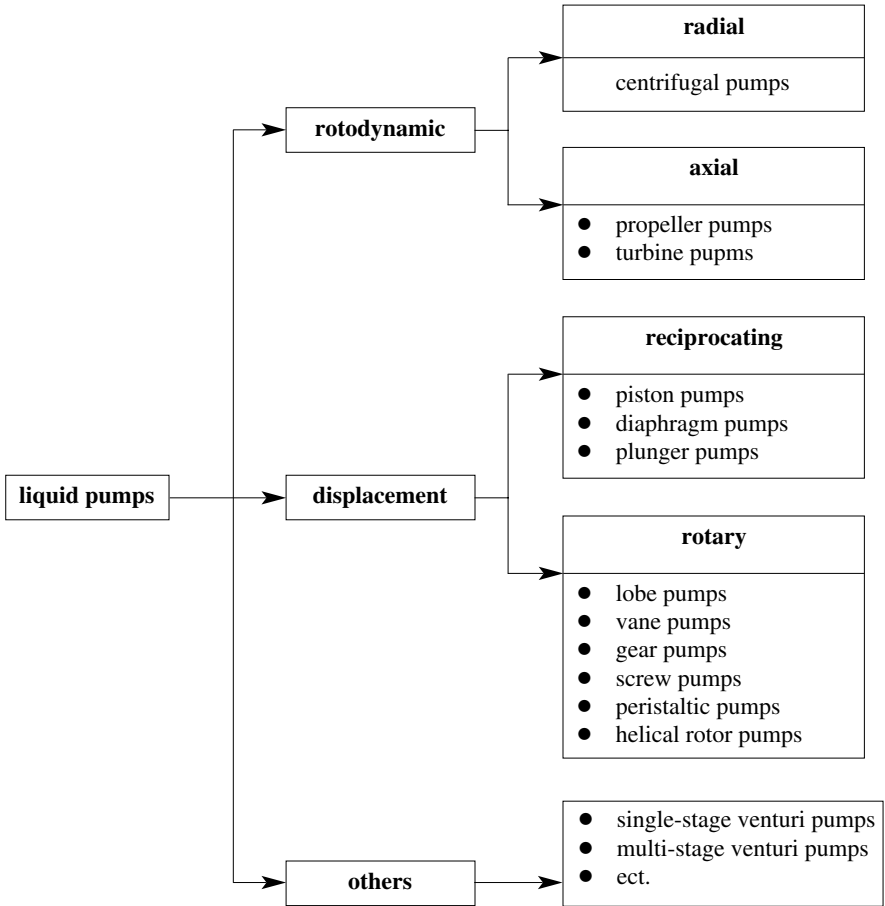
- Rotary vacuum pumps
- Displacement compressors
- Piston compressors

The differences between compressors and liquid pumps is that the medium being compressed by a compressor is gaseous instead of liquid. Vacuum pumps also have a gas as a medium, however, the aim is not to build up pressure, but to evacuate gas from a certain space.

Liquid pumps can be divided into main classes, two of which can be divided into sub-classes. This results in a total of 5 classes (see also Figure 2.1):

- radial rotodynamic pumps
- axial rotodynamic pumps
- reciprocating displacement pumps
- rotary displacement pumps
- other pumps

Figure 2.1 Classification of pumps for liquids



rotodynamic pumps: dynamic process, in which as a result of the addition of kinetic energy the medium is transported. Thereby a distinction is possible between radial and axial transport of the liquid.

- **radial**
centrifugal pumps are pumps with a fast rotating impeller, which establishes a dynamic rotation in the liquid. A centrifugal force is built up, so the liquid is forced out of the pump. A resultant low pressure at the pump entrance causes the liquid to flow into the pump. In the pump, the kinetic energy exerted by the impeller onto the liquid is partially converted into the required pressure.
- **axial**
propeller pumps are rotodynamic pumps transporting liquids in an axial direction through the impeller of the pump.

displacement pumps: the transport of liquids with a displacement pump is based on the principle of enlarging space (suction) and then reducing this space (pressure) mostly by means of pistons.

- **reciprocating displacement pumps**
piston pumps are reciprocating piston pumps or plunger pumps, especially used for displacement under higher pressure. They establish pressure by moving a piston up and down a barrel. This principle can also be found in compressors.

diaphragm pumps are similar to piston pumps, although the piston is replaced by a flexible working diaphragm. This type of pump is especially suitable for the pumping of abrasive and contaminated liquids, as long as the size of the polluting elements is not too big. This principle is also used for compressors.
- **rotary displacement pumps**
lobe pumps are displacement pumps, which have engaging rotors with 2 to 4 specially shaped teeth, which press the medium from the suction to the pressure opening by intermeshing. The lobe pump can be used for the transport of liquids with solid parts, which must not be damaged, like yoghurt containing strawberries.

- vane pumps* consist of a slotted rotor mounted asymmetrically in a concentric casing. Rigid blades are fitted in the rotor slots and are free to slide radially. They are normally swung outwards under the centrifugal force developed by rotation, although this radial movement may be assisted by spring loading or compressing the base of each vane. Sealing is achieved by the vanes rubbing along the inner surface of the casing, the space between adjacent blades forming pockets which alternately expand and contract in volume. Compressors of this type work with the same principle.
- gear pumps* are rotary pumps, which are the simplest in design, consisting of two intermeshing gears of the same diameter and form mounted on separate spindles, one gear shaft being driven whilst the other idles. Pumping action is produced by nature of the fact that during rotation, as each pair of teeth intermesh on the inlet side, the volume on that side is reduced by the volume of two tooth spaces, providing a suction effect. Liquid flowing into the suction space is then trapped on each side by a tooth crest approaching the bore of the housing and carried round to the delivery side by the 'pockets' between adjacent pairs of teeth. On the delivery side, liquid is displaced from the delivery port under pressure.
- screw pumps* are pumps of which screws may be in meshing contact, one power-driven screw driving the other; alternatively, they run with positive clearance, both screws being power-driven.
- peristaltic pumps* are pumps which transport liquid through a hose by squeezing the hose and moving this closure along the hose. The hose should be long-wearing and corrosion-resistant.
- helical rotor pumps* are pumps which are also called mono pumps and are particularly versatile types capable of handling a variety of liquids and products with a gentle pumping action with high efficiency. They consist, basically, of a rigid screw form rotor rolling in a resilient internal helical stator of hard or soft rubber with moderately eccentric motion. The eccentric screw can be specifically tailored to handle vicious liquids, slurries, pastes, solids in suspension and even delicate products, largely because of the low flow velocities realised through the pump.

- **remaining other principles**

- venturi pumps*

are pumps which are used for the transport of liquids and / or gases. This kind of pumps makes use of other liquids and / or gases like air or steam. They are blown into a venturi, where the fast flowing medium causes low pressure, so liquids and / or gases but even solids can be sucked into the venturi. As a result, both media are mixed and separation might be necessary. Venturi pumps are also used as vacuum pumps, for the transport of polluted corrosive liquids.

Besides the categories above, pumps also can be divided into different utilisations:

stationary pumps
are pumps which are dedicated to only one operation and are, therefore, installed permanently.
submersible pumps
are pumps with an integral electric motor connected to the pump, which can be utilised completely immersed. An example of a submersible pump is a deep well pump, which can be lowered into a well for draining and water raising, including the handling of sewage and slurries.
magnetic coupled pumps
are pumps in which two rings with an equal number of strong permanent magnets have been installed. The driving magnet is the reason for the rotation of the driven magnet and the vane. Between the driving and driven magnet, there is a box closing that part of the pump completely. Therefore, axle transit is impossible, the pump is leak-proof. These pumps can be used for the transport of dangerous, poisonous, smelling and explosive liquids up to a temperature of 200 °C. These pumps are used where the medium should be prevented to have contact with the electric motor at all times.
vacuum pumps
are pumps which generate negative pressure, a pressure below 1 bar, so that a vacuum is created. The vacuum technique often offers advantages for the purpose of sucking fluids, evacuating space or establishing low pressure. According to DIN 28400 (see also 5.1) vacuum means the total range of pressures beneath 1013 mbar. There are 4 stages distinguished: <ul style="list-style-type: none"> ● coarse vacuum till 1 mbar ● fine vacuum till 10^{-3} mbar ● high vacuum till 10^{-7} mbar ● extremely high vacuum from 10^{-7} to 10^{-13} mbar.

- **Pumps applications**

Pumps are used in sectors of watermanagement, construction, building techniques and the chemical industry. Liquid pumps are increasingly applied in the energy sector and in the processing of local and industrial waste water.

There is no pump type which exists in so many different variations and designs as the displacement pump. Displacement pumps are the specials amongst pumps, since they not only transport liquids but also high viscosity and bloated media. The highest pressure can be realised with the plunger pumps. The importance of the displacement pumps is reflected by the market. The axial plunger pump represents the majority of the displacement pumps together with rotodynamic pumps; they represent almost the entire pump market, including venturi and vane pumps.

- **Compressor applications**

In industry, compressed air is often used for control, transmission or transport. The importance of compressed air in industry as a transporter of energy has increased. Compressed air is also widely used in workshops to power pneumatic tools.

The energy source generated by compressing air is equal to that of electricity, water, oil and gas. Compressed air is a simple medium, which is less sensitive and causes less problems compared to other sorts of energy.

There are several compressing principles for providing compressed air. In practice, only three types are successful: piston compressors, screw compressors and rotary compressors.

Piston compressors
In the 1 to 7.5 kW range, the piston compressors dominate the market for 80 to 90 percent, and 10 to 20 percent is covered by rotary systems. Where the screw compressors are becoming more popular is the 11 to 450 kW range. Above 500 kW the market is almost completely represented by turbine compressors.
Screw compressors
In the field of larger industry compressors, oil injected screw compressors represent the majority followed by oil free screw, gear and turbo compressors. Their market share depends on the available power capacity. Oil free compressor types are used for large power capacities.
Rotary compressors
In the chemical industry, compressed air holds an advantage over other sources of energy, because it can easily be used in explosion-sensitive areas.

Criteria for the choice of using compressors are:

- capacity;
- power consumption;
- noise level;
- quality of air;
- oil pollution;
- energy costs;
- heat recovery;
- maintenance costs.

2.2 Customs/statistical product classification

On 1 January 1988, a unified coding system was introduced to harmonise the trading classification systems used world-wide and to allow for improved international comparability of foreign trade statistics. This system is called the Harmonised Commodity Description System (HS).

Table 2.1 gives a list of the main HS codes for pumps and compressors. The varieties of pumps and compressors discussed in this report are covered by Chapter 84 of the Harmonised System. The main categories used in the report are given below.

Table 2.1 HS code classification of pumps and compressors

HS codes	Product group
8413	<i>Pumps for liquids</i>
11 00	<i>Pumps for dispensing fuel or lubricants, of the type used in filling-stations or in garages</i>
19	<i>Pumps for use in civil aircraft and other</i>
20	<i>Hand pumps</i>
30	<i>Pumps for internal combustion piston engines</i>
40 00	<i>Concrete pumps</i>
50	<i>Reciprocating positive displacement pumps</i>
60	<i>Rotary positive displacement pumps</i>
70	<i>Centrifugal pumps, power-driven</i>
81	<i>Pumps for liquids, power-driven</i>
91	<i>Parts of pumps for use in civil aircraft and other</i>
8414	<i>Air or vacuum pumps and compressors</i>
10	<i>Vacuum pumps</i>
20	<i>Hand- or foot-operated air pumps</i>
30	<i>Compressors for refrigerating equipment</i>
40	<i>Air compressors mounted on a wheel chassis for towing</i>
80	<i>Air pumps, air or other gas compressors</i>
90	<i>Parts of air or vacuum pumps, air or gas compressors</i>

3 THE NETHERLANDS MARKET

3.1 Consumption

3.1.1 Market size

Unfortunately, in practice it is not possible to collect information with respect to the demand for pumps and compressors. However, the following comments can be made.

The market for pumps and compressors reflects the importance of the displacement pumps. The axial plunger pumps represent the majority of the displacement pumps and rotodynamic pumps; they represent almost the total pump market, including venturi and vane pumps.

In general, comparing The Netherlands with other EU countries, The Netherlands is one of the smaller markets together with Belgium. The Netherlands is, nevertheless, a typical “pumping” country since the western part of the country would be flooded if it were not continuously pumped. Large and reliable pumping stations have been built for this purpose in the past, meaning that there is a steady demand for spare parts and replacement pumps all the time. Well-known national and European pump manufacturers dominate this market. The concentration of the oil and gas industry around Rotterdam represents a highly professional market for special pumps, particularly for aggressive liquids and gases.

3.1.2 Market segmentation

Compressors are usually used to compress air for controlling, transmission and transport. Applications of pumps can be divided into the following sectors:

Chemicals / petrochemicals
Corrosive, explosive and toxic liquids exposed to high temperatures and pressures in the chemical and petrochemical industry, require pumps designed for specific applications which meet certain quality and safety standards. Safety in this respect is of great importance. Pumps that are safeguarded against explosion, are pressure-proof encapsulated and hermetically sealed, with an internal shaft guaranteeing protection from unwanted toxic emissions. This is the most interesting market for pumps and compressors in certain areas in Europe.
Energy and offshore technology
Pumps play a key role in the safe and economic extraction of raw materials and in energy supply. Whether in underground mining or in offshore technology on the sea bed, special underwater pumps are indispensable for oil and gas extraction. Pumps of the most varied type and construction are needed for very high pressures (compression) for cooling purposes or for blower-output in energy conversion in both conventional and nuclear power stations.

<p>Building / domestic engineering</p> <p>By integrating electronic controls within the pump itself, as in the case of heat-circulation (central heating) pumps, completely new fields of application have been opened in building / domestic engineering that save energy, are environmentally friendly and also economic. In the case of booster pumps for the water supply, the integration of all the signalling and control possibilities within the pumping sets takes away the need to install a large switch cabinet and also enables process control technology for large buildings at a higher centralised level. The development of fully automatic pumps integrated into waste and sewage water lifting installations enables the use of basement storeys for residential purposes.</p>
<p>Food and drink industry</p> <p>Special pumps demanding high levels of hygiene are used in the food and beverage industry. They must be simple and easy to clean, mostly made of stainless steel, and have polished surfaces that make it impossible for bacteria to develop sources of infection. In particular, product-protective, foam-free delivery is essential where it involves the transport and filling of apple purée, beer, butter, corned beef, meat salad, honey, jams and other preserves with whole fruit, curd, shaving cream, cheese spread, tomato ketchup, wine or toothpaste.</p>
<p>Biotechnology, pharmaceutical and cosmetic industry</p> <p>The selection of pumps for these application fields involves additional criteria. The pumps must be easy to clean and sterilise. The processing of their metal parts must attain minimal surface roughness for their use in genetic-engineering systems and plant. Such pumps must satisfy exacting demands for the protective conveyance of sensitive materials, especially in the molecular sector, and must also comply with strict national and international laws, regulations and directives.</p>
<p>Industrial and processing engineering</p> <p>Pumps have to meet manifold demands in industrial and process engineering. High temperatures, pressures and frequent switching drive, as well as the transport of aggressive, corrosive, explosive, toxic, solid-charged or viscous liquids, require pumps aggregates with special quality and safety standards which must guarantee the smooth functioning of production processes.</p>
<p>Environmental technology / waste water</p> <p>Special pumps, many submersible types, are used for a variety of key functions, enabling extremely stringent environmental requirements to be fulfilled. They have proved their value in large communal sewage and industrial waste-water treatment plants, as well as in flue gas desulphurizing plants for clean air maintenance. This is a market sector where the highest growth in demand is now observed.</p>

Water supply / irrigation

Falling ground water levels in many of Europe's agricultural regions, unfavourable soil conditions and long periods of drought in tropical countries pose challenges for the pump industry to provide efficient and economic solutions for the supply of drinking water for people and service water for industry and agricultural irrigation. Numerous types of pumps can be used to ensure that water is reliably drawn from rivers, basins or the sea or out of the ground. This is traditionally a big (replacement) market for The Netherlands.

Cooling lubricant supply

Pumps for the supply of cooling lubricant have the task of delivering cooling lubricant liquids (cutting oil, oil-in-water emulsion, cooling lubricant solution) in sufficient quantity with the necessary pressure at the working place e.g. for machine tools. Suitable types of pumps for the supply of cooling lubricants are used by planners, fitters and users in the most varied working processes and for the most highly differentiated cooling lubricant liquids in mechanical engineering generally, and for machine-tool and plant manufacturers, the automobile and its sub-supplier industry and for many other branches of industry.

3.1.3 Consumption patterns and trends

Pumps

New computer technology

Weak markets forced many companies to capacity and cost reductions to retain competitiveness. The wide deployment of Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), and Computer-Integrated Manufacturing (CIM) has resulted in productivity improvements and consequently to labour cost savings. This trend is likely to continue. Widespread and efficient distribution networks on key markets are becoming more important in the standardised pump sector. Many of the specialised companies need more effort in product innovation and product modification, in order to retain a competitive advantage.

Use of water hydraulics

The use of water hydraulics (systems using pure water or water-based fluids as a pressure medium) used to result in problems to hydraulics function as motors and servo valves. This has changed, partly due to new materials but also due to research and development. The advantages of water are, therefore, more accessible. Water is efficient as its low compressibility and viscosity make it a better transmitter of energy than the finest hydraulic fluids. Water is clean, easy to store, disposal is cheap and simple, and it is therefore a low-cost fluid. The choice for water hydraulics depends both on the area in which it will be used and on the customer's real needs. Together, they determine if this system will be more useful than the usual oil system.

Synthetics

Stainless steel pumps have been the only option to deal with corrosive liquids in the past. However, new synthetic pumps, incorporating the advantages of stainless steel into a cost-effective pump are able to cope with liquids such as acids, dielectrics and many organic solvents. An example of such a pump, with pressure up to 12 bar, has been developed to be resistant to all types of chemicals and be able to cope with erosion and abrasion when delivering contaminated liquids. Research revealed that all these requirements could not be met with only one type of synthetic material. In the light of this, it was discovered that two materials met design requirements when combined with the glass fibre polyoxymethylene (POM) and with polyphenylsulfide (PPS).

No cast iron submersible pumps

In order to be able to reduce the weight of the pump, to increase heat transfer (necessary for increasing the life of the motor), and making cleaning much easier, a new type of pump has been developed by using other materials. Thanks to several developments in plastics (polyurethanes), the impeller and the impeller housing could be made in PUR. Apart from being light, this material is also fairly resistant to abrasive materials (2-11 pH). The motor is made of stainless steel, allowing a thinner wall and better heat transfer. These measures together lead to an almost 60 percent decrease in the weight of a 150 kg cast iron pump.

Barrel pumps

As a result of heightened environmental consciousness, the interest for barrel pumps is increasing. These pumps can be used for different kind of fluids and several barrels can be emptied quickly after each other. The kind of energy source available is crucial to the development of special barrel pumps. They are now widely offered with drives for alternating current (AC), 3-phase current or direct current (DC) but also with compressed air drives.

Compressors

In The Netherlands, compressors are used in sectors such as petrochemical and offshore industry by diving companies, power stations, steel-preserving companies and construction contractors. Installations can be rented from 0.7 up to 45 bar and will be maintained and repaired by the rental company. They guarantee a 24 hours/day uninterrupted supply of compressed air. A trend in this market is the changing demand for cleaner and dryer air, especially in the processing industry, where air quality is becoming more and more important.

The market for compressors concentrates on economical complete installations, resulting in lower energy and service costs. Although compressed air technology offers many benefits, compressed air itself is an expensive and inefficient energy form, especially when errors are made in the buying process and the way in which the air is treated and used. In the planning stage, not only the supply volume and the pressure should be dealt with, also other factors such as the quality of the free air, energy efficiency, energy in compressing air, quality of compressed air, and service costs should be given attention.

Further developments lead to an integrated concept of compressed air which means that compressor, condenser and air preparation unit will be offered as one compact, directly connectable systems. More electronic and improved control and steering systems will be used for the control of compressors, and connected by bus systems.

It is expected that compressed air will increasingly be utilised as processing air, oil-free compressed air. Although it has clear technical advantages over electricity, the function of compressed air as an energy carrier will stagnate. Other trends in the market for compressors are:

- Smaller energy-savings units
- New raw material combinations and surface treatment
- Innovations leading to higher capacity with smaller pumps
- Improvements in material, seals and driving forces.

3.2 Production

There are a few manufacturers of pumps in The Netherlands. Important pump and compressors suppliers are the members of the Holland Pump Group (HPG), a manufacturer's association (see Appendix 3 for address). The following companies are members:

- BW/IP International BV
- Delaval-Stork VOF
- Enviro Tech Pumpsystems BV
- Houttuin Holland BV
- IHC Holland NV Parts & Services
- Sihi-Maters BV
- Stork Pompen BV
- Duyvelaar pompen
- Robotpompen

For reasons of protection from competition, the small number of producers in The Netherlands does not publish any production figures. The following general figures are available:

Table 3.1 Netherlands production of pumps and compressors (US\$ million), 1996-1998

	1996	1997	1998
Liquid centrifugal pumps	76	55	58
Parts of pumps and elevators	100	83	143
Parts of air pumps and compressors	64	56	48

Source: CBS (1999)

The Netherlands industry specialises in developing and producing types of pumps which meet very specific requirements such as in the field of sealing, safety, anti-corrosion properties and pressure. Each supplier tries to differentiate by adding extra quality assurance, testing, logistics or after sales services.

3.3 Imports

All data presented in this section are official trade figures provided by Eurostat. Since the establishment of the single market on 1 January 1993, the collection of data regarding trade flows has become more cumbersome. Prior to that date, trade was registered by means of compulsory Customs procedures at border crossings. Due to the removal of the intra-EU borders, this is no longer the case. Therefore, statistical bodies like Eurostat cannot depend on automatic generation of trade figures. They have become dependent on reports from exporting and importing firms, which are only supplied on a *voluntary* basis for transactions with a value below NLG 175 thousand (approximately US\$ 100 thousand). The reports are only *compulsory* for transactions with a value above NLG 175 thousand.

This means that not all trade is included in the data. A relatively larger share of trade in product groups where there are a large number of small transactions is unrepresented, compared to those where there are more sizeable transactions.

The statistics below, besides the total imports into the EU, also list the part originating outside the EU (extra-EU) and the share of developing countries. Developing countries, as defined by the OECD, are listed in Appendix 8.

Appendix 1 lists detailed import statistics with respect to The Netherlands, including the import figures for the different products within the product groups and the most important countries of origin.

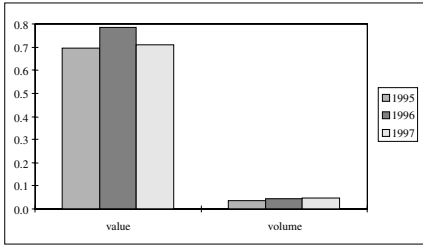
3.3.1 Total imports

After an increase of 13 percent in 1996, total imports of pumps and compressors into The Netherlands decreased by 10 percent to US\$ 711 million (or 46 thousand tonnes) in 1997. In particular, imports of pumps for liquids represented 56 percent of total imports, amounting to US\$ 398 million in that same year. The imports of pumps and compressors originated mainly in European countries. The share of developing countries in total imports of pumps and compressors into The Netherlands increased by 11 percent, to US\$ 13 million in 1997 (4 thousand tonnes).

The top three suppliers and their respective shares in total imports of pumps and compressors in 1997 are shown in the box below (for more detailed statistics see Appendix 1).

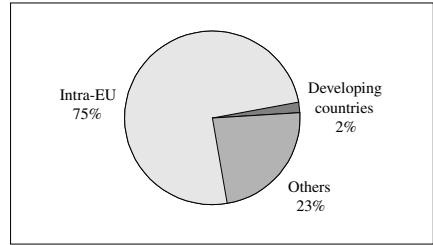
Leading suppliers of pumps and compressors to The Netherlands	
Liquid pumps	→ Germany (39%), USA (12%), UK (10%)
Air or vacuum pumps and compressors	→ Germany (24%), UK (21%), Japan (9%)

Figure 3.1 Imports of pumps and compressors into The Netherlands (value in US\$ billion, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

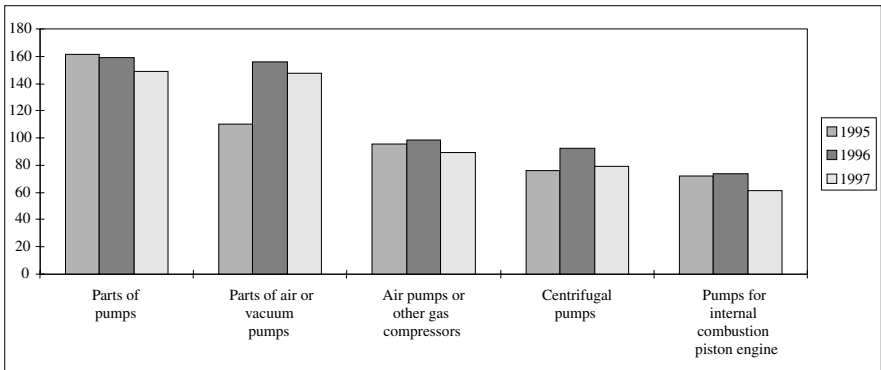
Figure 3.2 Imports of pumps and compressors into The Netherlands (as a share of total value), 1997



Source: Eurostat (1998)

3.3.2 Imports by product

Figure 3.3 Imports of top five pumps and compressors into The Netherlands (in million US\$), 1995-1997



Source: Eurostat (1998)

The most significant categories of imports are parts of pumps, parts of air or vacuum pumps, and air pumps.

Table 3.2 Imports of pumps and compressors into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997		trends
	value	volume	value	volume	value	volume	
Total pumps and compressors	695,765	35,537	785,190	43,654	710,584	45,951	↗↘
Intra-EU	518,505	26,382	565,886	29,486	533,492	31,991	↗↘
Developing countries	10,688	1,537	12,110	2,744	13,463	4,401	↗
Total pumps for liquids	417,450	21,601	433,721	24,516	398,482	27,441	↗↘
Intra-EU	317,150	15,707	335,851	16,572	305,067	18,257	↗↘
Developing countries	4,992	831	6,273	1,581	7,867	3,530	↗
Total air/vacuum pumps and compressors	278,315	13,936	351,469	19,138	312,101	18,510	↗↘
Intra-EU	201,355	10,675	230,035	12,914	228,425	13,734	↗↘
Developing countries	5,695	706	5,838	1,163	5,596	871	↗↘
Parts of pumps	161,250	10,192	158,715	10,490	149,053	10,402	↘
Parts of air or vacuum pumps	109,983	3,920	156,215	6,814	147,767	5,732	↗↘
Air pumps, air or other gas compressors	95,584	5,005	98,823	5,247	88,873	5,659	↗↘
Centrifugal pumps	75,848	5,249	92,516	6,734	79,221	7,974	↗↘
Pumps for internal combustion piston engines	72,165	1,601	73,651	1,440	61,518	1,308	↗↘
Compressors for refrigerating equipment	34,222	2,186	35,129	3,245	32,675	4,047	↗↘
Vacuum pumps	25,791	943	48,063	1,962	30,912	1,359	↗↘
Reciprocating positive displacement pumps	34,587	1,193	30,479	1,135	30,472	1,080	↘
Pumps for liquids	24,715	1,446	25,410	1,562	29,926	1,864	↗
Rotary positive displacement pumps	33,523	887	29,464	930	28,160	1,635	↘
Air compressors	8,030	824	8,818	876	7,902	788	↗↘
Pumps for use in civil aircraft and other	3,059	125	3,983	131	6,886	222	↗↘
Hand pumps	4,149	505	9,456	1,288	6,718	2,430	↗↘
Hand- or foot-operated air pumps	4,705	1,058	4,423	994	3,972	925	↘
Concrete pumps	4,416	274	5,246	587	3,480	371	↗↘
Pumps for dispensing fuel or lubricants	3,738	129	4,801	219	3,049	155	↗↘

Source: Eurostat (1998)

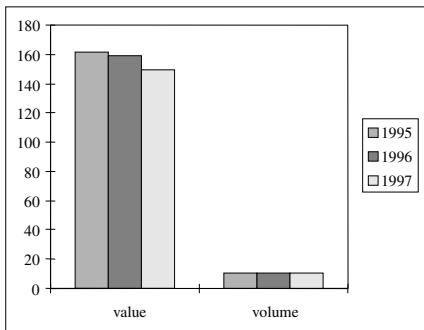
● **Parts of pumps**

Parts of pumps is the most important product group in terms of imported value, representing 21 percent of total imports of all product groups. Pumps for use other than for civil aircraft played the major role within this product group, amounting to US\$ 149 million in 1997.

The value of parts of pumps showed a small decrease between 1996 and 1997 from US\$ 159 million to US\$ 149 million. The largest supplier of parts of pumps is Germany accounting for 32 percent of total parts of pumps imports, followed by Italy (12 percent). The share of developing countries in the imported value expanded by 39 percent, from US\$ 2.5 million in 1996 to US\$ 3.5 million in 1997, representing 2 percent of the total imports.

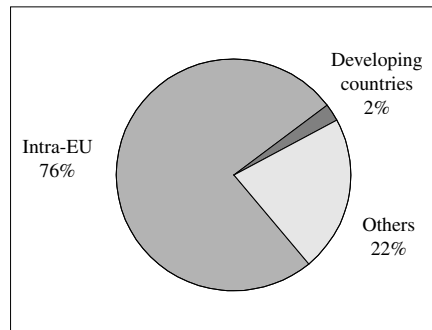
Imports of parts of pumps from Germany increased slightly from US\$ 47 million in 1996 to US\$ 48 million in 1997 (up 2 percent). The other main supplying developing countries are Slovenia, India, Malaysia and Brazil.

Figure 3.4 Imports of parts of pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

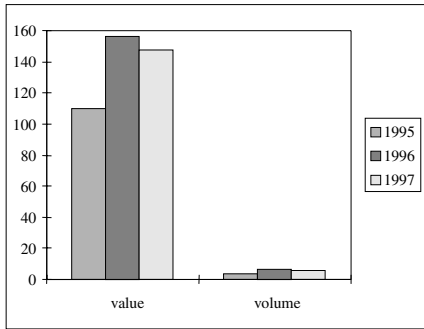
Figure 3.5 Imports of parts of pumps into The Netherlands (as a share of total value), 1997



Source: Eurostat (1998)

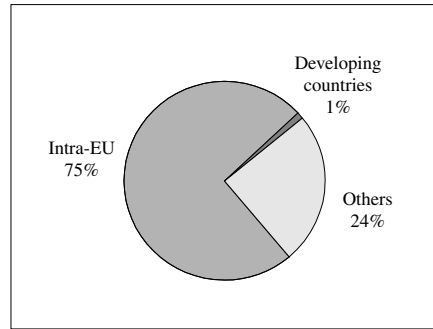
- **Parts of air or vacuum pumps**

Figure 3.6 Imports of parts of air or vacuum pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.7 Imports of parts of air or vacuum pumps into The Netherlands (as a share of total value), 1997



Source: Eurostat (1998)

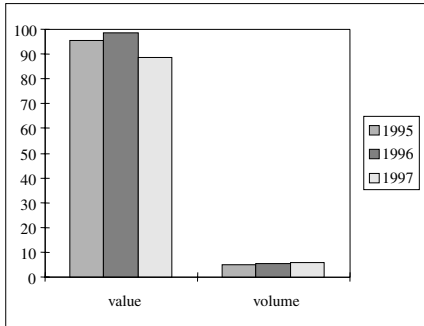
Parts of air or vacuum pumps are a significant import segment and accounted for a value of US\$ 148 million and volume of 6 thousand tonnes in 1997. Their imported volume represented 21 percent of all product groups together.

Between 1996 and 1997, both the value and volume of imported parts of air or vacuum pumps experienced decreases of 5 percent and 16 percent respectively. The UK and Germany are the two largest suppliers and accounted together for 26 percent of total imports of parts of air or vacuum pumps.

The UK's supply of parts of air or vacuum pumps to The Netherlands increased considerably between 1996 and 1997 from US\$ 18 million to US\$ 34 million, reflecting an increase of 84 percent. Of the total imports of parts of air or vacuum pumps, 1 percent is supplied by developing countries, mainly by South Korea (28 percent), Algeria (19 percent) and Slovenia (14 percent). Between 1995 and 1997, imports of parts of air or vacuum pumps originating in developing countries declined considerably from US\$ 2.6 million to US\$ 1.6 million, indicating a decrease of 39 percent.

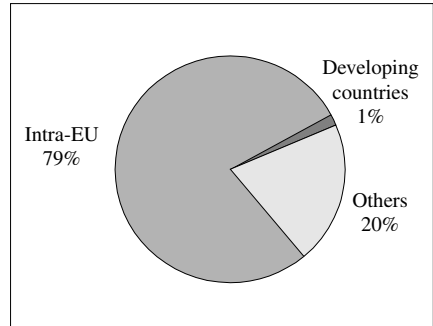
- Air pumps

Figure 3.8 Imports of air pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.9 Imports of air pumps into The Netherlands (as a share of total value), 1997

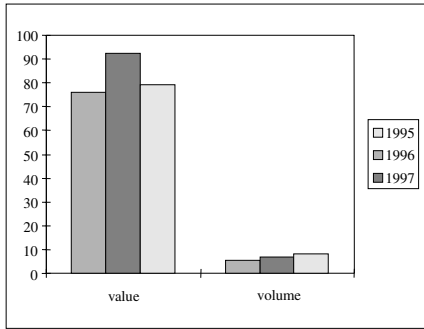


Source: Eurostat (1998)

Total imports of air pumps decreased by 10 percent from US\$ 99 million in 1996 to US\$ 89 million in 1997. Turbo compressors (single stage) played the leading role within the product groups air pumps and amounted to US\$ 25 million in 1997. With the value US\$ 16 million and US\$ 11 million in that same year, reciprocating displacement compressors having a gauge pressure capacity of not exceeding 15 bar (giving a flow per hour not exceeding 60 m³) and reciprocating displacement compressors having a gauge pressure capacity of exceeding 15 bar (giving a flow of per hour of exceeding 120 m³) followed in order of importance. The share of EU countries in these imports was 79 percent in 1997. The leading supplier is the UK, responsible for 28 percent of total imports of air pumps (US\$ 25 million), followed by Germany (23 percent). Developing countries are mainly represented by the newly emerging country Liberia, which accounted for 44 percent of total developing countries imports into The Netherlands of air pumps in 1997. Other major exporting developing countries are China and Algeria.

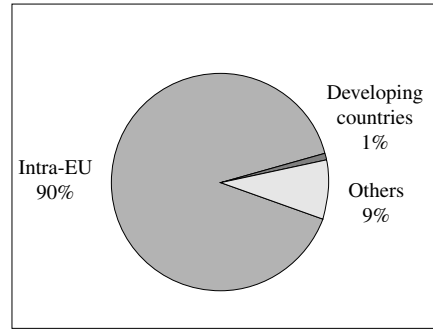
- Centrifugal pumps

Figure 3.10 Imports of centrifugal pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.11 Imports of centrifugal pumps into The Netherlands (as a share of total value), 1997

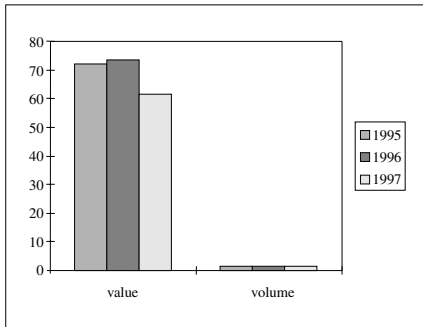


Source: Eurostat (1998)

Over the last three years, imports of centrifugal pumps have been fluctuating in terms of value, and amounted to US\$ 79 million. In terms of volume, centrifugal pumps imports into The Netherlands increased from 5.2 thousand tonnes in 1995 to 8.0 thousand tonnes in 1997. Imports of centrifugal pumps into The Netherlands mainly originated in EU countries. Germany is the leading supplier of centrifugal pumps to The Netherlands, accounting for 42 percent of total centrifugal pumps imports in 1997. The second and third largest suppliers, France and Italy, together took 29 percent for their account. Developing countries were mainly represented by a newly emerging exporting country Libya, which accounted for 33 percent of total imports from developing countries. Other major suppliers in developing countries were Brazil (33 percent) and Sri Lanka (19 percent).

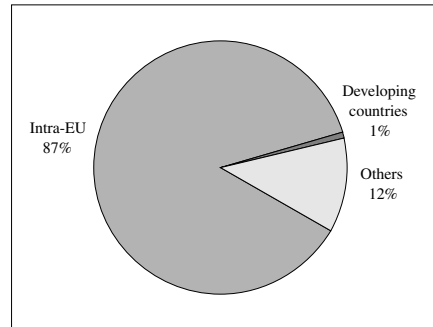
- **Pumps for internal combustion piston engines**

Figure 3.12 Imports of pumps for internal combustion piston engines into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.13 Imports of pumps for internal combustion piston engines into The Netherlands (as a share of total value), 1997

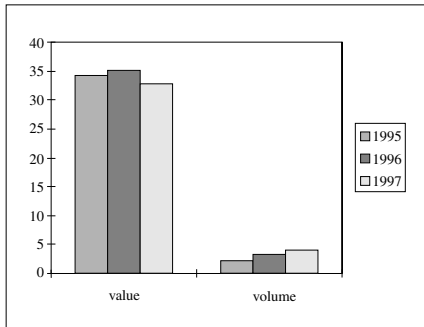


Source: Eurostat (1998)

Total imports of pumps for internal combustion piston engines decreased by 16 percent from US\$ 74 million in 1996 to US\$ 62 million in 1997. Of the total imports of pumps for internal combustion engines, injection pumps took US\$ 22 million for their account in 1997. The share of EU countries was 87 percent in 1997. The leading supplier was Germany, responsible for 74 percent of the total imports of pumps for internal combustion piston engines. Developing countries are mainly represented by India (73 percent), South Korea (15 percent) and Brazil (5 percent).

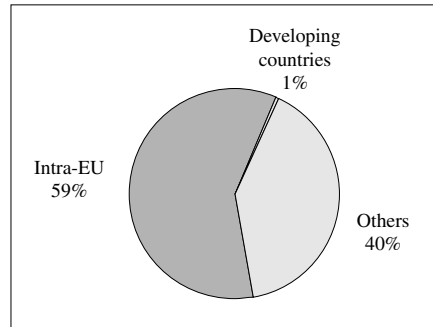
- Compressors for refrigerating equipment

Figure 3.14 Imports of compressors for refrigerating equipment into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.15 Imports of compressors for refrigerating equipment into The Netherlands (as a share of total value), 1997



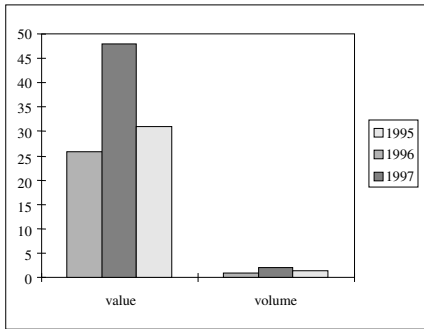
Source: Eurostat (1998)

The value of compressors for refrigerating equipment showed a small decrease between 1996 and 1997 from US\$ 35 million to US\$ 33 million. More than 50 percent of total imports, or US\$ 17 million, was taken by compressors of a kind used in refrigerating equipment of a power exceeding 0.4 kW (hermetic or semi-hermetic).

The largest supplier was Germany, accounting for 29 percent of total compressors for refrigerating equipment imports, followed by Japan (23 percent). Imports originating in developing countries declined in terms of value from US\$ 0.4 million in 1996 to US\$ 0.2 million in 1997, representing 1 percent of the total imports. Developing countries were represented by Mexico (39 percent), China (20 percent) and Nigeria (16 percent).

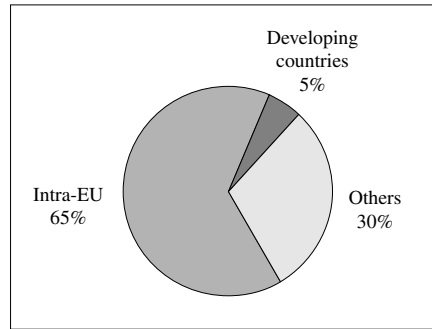
- Vacuum pumps

Figure 3.16 Imports of vacuum pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.17 Imports of vacuum pumps into The Netherlands (as a share of total value), 1997

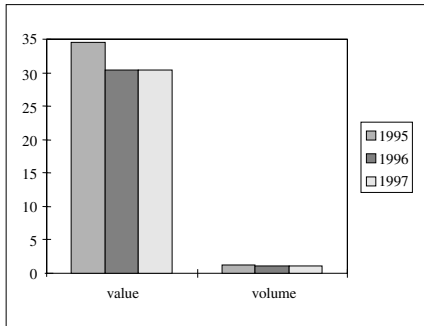


Source: Eurostat (1998)

Between 1995 and 1997, imports of vacuum pumps fluctuated both in terms of value and volume, and reached US\$ 31 million or 1.4 thousand tonnes in 1997. This product group is mainly represented by rotary piston pumps and diffusion pumps amounting respectively to US\$ 9 million and US\$ 385 thousand. The leading supplier was Germany, accounting for 31 percent of total imports of vacuum pumps into The Netherlands. The share of developing countries in total imports of vacuum pumps increased from 3 percent in 1996 to 5 percent in 1997. Major exporting developing countries were South Korea (44 percent), Brazil (24 percent) and Malaysia (18 percent).

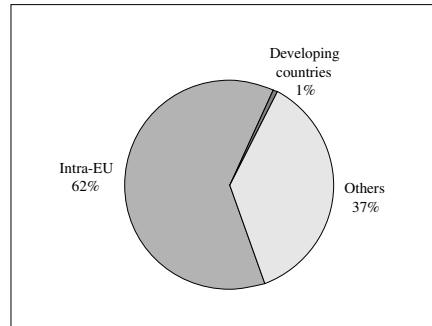
- **Reciprocating positive displacement pumps**

Figure 3.18 Imports of reciprocating positive displacement pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.19 Imports of reciprocating positive displacement pumps into The Netherlands (as a share of total value), 1997

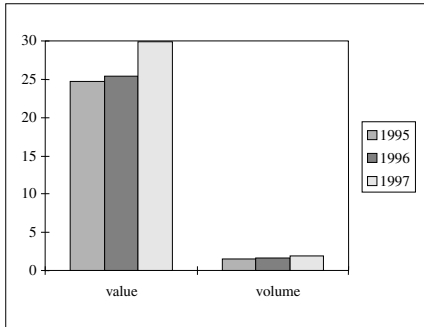


Source: Eurostat (1998)

Between 1996 and 1997, imports of reciprocating positive displacement pumps were stable at US\$ 31 million or 1 thousand ton. In 1997, this product group was mainly represented by hydraulic fluid power piston pumps (US\$ 17 million) and dosing and proportioning pumps (US\$6 million). The leading supplier was the USA, accounting for 33 percent of total imports of reciprocating positive displacement pumps, followed by Germany (30 percent) and Sweden (22 percent). Developing countries were mainly represented by Croatia, which took 57 percent of total reciprocating positive displacement pumps imports originating in developing countries. Other suppliers in developing countries are Liberia and China.

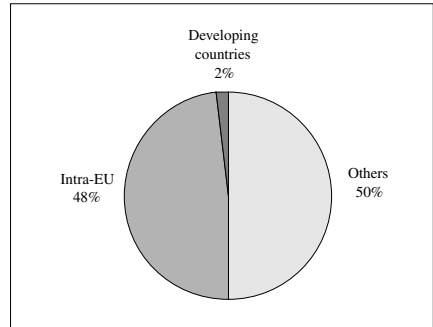
- Pumps for liquids

Figure 3.20 Imports of pumps for liquids into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.21 Imports of pumps for liquids into The Netherlands (as a share of total value), 1997



Source: Eurostat (1998)

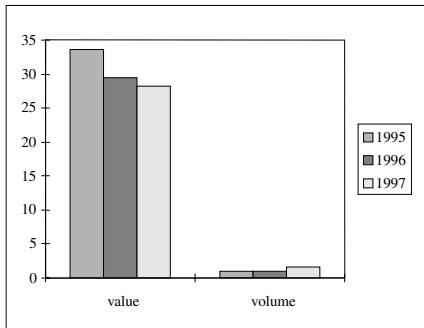
Between 1996 and 1997, both in terms of value and volume, pumps for liquids witnessed an increase of 18 percent and 19 percent to US\$ 30 million and 1.9 thousand tonnes respectively. The USA was the largest supplier, accounting for 31 percent of total imports of pumps for liquids, followed at a far distance by Belgium (17 percent). Noticeably, the Belgian supply of pumps for liquids to The Netherlands increased considerably between 1995 and 1997, from US\$ 0.4 million in 1995 to US\$ 5.0 million in 1997.

The share of developing countries in the imported value of pumps for liquids expanded from US\$ 0.4 million in 1996 to US\$ 0.6 million in 1997. In 1997, 2 percent of all imports of pumps for liquids was supplied by developing countries, mainly Turkey (25 percent), Slovenia (18 percent) and China (16 percent).

● **Rotary positive displacement pumps**

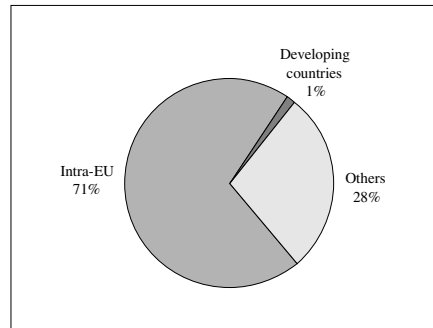
The total value of imports of rotary positive displacement pumps decreased by 4 percent from US\$ 29 million in 1996 to US\$ 28 million in 1997. Rotary positive displacement pumps originated mainly in Germany (38 percent). The share of developing countries in imports of rotary positive displacement pumps decreased from 2 percent in 1996 to 1 percent in 1997. The main developing countries that supplied rotary positive displacement pumps in 1997 were Iran, Algeria and Ghana.

Figure 3.22 Imports of rotary displacement pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

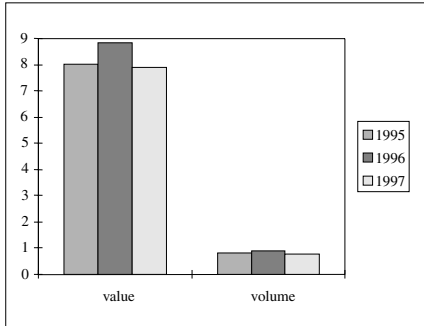
Figure 3.23 Imports of rotary displacement pumps into The Netherlands (as a share of total value), 1997



Source: Eurostat (1998)

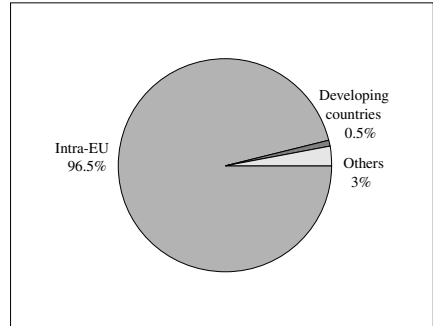
- Air compressors

Figure 3.24 Imports of air compressors into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.25 Imports of air compressors into The Netherlands (as a share of total value), 1997

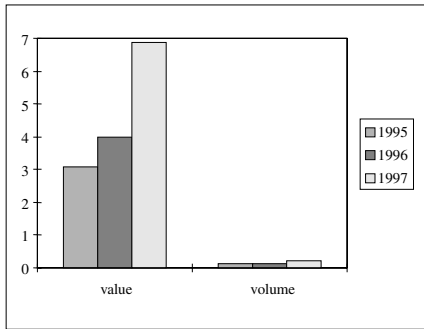


Source: Eurostat (1998)

Both in terms of value and volume, imports of air compressors fluctuated between 1995 and 1997. Compared to the previous year, imports of air compressors decreased by 10 percent amounting to US\$ 8 million in 1997. The two leading suppliers were Belgium and the UK, which respectively accounted for 50 percent and 36 percent of total air compressors imports into The Netherlands in 1997. Developing countries were only represented by Ghana.

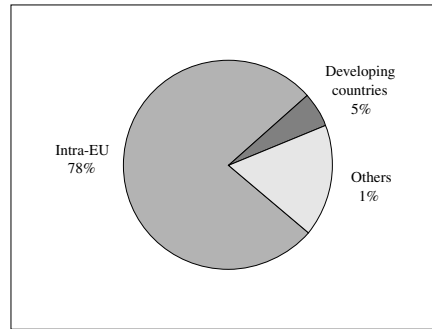
- Pumps for use in civil aircraft and other

Figure 3.26 Imports of pumps for civil aircraft and other into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.27 Imports of pumps for civil aircraft and other into The Netherlands (as a share of total value), 1997

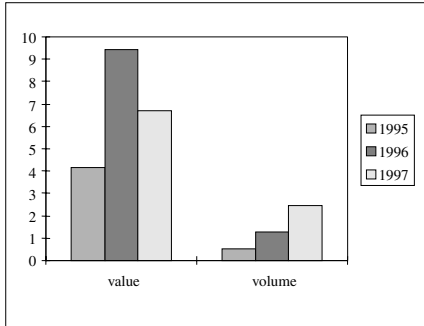


Source: Eurostat (1998)

Both in terms of value and volume, the total imports of pumps for use in civil aircraft and other into The Netherlands increased by more than 70 percent between 1996 and 1997 amounting to US\$ 6.9 million or 0.2 thousand tonnes in 1997. The share of developing countries increased considerably, from 0.1 percent in 1995 to 5 percent in 1997. The only supplier in developing countries was India, which is a newly emerging exporter of pumps for use in civil aircraft and other.

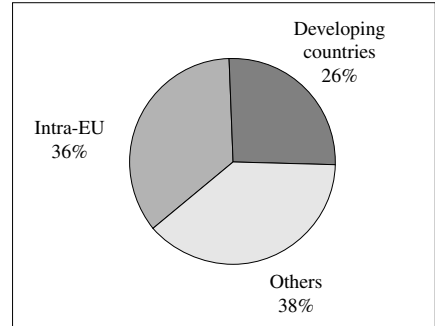
- Hand pumps

Figure 3.28 Imports of hand pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

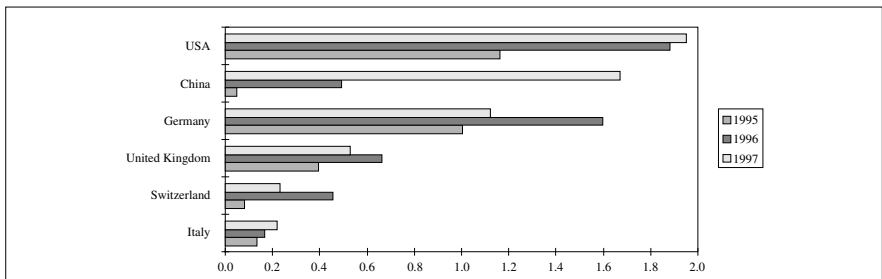
Figure 3.29 Imports of hand pumps into The Netherlands (as a share of total value), 1997



Source: Eurostat (1998)

In terms of value, the total imports of hand pumps into The Netherlands amounted to US\$ 7 million in 1997, reflecting a decrease of 29 percent compared to previous year. In volume terms, imports showed considerable increases from 0.5 thousand tonnes in 1995 to 2.4 thousand tonnes in 1997. The leading supplier was the USA, responsible for 29 percent of total imports of hand pumps in 1997. China, the leading supplier in developing countries, followed at a close distance, accounting for 25 percent. Between 1995 and 1997, China witnessed a strong increase in imports of hand pumps into The Netherlands from US\$ 48 thousand in 1995 to US\$ 1.7 million in 1997. Other major supplying developing countries were India and South Korea. Hand pumps is noticeably the most important product group exported by developing countries.

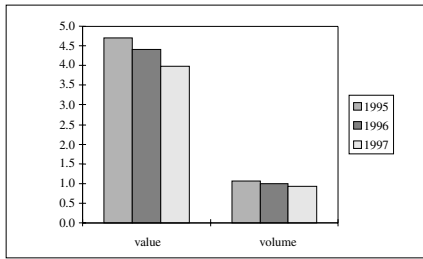
Figure 3.30 The leading supplying countries of hand pumps to The Netherlands (in US\$ million), 1995-1997



Source: Eurostat (1998)

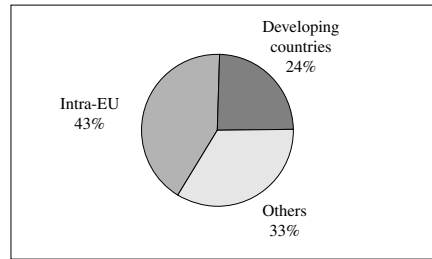
- Hand- or foot-operated air pumps

Figure 3.31 Imports of hand- or foot-operated air pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

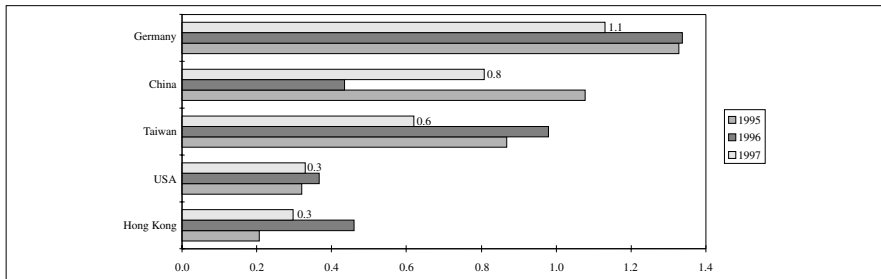
Figure 3.32 Imports of hand- or foot-operated air pumps into The Netherlands (as a share of total value), 1997



Source: Eurostat (1998)

Imports of hand- or foot-operated air pumps into The Netherlands, both in terms of value and volume, decreased considerably to US\$ 4 million or 0.9 thousand tonnes in 1997. Hand pumps for cycles mainly represented this product group, amounting to US\$ 1 million in 1997. The share of developing countries in total imports of hand- or foot-operated air pumps fluctuated from 25 percent in 1995 to 11 percent in 1996 and returned to 24 percent in 1997. The leading hand- or foot-operated air pumps supplier in 1997 was Germany (28 percent), followed by China (20 percent). The leading supplier of the developing countries was China, accounting for 84 percent of total hand- or foot-operated air pumps imports from developing countries. Other main exporting developing countries were India (14 percent) and Pakistan (2 percent). It should be noted that hand- or foot-operated air pumps is the second largest product group of total pumps and compressors exported to The Netherlands by developing countries.

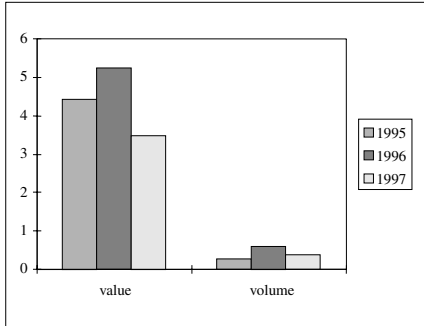
Figure 3.33 The leading supplying countries of hand- or foot-operated air pumps to The Netherlands (in US\$ million), 1995-1997



Source: Eurostat (1998)

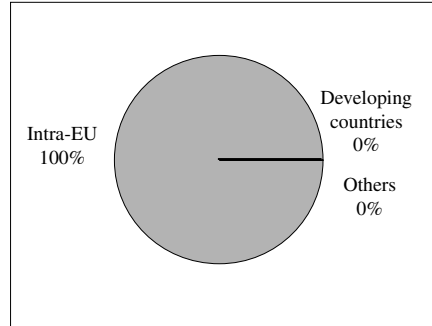
- Concrete pumps

Figure 3.34 Imports of concrete pumps into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.35 Imports of concrete pumps into The Netherlands (as a share of total value), 1997

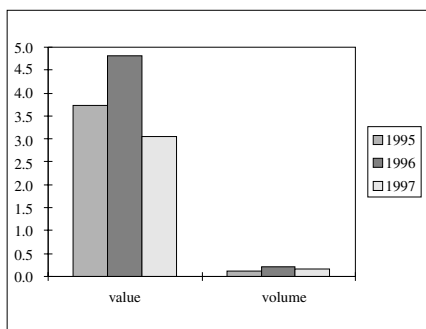


Source: Eurostat (1998)

The total imports of concrete pumps into The Netherlands fluctuated between 1995 and 1997, reaching US\$ 3.4 million or 0.4 thousand tonnes in 1997. Germany and Italy were the only two countries supplying concrete pumps to The Netherlands. Although imports of concrete pumps originating in Germany decreased between 1995 and 1997, it still was the leading supplier, accounting for 86 percent of total imports of concrete pumps into The Netherlands.

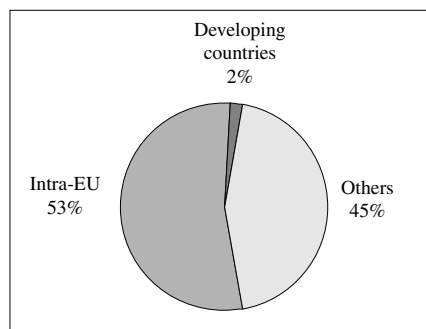
- **Pumps for dispensing fuel or lubricants**

Figure 3.36 Imports of pumps for dispensing fuel or lubricants into The Netherlands (value in US\$ million, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 3.37 Imports of pumps for dispensing fuel or lubricants into The Netherlands (as a share of total value), 1997



Source: Eurostat (1998)

Over the last three years, the imports of pumps for dispensing fuel or lubricants into The Netherlands have fluctuated; they amounted to US\$ 3 million or 155 tonnes in 1997. The leading supplier of pumps for dispensing fuel or lubricants in 1997 was the UK (36 percent), followed by the USA (21 percent). Developing countries took 2 percent of total imports for their account and were only represented by Turkey.

3.3.3 The role of developing countries

Appendix 1 provides detailed imports statistics for the main product groups covered in this survey. Appendix 8 gives a list of developing countries, as defined by the OECD.

The role of developing countries is small, as they only supplied US\$ 13 million or 2 percent of the total imported value into The Netherlands in 1997. The importance of developing countries as suppliers of pumps and compressors differs according to product group (see subsection 3.3.2).

Table 3.3 Netherlands imports of pumps and compressors from developing countries (share in the imported value of each product group; share of each product group in the total imported volume originating in developing countries), 1997

	Total (US\$ thousand)	Developing countries (US\$ thousand)	% per product group	% of total DC's supply
Total pumps and compressors	710,584	13,463	2	100
Total liquid pumps	398,482	7,868	2	58
Total air or vacuum pumps and compressors	312,101	5,596	2	42
Hand pumps	6,718	1,740	26	13
Hand- or foot-operated air pumps	3,972	967	24	7
Vacuum pumps	30,912	1,632	5	12
Pumps for use in civil aircraft and other	6,886	358	5	3
Parts of pumps	149,053	3,508	2	26
Pumps for dispensing fuel or lubricants	3,049	60	2	0.4
Pumps for liquids, power-driven	29,926	555	2	4
Air pumps, air or other gas compressors	88,873	1,215	1	9
Rotary positive displacement pumps	28,160	344	1	3
Parts of air or vacuum pumps	147,767	1,574	1	12
Centrifugal pumps, power-driven	79,221	694	1	5
Pumps for internal combustion piston engines	61,518	433	1	3
Reciprocating positive displacement pumps	30,472	176	1	1
Compressors for refrigerating equipment	32,675	172	1	1
Air compressors	7,902	36	0.5	0.3
Concrete pumps	3,480	0	0	0

Source: Eurostat (1998)

The pumps and compressors from developing countries imported into The Netherlands consist mainly of hand pumps and hand- or foot-operated air pumps. Parts of pumps are mainly represented by castings. As developing countries are still somewhat less technically developed, they only supply technically rather simple pumps.

In 1997, more than US\$ 13 million worth of pumps and compressors originated in developing countries, of which about US\$ 8 million were liquid pumps. Hand pumps is the most important product group exported by developing countries to The Netherlands.

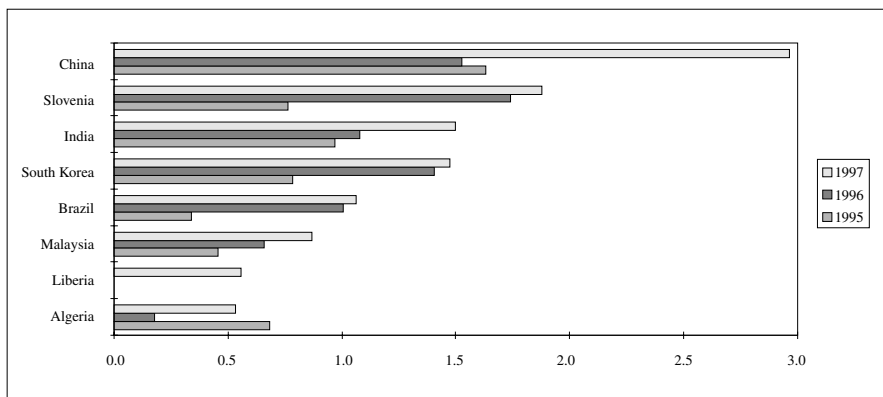
In 1997, hand pumps represented 26 percent of the total supply of pumps and compressors from developing countries, of which 96 percent originated in China. India is a newly emerging supplier of pumps for use in civil aircraft and other to The Netherlands.

Leading suppliers of pumps and compressors in developing countries (% of total imported value from developing countries), 1997	
Hand pumps	China (96%), India (3%), South Korea (1%)
Hand- or foot-operated pumps	China (84%), India (14%), Pakistan (2%)
Vacuum pumps	South Korea (40%), Brazil (24%), Malaysia (18%)
Pumps for use in civil aircraft and other	India (100%)

Source: Eurostat (1998)

Imports of pumps and compressors from developing countries into The Netherlands have been increasing. In 1996, imports amounted to US\$ 12 million, 13 percent higher than in 1995. In 1997, imports increased again by 11 percent to more than US\$ 13 million. China dominated imports and accounted for 22 percent of imports from developing countries or 0.4 percent of total imports in 1997. Slovenia (14 percent), India (11 percent) and South Korea (11 percent) followed in order of importance. Imports of pumps and compressors into The Netherlands originating in China and Liberia showed strong increases in the years 1995 to 1997.

Figure 3.38 The leading supplying developing countries of pumps and compressors to The Netherlands (US\$ millions), 1995-1997

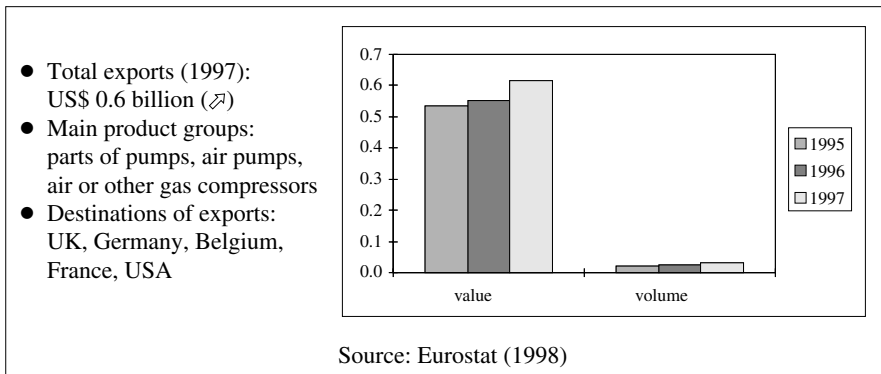


Source: Eurostat (1998)

3.4 Exports

The Netherlands was a net importer. Total exports of pumps and compressors increased considerably from US\$ 0.5 billion in 1995 to US\$ 0.6 billion in 1997. 54 percent of the exports was destined for other EU markets, which reflects the importance of The Netherlands as a gateway to Europe. Major destinations of exports of pumps and compressors from The Netherlands are shown in the figure below.

Figure 3.39 Netherlands exports of pumps and compressors (value in US\$ billion, volume in thousand tonnes), 1995-1997

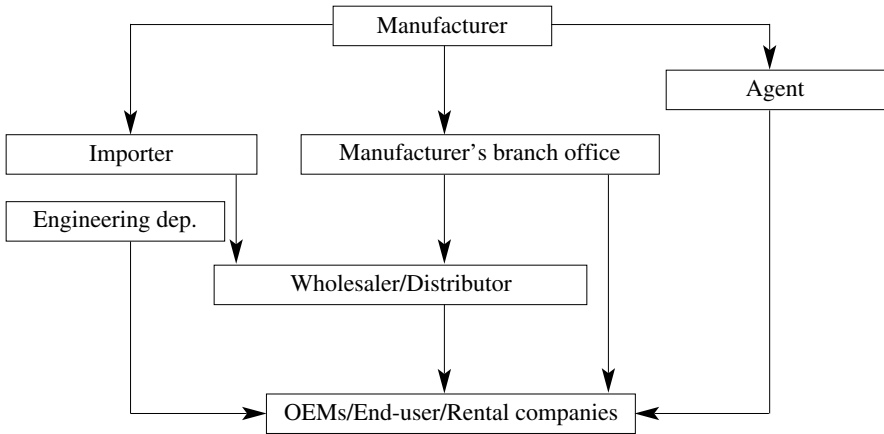


Parts of pumps is the leading product group, representing 25 percent of the total exported value (US\$156 million) in 1997. Air pumps is the second largest group. The exported value of air pumps more than doubled from US\$ 50 million in 1996 to US\$ 134 million in 1997. Exports of concrete pumps decreased considerably during 1995 and 1997, both in terms of value and volume. The exports of concrete pumps decreased from US\$ 6.3 million (451 tonnes) in 1995 to US\$ 57 thousand (2 tonnes) in 1997.

3.5 Trade structure

There are several channels for marketing products in The Netherlands. Three levels can be distinguished between the manufacturer and the end-user levels. Each level has its own specific characteristics and serves its own piece of the market.

Figure 3.40 Distribution channel for pumps and compressors



Importer / Engineering department

Distribution of pumps and compressors mainly follows the pattern from manufacturer to importer. However, products for which the market is small are distributed by agents. Pumps for cycles are directly imported by the do-it-yourself shops and retailers.

Large importers can also have their own engineering department. In this case, they purchase their own products from manufacturers and adapt them to the specific needs of their customers.

OEM (Original Equipment Manufacturer)

Agents and importers usually like to have an exclusive contract with the manufacturer. The reason for this is that an agent or importer has to invest in advertising and documentation costs to get the product marketed. To compensate this, he requires the guarantee that the product is excluded from other channels.

Manufacturer's branch office

The manufacturer's branch office will be a part of the parent company and will exclusively trade the company's brand. The wholesaler and the engineering company are optional channels which sell products as well. However, in some cases, the wholesaler imports as well on his own account. The OEMs will not sell the components but will use them to construct the end product incorporating the parts. This places the OEM on the same level as the end-user.

Compressor rental companies

Another end-user market is the compressor rental market consisting of a wide range of compressors, knowledge and expertise in the field of compressed air applications. Many rental companies in addition to renting also provide sales and services of portable compressors and auxiliaries such as filters, dryers, after-coolers, aggregates and couplings. Therefore, it is possible to provide total systems or solutions to problems at customer level.

Pumps rental companies

The products which can be rented consist mainly of portable, small pumps. There is a wide range of types offered from sewage pumps to diaphragm and lobe pumps, with different pressure and capacity possibilities. Together with the necessary additional equipment, all requirements can be fulfilled. The main rental sectors are the contractor market, construction and off shore industry. Prices are estimated on a weekly basis (40 hours) excluding taxes and overtimes. Most rental companies also have a 24 hours maintenance service team available.

● **Advice**

Companies wishing to export to The Netherlands have to take these trading channels into account. It is recommended to trade through agents, importers or importing wholesalers. Direct trading with OEMs or end-users is not advisable, because these normally have little experience with importing and orders will be too small to be profitable. Indirect trading is more recommended, as importers will not only import and trade products, but also will add value to a product by giving advice, information, service, guarantee or stocking the product.

3.6 Prices and margins

3.6.1 Prices

Below we give price indications of selected pumps types (VAT included). It should be noted that the types mentioned are just a small part of the wide range of pump types and should be considered as indications.

Norm pumps are single stage centrifugal pumps used for water supply, sprinkling and irrigation. This pumps type is used for the transport of water condensate, circulation of hot water, cooling water and oil.

n	2900 1/min
Q	12.5 m ³ /h
size	125 mm
price	US\$ 3,250

n	2900 1/min
Q	50 m ³ /h
size	125 mm
price	US\$ 3,800

n	2900 1/min
Q	160 m ³ /h
size	160 mm
price	US\$ 5,500

The following pumps with their specifications are used to transport organic and inorganic fluids.

n	1450 1/min
Q	25 m ³ /h
size	125 mm
price	US\$ 3,800

n	1450 1/min
Q	125 m ³ /h
size	200 mm
price	US\$ 6,500

n	1450 1/min
Q	315 m ³ /h
size	315 mm
price	US\$ 13,000

Screw compressors with the following specifications are priced (including motor):

n	3000 1/min
p	3.5 bar
Q	560 m ³ /h
price	US\$ 4,500

n	3000 1/min
p	3.5 bar
Q	3300 m ³ /h
price	US\$ 31,500

n	1500 1/min
p	3.5 bar
Q	8800 m ³ /h
price	US\$ 67,000

It should be noted that these prices exclude possible discounts of maximum 30 percent.

In general, the sale prices of pumps and compressors have been witnessed increases in the last few years, as cost prices are higher. Technology brings about more qualitative and efficient pumps and compressors made of better materials.

3.6.2 Margins

It is, however, more important for a manufacturer or exporter from a developing country to know which margins a wholesaler or distributor needs to cover his costs. It has to be kept in mind that the product has to be transported to the client, distributor or wholesaler, resulting different margins. Different margins usually depend on the levels a product has to go through before it reaches the end-user. The following main levels within the trading chain can be distinguished (see also Figure 3.40):

Customer level	Original equipment manufacturer (OEM) will not only purchase a component from an exporter to directly make a profit. The OEM is more interested in the overall product. For this reason, the margin an OEM calculates on a product will be comparable to the costs he makes for keeping the product stocked. End-users will not calculate a profit, because they will simply purchase the product and put it into operation.
Intermediate level	Engineering company completes projects on contract base. It will work out solutions, make drawings, monitor or execute installations. Purchases made by an engineering company are only used to complete the project. The engineering company will calculate a margin of 5-10 percent. Wholesaler will purchase from the manufacturer's branch office directly or from the importer. A margin of 10-20 percent is usual.

continued

continued

Representative level

Agent does not handle the actual goods, therefore, he will receive a commission of the part of the sales he induces. There should be a good, honest relationship between the manufacturer and the agent.

A commission between 1-10 percent, depending on the product and volume, is usual. **Importer** will keep stock and will, furthermore, add value to the product by giving advice, guarantee, information and after-sales service. Depending on the amount of value added and the products, the margin level will vary between 20-50 percent.

Manufacturer's branch office is a part of the manufacturing company and therefore, the margin calculated by either the branch office or the manufacturer is a business policy. A margin of 12-25 percent is commonly calculated either by the parent company or the branch office.

Looking at these figures, an exporter might think that the most beneficial way for him is to sell directly to end-users, as margins and profits can apparently be higher. A note should be made on this. An end-user will probably only make one order to satisfy his needs. An importer or wholesaler, on the other hand, will make continuous orders to keep his stock up to level. The short-term effect of making a bigger profit with one order in this way will be diminished by long-term orders with a smaller profit. Therefore, exporters are recommended to look for a competent importer, wholesaler or agent rather than attempting to serve the end-user directly.

It should also be stressed that the figures mentioned above are an indication for the overall market. Significant differences can occur depending on the product, the relation between the exporter and his representative, and the amount of value added by the importer.

3.6.3 Sources of price information

The European market prices of pumps and compressors can be obtained by asking European manufacturers, wholesalers or distributors for product and price information. Please also refer to Appendix 9 for addresses of importers in The Netherlands.

4 THE EUROPEAN UNION MARKET

4.1 The EU market summary

- **Consumption**

Pumps

Market demand can be divided into two groups for liquid pumps: standardised pumps and engineered pumps. Both categories have a wide range of products and wide range of applications. Major markets for standardised pumps are the chemical industry, processing industry, construction industry, food industry, shipping, horticulture, civil engineering and the original equipment manufacturer (OEM) sectors. Engineered pumps are used in the petrochemical and chemical industries, power stations, irrigation and water supply. Both markets require customer-tailored solutions demanding a flexible and efficient production of those who are active in this field.

Demand is expanding from the traditional applications of pumps for water management, construction and the chemical industry, into the energy sector. Liquid pumps are especially useful for environmental protection and water purification.

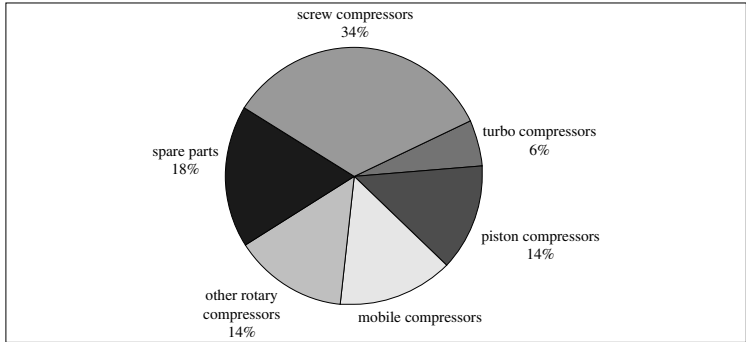
Both the pumps and compressors markets in Europe are growing, due to economic growth and stricter environmental regulations, resulting in new process technologies.

Compressors

The most important compressors on the market are screw compressors, with a 34 percent share of the market and sales in the order of US\$ 1.9 billion in 1996. The market shares of turbo compressors and other rotary compressors are expected to rise, thanks to greater production capacities, improved control systems and growth in the market for central, high-performance compressors.

Environmental topics are becoming increasingly important on the market for industrial compressors as in other sectors. In addition to new regulations concerning noise emissions and the problem of condensate disposal, financial considerations also have an important role to play. More and more users are switching to oil-free air compressors, as customers try to minimise the risk of oil pollution caused by their processes or products.

Figure 4.1 Distribution of turnover according to product groups, 1996



Source: Process (1998)

● **Production**

The EU is the largest industrial pump and compressor manufacturing economic entity in the world, with the USA second and Japan third. Within the EU, Germany is the leading producing country, followed by France at a far distance. Spanish production of pumps and compressors doubled between 1995 and 1996, amounting to US\$ 0.3 billion in 1996.

Table 4.1 Production of pumps and compressors in selected EU countries (US\$ million), 1995-1996

	1995	1996	Growth compared to 1995, in %
Germany	3,116.92	2,777.64	-11
United Kingdom	1,017.99	1,051.55	3
Italy	862.98	998.65	16
France	948.77	989.91	4
Spain	165.40	329.83	99
The Netherlands	255.85	231.89	-9
Switzerland	108.51	108.36	0
Austria	98.36	100.99	3
Belgium	77.10	62.51	-19

Source: Europump (1998)

A feature of the EU pump and compressor industry is that there is a comparatively limited number of large, full product line companies and many small and medium-sized manufacturers. The smaller companies, though not exclusively, are often specialised in serving particular market sectors. Although the average size of pump and compressor companies is small, their contribution to regional economies is high in the value added. For this reason, the closing-down of a pump and compressor company can have a significant impact on a local economy.

The productivity in all branches of pump and compressor manufacturing is improved by new technologies such as Computer Aided Design (CAD), Computer Aided Manufacturing (CAM) and Computer Integrated Manufacturing (CIM).

● Imports

The same restrictions apply to the import and export statistics of the EU as to The Netherlands (see section 3.3). Detailed import statistics are listed in Appendix 1.

Imports of pumps and compressors into the EU amounted to more than US\$ 13 billion or 1 million tonnes in 1997, which indicated a decrease of 2 percent over 1996.

The most sensational decreases were in Portugal (down 12 percent) and The Netherlands (down 10 percent). Increases in imports occurred in Denmark (up 13 percent), the UK (8 percent) and Finland (8 percent).

In 1997, the major importers in the EU were Germany, which accounted for 20 percent of total EU imports in terms of value, France (17 percent), the United Kingdom (15 percent) and Italy (11 percent). Germany played an obvious major role in the market for pumps and compressors. Germany represented the highest import and export figures for the total pumps and compressors market in the EU.

Table 4.2 Pumps and compressors imported into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Germany	2,586,654	196,901	2,792,730	206,227	2,709,642	211,981
France	2,278,201	158,263	2,334,849	141,331	2,297,621	150,495
United Kingdom	1,798,552	99,813	1,891,174	108,742	2,051,707	275,951
Italy	1,545,683	100,301	1,527,919	100,653	1,487,680	107,462
Spain	933,091	67,580	1,021,135	78,044	955,308	82,598
Belgium & Luxembourg	640,120	60,081	794,243	61,290	766,361	75,399
The Netherlands	695,765	35,537	785,190	43,654	710,584	45,951
Sweden	723,122	43,003	725,068	43,090	678,203	41,058
Austria	592,199	38,999	561,480	38,392	518,273	40,401
Denmark	396,792	41,448	376,750	40,052	426,317	51,128
Finland	211,284	25,796	228,888	13,261	247,397	14,936
Portugal	145,956	15,341	197,899	16,116	174,453	17,424
Greece	134,025	107,525	138,244	11,994	128,406	36,893
Ireland	111,847	11,203	123,626	8,023	123,714	8,805
EU	12,793,278	1,001,791	13,499,185	910,869	13,275,691	1,160,482

Source: Eurostat (1998)

The main pumps and compressors imported into the EU in 1997, ranked in terms of value and main suppliers, were:

Pumps and compressors imported into the EU	Main suppliers
Pumps for internal combustion piston engines	Germany (50%), France (11%), USA (7%)
Parts of pumps	Germany (22%), USA (11%), France (11%)
Parts of air or vacuum pumps	Germany (14%), Italy (14%), USA (13%)
Compressors for refrigerating equipment	Japan (29%), USA (16%), Germany (12%)
Air pumps, air or other gas compressors	UK (19%), Germany (14%), France (14%)
Centrifugal pumps, power-driven	Germany (24%), France (19%), Denmark (13%)

Source: Eurostat (1998)

The role of developing countries is small, as they only supplied 3 percent of total imports in 1997. Their share in the imports of hand- or foot-operated air pumps demonstrated an increasingly important role. Developing countries supplies are dominated by Brazil, which accounted for 39 percent of total imports of pumps and compressors originating in developing countries. South Korea (21 percent) and Slovenia (13 percent) followed in order of importance. The key product group is hand- or foot-operated air pumps, accounting for 26 percent of the total imports of pumps and compressors in 1997.

Table 4.3 EU imports of pumps and compressors from developing countries (share in the imported values; share of each product group in the total imported value originating in developing countries), 1997

	Total (US\$ thousand)	Developing countries (US\$ thousand)	% per product group	% of total DC's supply
Total pumps and compressors	13,275,691	459,509	3	100
Total liquid pumps	7,738,524	197,139	3	43
Total air or vacuum pumps and compressors	5,537,167	262,370	5	57
Hand- or foot-operated air pumps	46,116	11,999	26	3
Hand pumps	66,792	3,949	6	1
Air pumps, air or other gas compressors	1,634,326	95,390	6	21
Compressors for refrigerating equipment	1,637,610	88,124	5	19
Pumps for internal combustion piston engines	2,261,745	96,908	4	1
Parts of air or vacuum pumps	1,656,308	59,887	4	13

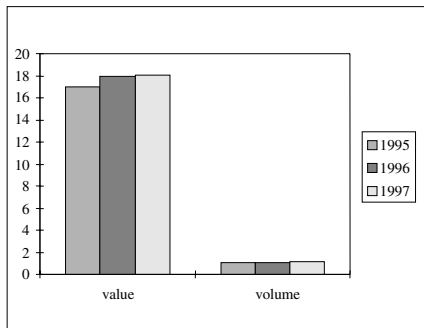
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continued	Total (US\$ thousand)	Developing countries (US\$ thousand)	% per product group	% of total DC's supply
Pumps for liquids, power-driven	669,471	18,39	3	34
Concrete pumps	22,247	599	3	0
Parts of pumps	2,206,996	55,051	2	12
Air compressors	163,787	2,564	2	1
Pumps for use in civil aircraft and other	83,625	1,145	1	0
Centrifugal pumps, power-driven	1,179,371	15,008	1	3
Vacuum pumps	399,021	4,406	1	1
Reciprocating positive displacement pumps	486,929	2,592	1	1
Pumps for dispensing fuel or lubricants	80,239	396	0	0
Rotary positive displacement pumps	681,109	3,098	0	1

Source: Eurostat (1998)

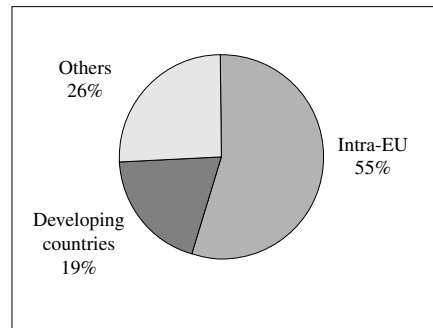
● Exports

Figure 4.2 EU exports of pumps and compressors (value in US\$ billion, volume in thousand tonnes), 1995-1997



Source: Eurostat (1998)

Figure 4.3 Exports of pumps and compressors from the EU (as a share of total value), 1997



Source: Eurostat (1998)

In 1997, the EU exported US\$ 18 billion or 1 million ton of pumps and compressors and was a net exporter. Between the years 1995 and 1997, total EU exports of pumps and compressors increased by 6 percent from US\$ 17 billion in 1995 to US\$ 18 billion in 1997. Germany is the leading exporter of pumps and compressors, taking 36 percent for its

account, followed by Italy, France and the UK. In 1997, the four largest exporting EU countries represented 79 percent of total exports of pumps and compressors.

Major destinations of exports of pumps and compressors from the EU were mainly EU countries (55 percent). 19 percent of EU-exported pumps and compressors went to developing countries. The reason for this is that pumps and compressors are essential for the delivery of basic necessities in developing countries, such as the improvement of hygiene through the supply of potable water.

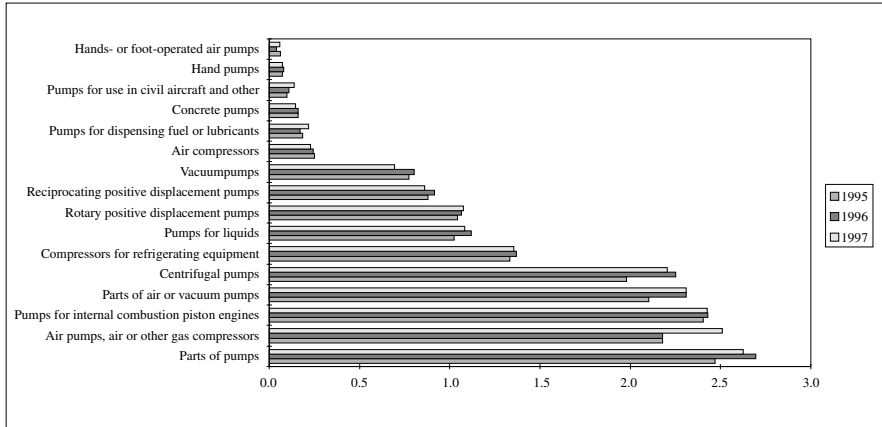
Table 4.4 Pumps and compressors exported from the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Germany	6,567,493	253,070	6,585,845	259,820	6,454,974	292,728
Italy	2,671,398	315,264	3,044,494	339,593	2,951,962	352,531
France	2,229,344	123,868	2,467,195	135,567	2,506,441	143,342
United Kingdom	1,904,415	103,231	2,077,168	111,287	2,386,075	118,071
Denmark	632,616	43,040	652,929	41,321	656,759	44,638
The Netherlands	533,006	22,797	551,058	23,328	616,421	31,397
Belgium & Luxembourg	520,025	28,229	572,348	31,759	605,733	40,014
Sweden	596,189	33,632	614,094	36,675	532,833	31,463
Spain	603,129	68,770	589,058	60,158	506,758	60,018
Austria	468,938	34,477	450,424	36,578	447,022	43,775
Ireland	139,356	5,914	161,523	6,217	159,345	6,734
Finland	131,645	7,763	151,009	8,015	149,569	8,802
Portugal	12,891	1,349	15,236	1,448	16,164	1,661
Greece	7,776	800	8,035	1,030	10,689	1,571
EU	17,018,210	1,042,204	17,940,404	1,092,796	18,000,745	1,176,745

Source: Eurostat (1998)

The leading categories were parts of pumps, air pumps, and pumps for internal combustion piston engines. Parts of pumps represented 15 percent of the total exported value or almost US\$ 3 billion in 1997. Air pumps increased by 15 percent from US\$ 2.2 billion in 1996 to US\$ 2.5 billion in 1997. Parts of air pumps and centrifugal pumps increased considerably during 1995 and 1997. The exports of parts of air pumps increased from US\$ 2.1 billion in 1996 to US\$ 2.3 billion in 1997, reflecting an increase of 10 percent. Exports of centrifugal pumps increased by 11 percent from US\$ 2.0 billion in 1996 to US\$ 2.2 billion in 1997.

Figure 4.4 Pumps and compressors exported by the EU (in US\$ billion), 1995-1997



Source: Eurostat (1998)

● **Trade structure**

The information on trade structure and distribution channels described in Section 3.5 about The Netherlands is also relevant for the trade in pumps and compressors for the rest of the EU market. Therefore, one is referred to Figure 3.40, which shows the most important actors in the trade structure, and the most common distribution channels for pumps and compressors.

4.2 Profile of the major EU market

4.2.1 Germany

● **Production**

German pump suppliers take the second place, after the USA, and followed by Japan, in the total world market of liquid pumps.

The production of liquid pumps decreased in 1997 to DM 5.8 billion (US\$ 3.3 billion), whilst manufacturers of displacement pumps managed to achieve considerable rates of increase. Production of centrifugal pumps collapsed in the first quarter of 1997.

Compared to the previous year, the German manufacturers of vacuum pumps and compressors were able to report a growth in production of almost 5 percent for 1997. This growth is reflected in all segments of the branch. The highest growth, 9.5 percent, was recorded by manufacturers of turbo compressors, followed by rotary piston compressors (7.3 percent) and vacuum pump manufacturers (4.4 percent).

The German pump industry has established its leading position in the world through its:

- quality
- creativity
- reliability
- customised and standardised solution
- excellent service.

In addition to certain large companies with their international production centres, it is above all the many small and medium-sized firms that have concentrated on certain fields of work and possess extensive and highly specialised know-how. A guarantee for this technical leadership is the great potential in development. Highly qualified engineers, master craftsmen and technicians, in cooperation with renowned technical universities and institutes in Germany, ensure a constantly high speed of development.

- Imports

IMPORTS
<ul style="list-style-type: none">● Total imports (1997): US\$ 2.7 billion (٢٧٤٠)● Main product groups: parts of pumps, compressors for refrigerating equipment, air pumps, air or other gas compressors● Main supplying developing countries: Brazil, Slovenia, India, South Korea

Germany is a major importer, exporter and trader in pumps and compressors and has a large pumps production capacity. In 1997, Germany imported US\$ 2.7 billion worth of pumps and compressors. The leading supplier of imports of pumps and compressors to Germany was France (16 percent). The share of developing countries was stable at 6 percent of total imports during 1996 and 1997. In terms of value, the prevalent leading role of developing countries is taken by Brazil, which supplied 3 percent of total imports of pumps and compressors into Germany.

Table 4.5 Imports of pumps and compressors into Germany
(value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	2,586,654	196,901	2,792,730	206,227	2,709,642	211,981
Extra-EU	1,072,331	76,754	1,198,131	80,249	1,251,657	90,320
Developing countries	179,795	23,466	178,830	21,299	175,710	23,130
Top 5 suppliers						
France	366,120	19,028	405,035	20,499	420,991	21,502
USA	233,370	13,205	289,675	15,285	332,086	16,674
Japan	278,485	9,189	309,119	12,119	329,007	15,217
Italy	291,763	40,934	327,728	42,669	294,480	40,092
Switzerland	256,905	10,933	248,111	10,688	198,680	9,886
Developing countries:						
<i>Brazil</i>	65,860	1,942	61,374	1,778	69,226	1,837
<i>Slovenia</i>	57,531	10,905	41,234	7,911	36,424	8,925
<i>India</i>	18,212	800	19,070	1,094	23,235	1,456
<i>South Korea</i>	10,672	524	21,470	828	11,412	579
<i>Turkey</i>	6,619	3,875	8,018	3,860	10,225	5,641
<i>China</i>	10,356	4,968	9,278	4,638	8,518	3,380
<i>Mexico</i>	663	36	3,393	439	4,978	521

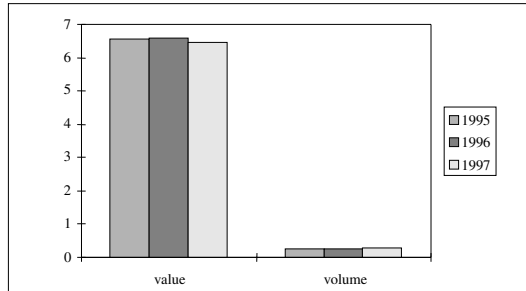
Source: Eurostat (1998)

Parts of pumps is the leading imported product group, representing 18 percent of the total value of imported pumps and compressors, or US\$ 0.5 billion, in 1997. Compressors for refrigerating equipment is the second largest import product and the value increased by 1 percent to US\$ 0.4 billion in 1997. Imports of pumps for internal combustion piston engines increased strongly compared to the previous year, amounting to US\$ 0.3 billion or 9 thousand tonnes in 1997. Imports of pumps for dispensing fuel or lubricants into Germany decreased considerably from US\$ 14 million in 1995 to US\$ 9 million in 1997.

EXPORTS

Figure 4.5 German exports of pumps and compressors
(value in US\$ billion, volume in thousand tonnes)

- Total exports (1997):
US\$ 6.5 billion (⇒)
- Main product groups:
pumps for internal
combustion piston engines,
air pumps, parts of pumps
- Destinations of exports:
France, UK, USA, Italy,
The Netherlands



Source: Eurostat (1998)

The German pump industry holds the world's leading position in the exports of liquid pumps. In 1997, Germany exported totally US\$ 6.5 billion of pumps and compressors, reflecting a slight decrease of 2 percent. The main destinations are France (14 percent) and the UK (10 percent).

Pumps for internal combustion piston engines is the leading group, representing 23 percent of total exported pumps and compressors (US\$ 1.5 billion). Air pumps, air or other gas compressors is the second largest with the exported value 2 percent higher at US\$ 0.8 billion in 1997. Exports of air compressors increased considerably between 1995 and 1997, amounting to US\$ 28 million in 1997. Hand pumps and hand- or foot-operated air pumps witnessed a considerable decrease between 1995 and 1997, accounting for US\$ 24 million and US\$ 11 million respectively.

4.2.2 France

Total imports of pumps and compressors into France decreased slightly between 1996 and 1997, and amounted to US\$ 2.3 billion in 1997. Though imports originating in Germany decreased in terms of value, it was still the leading supplier of pumps and compressors to France. The share of developing countries in total imports of pumps and compressors into France was stable at 1 percent in 1997. The major suppliers in developing countries were Argentina, South Korea and China. These three countries accounted respectively for 20 percent, 13 percent, and 10 percent of total imports originating in developing countries in 1997.

IMPORTS

- Total imports (1997): US\$ 2.3 billion (€2.3)
- Main product groups: pumps for internal combustion piston engines, parts of pumps, parts of air or vacuum pumps
- Main supplying developing countries: Argentina, South Korea, China, Brazil

The main imported pumps and compressors are pumps for internal combustion piston engines, parts of pumps and parts of air or vacuum pumps. Pumps for internal combustion piston engines accounted for 27 percent of total imported value of pumps and compressors into France. Between 1995 and 1997, imports of parts of air or vacuum pumps, and centrifugal pumps each witnessed increases by 17 percent reaching US\$ 0.3 billion and US\$ 0.2 billion in 1997, respectively. In that same period, imports of air compressors, in contrast, decreased by 39 percent amounting to US\$ 33 million in 1997.

Table 4.6 Imports of pumps and compressors into France (value in US\$ thousand, volume in tonnes), 1995-1997

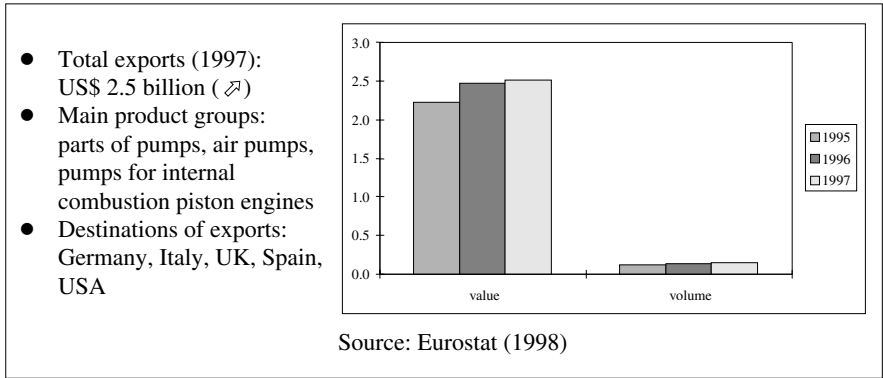
	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	2,278,201	158,263	2,334,849	141,331	2,297,621	150,495
Extra-EU	422,309	29,314	458,601	28,910	478,303	30,960
Developing countries	31,962	6,738	33,240	5,251	32,013	4,847
Top 5 suppliers:						
Germany	876,694	31,678	834,303	32,950	779,572	34,144
Italy	265,713	55,906	276,541	39,780	274,956	43,896
United Kingdom	179,967	14,022	218,151	11,381	256,649	13,764
USA	183,843	12,574	213,959	13,634	252,085	15,639
Spain	214,924	7,927	217,414	8,387	193,928	9,331
Developing countries:						
Argentina	5,973	377	5,154	354	6,548	466
South Korea	5,325	992	8,115	457	4,182	234
China	4,413	1,414	3,393	1,037	3,239	894
Brazil	1,14	43	3,146	178	2,823	335
India	280	10	895	54	2,415	175
Turkey	4,027	3,442	3,034	2,664	1,973	1,939
Thailand	610	65	1,536	220	1,272	187
Croatia	111	9	8	0	1,127	5

Source: Eurostat (1998)

Both in terms of value and volume, French exports of pumps and compressors increased slightly amounting to US\$ 2.5 billion or 143 thousand tonnes in 1997. About 65 percent of exports have destinations in other EU countries, particularly Germany (23 percent), Italy (13 percent), Spain (12 percent) and the UK (8 percent).

EXPORTS

Figure 4.6 French exports of pumps and compressors (value in US\$ billion, volume in thousand tonnes)



Parts of pumps is the leading exported product group, representing 18 percent of the total exported value or US\$ 0.5 billion in 1997. Air pumps, pumps for internal combustion piston engines, centrifugal pumps and parts of air or vacuum pumps are other key product groups which are exported by France, and together represent 57 percent of total exported value in 1997. Noticeably, between 1995 and 1997, exports of hand- or foot-operated pumps decreased by 18 percent, reaching US\$ 6 million in 1997.

4.2.3 United Kingdom

Total imports of pumps and compressors into the UK increased by 14 percent from US\$ 1.8 billion in 1995 to US\$ 2.1 billion in 1997. The three largest suppliers, Germany, the USA and France accounted together for 57 percent of total imports into the UK. Developing countries were responsible for 6 percent of total imports and were mainly represented by Saudi Arabia (35 percent), South Korea (18 percent), Brazil (12 percent) and China (10 percent).

IMPORTS

- Total imports (1997): US\$ 2.1 billion (€)
- Main product groups: pumps for internal combustion piston engines, parts of pumps, parts of air or vacuum pumps
- Main supplying developing countries: Saudi Arabia, South Korea, Brazil, China

The leading imported product group is pumps for internal combustion piston engines, representing 20 percent of total imported pumps and compressors in 1997. Other important groups are parts of pumps (19 percent), parts of air or vacuum pumps (14 percent), compressors for refrigerating equipment (11 percent) and air pumps (11 percent). Air pumps, centrifugal pumps and vacuum pumps increased considerably between 1995 and 1997, amounting to US\$ 220 million, US\$ 114 million and US\$ 67 million in 1997 respectively.

Table 4.7 Imports of pumps and compressors into the UK (value in US\$ thousand, volume in tonnes), 1995-1997

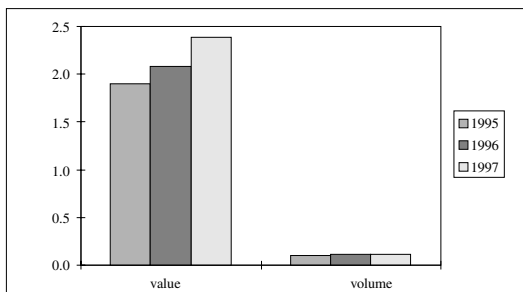
	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	1,798,552	99,813	1,891,174	108,742	2,051,707	275,951
Extra-EU	627,373	36,356	688,524	38,002	784,030	44,789
Developing countries	71,813	7,600	95,498	6,964	124,248	10,291
Top 5 suppliers:						
Germany	501,082	19,485	477,946	21,410	494,939	154,648
USA	306,082	15,682	336,929	18,251	380,372	19,908
France	257,893	7,624	274,953	8,868	290,024	11,977
Italy	127,331	14,723	157,246	17,281	156,662	21,424
Japan	123,141	5,937	122,388	6,233	138,837	7,365
Developing countries:						
<i>Saudi Arabia</i>	14,747	50	37,041	77	43,992	197
<i>South Korea</i>	5,997	661	15,151	1,510	22,910	2,599
<i>Brazil</i>	18,385	2,348	15,914	1,139	15,072	1,638
<i>China</i>	6,647	1,777	6,309	1,503	12,064	2,920
<i>India</i>	5,574	1,093	5,279	1,165	10,224	1,273

Exports of pumps and compressors by the UK increased by 25 percent from US\$ 2.0 billion in 1995 to US\$ 2.4 billion in 1997. The UK mainly exported air pumps, parts of air or vacuum pumps and parts of pumps, and, in 1997, 44 percent of total exports went to other EU countries. The main destinations of the UK exports of pumps and compressors were the USA (14 percent), Germany (10 percent) and France (10 percent).

EXPORTS

Figure 4.7 UK exports of pumps and compressors (value in US\$ billion, volume in thousand tonnes)

- Total exports (1997): US\$ 2.4 billion (≈)
- Main product groups: air pumps, parts of air or vacuum pumps, parts of pumps
- Destinations of exports: USA, Germany, France, Italy, The Netherlands, Spain



Source: Eurostat (1998)

The main exported product group, air pumps, accounted for 19 percent of UK total exported value. Exports of pumps for liquids, compressors for refrigerating equipment and pumps for use in civil aircraft and other increased considerably between 1995 and 1997, reaching respectively US\$ 70 million, US\$ 53 million and US\$ 32 million in 1997.

4.2.4 Italy

Total imports of pumps and compressors into Italy decreased slightly by 4 percent amounting to US\$ 1.5 billion in 1997. Of the total imported pumps and compressors, 77 percent was supplied by other EU countries, mainly Germany. The share of developing countries in the total imports of pumps and compressors into Italy decreased from 5 percent in 1995 to 4 percent in 1997. Brazil accounted for 27 percent of total imports from developing countries in 1997.

IMPORTS

- Total imports (1997): US\$ 1.5 billion (≈)
- Main product groups: pumps for internal combustion piston engines, compressors for refrigerating equipment, air pumps, and air or other gas compressors
- Main supplying developing countries: Brazil, South Korea, Slovenia, China

Pumps for internal combustion piston engines is the leading imported product group, accounting for 23 percent of total imports of pumps and compressors. Other important product groups were compressors for refrigerating equipment (17 percent), air pumps and air or other gas compressors (11 percent), parts of air or vacuum pumps (11 percent), and parts of pumps (10 percent).

Table 4.8 Imports of pumps and compressors into Italy (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	1,545,683	100,301	1,527,919	100,653	1,487,680	107,462
Extra-EU	366,541	32,009	399,099	33,848	348,700	30,626
Developing countries	71,327	14,091	80,103	14,660	64,422	13,619
Top 5 suppliers:						
Germany	643,033	23,972	550,583	21,467	552,970	22,620
France	224,073	13,583	246,013	14,999	233,379	18,894
United Kingdom	83,780	4,200	93,123	5,115	115,694	5,863
Japan	148,870	8,667	133,986	8,827	105,396	7,264
USA	90,259	5,264	110,626	5,682	103,923	4,838
Developing countries:						
<i>Brazil</i>	26,315	7,021	19,530	4,782	17,671	4,466
<i>South Korea</i>	25,631	3,263	37,134	4,856	14,006	1,714
<i>Slovenia</i>	6,342	1,495	8,175	2,172	11,561	3,408
<i>China</i>	3,163	643	3,223	576	5,306	996
<i>Egypt</i>	342	38	603	48	3,466	994
<i>India</i>	1,046	334	1,376	229	3,050	293
<i>Turkey</i>	1,889	621	2,521	1,222	2,705	1,130

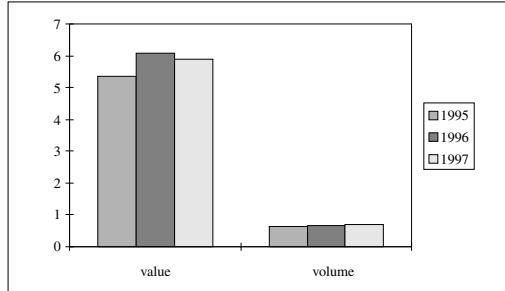
Source: Eurostat (1998)

Between 1995 and 1996, in terms of value, total exports of pumps and compressors from Italy showed an increase of 14 percent reaching US\$ 3.0 billion in 1996. In 1997, exports remained roughly stable at the same level as in the 1996. Of the total exports, 72 percent has destinations in other EU countries, mainly represented by Germany and France.

EXPORTS

Figure 4.8 Italian exports of pumps and compressors (value in US\$ billion, volume in thousand tonnes)

- Total exports (1997): US\$ 3.0 billion (€)
- Main product groups: pumps for liquids, air pumps, parts of air or vacuum pumps
- Destinations of exports: Germany, France, USA, Spain, UK



Source: Eurostat (1998)

The leading exported product group is pumps for liquids, representing 23 percent of the total exported pumps and compressors (US\$ 0.7 billion in 1997). Air pumps is the second largest with its exported value 5 percent lower at US\$ 0.5 billion in 1997. Exports of pumps for dispensing fuel or lubricants and hand- or foot-operated pumps more than doubled between 1995 and 1997, amounting to US\$ 29 million and US\$ 19 million in 1997 respectively.

4.2.5 Spain

After a strong increase in 1996, imports of pumps and compressors into Spain returned in 1997 to roughly the same level as in 1995 (US\$ 1 billion). About 78 percent of Spanish pumps and compressors imports originated in other EU countries. The four largest suppliers, Germany, Italy, France and the UK, were responsible for 68 percent of total imports of pumps and compressors in 1997. In that same year, developing countries supplied 2 percent of total imports, mainly represented by South Korea, which took 36 percent of total imports originating in developing countries for its account.

IMPORTS

- Total imports (1997): US\$ 1.0 billion (€)
- Main product groups: pumps for internal combustion piston engines, air pumps and air or other gas compressors, compressors for refrigerating equipment, parts of pumps
- Main supplying developing countries: South Korea, Brazil, Egypt, Malaysia

Although imported pumps for internal combustion piston engines decreased between 1995 and 1997, they still were the leading product group, representing 19 percent of total imported pumps and compressors, in 1997. Air pumps was the second largest imported product group (17 percent). Imports of vacuum pumps and hand pumps showed increases during the last three years, and amounted to respectively US\$ 22 million and US\$ 2 million in 1997. In that same period, in contrast, Spanish imports of concrete pumps decreased by 72 percent, reaching US\$ 0.6 million in 1997.

Table 4.9 Imports of pumps and compressors into Spain (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	933,091	67,580	1,021,135	78,044	955,308	82,598
Extra-EU	190,588	12,601	213,241	17,081	213,786	17,321
Developing countries	10,886	1,707	13,630	1,969	16,430	2,575
Top 5 suppliers:						
Germany	298,829	12,549	283,449	14,027	237,230	16,716
Italy	148,820	23,370	163,331	25,442	158,315	25,563
France	135,235	9,364	176,643	10,324	153,586	10,040
United Kingdom	68,442	3,240	87,726	4,130	97,679	5,098
USA	50,006	3,727	77,289	4,552	81,309	4,948
Developing countries:						
<i>South Korea</i>	4,970	505	4,715	426	5,996	605
<i>Brazil</i>	377	77	3,455	181	2,610	93
<i>Egypt</i>	12	24	259	86	2,132	807
<i>Malaysia</i>	2,322	325	1,329	175	1,537	177
<i>China</i>	1,209	415	1,321	498	1,228	422

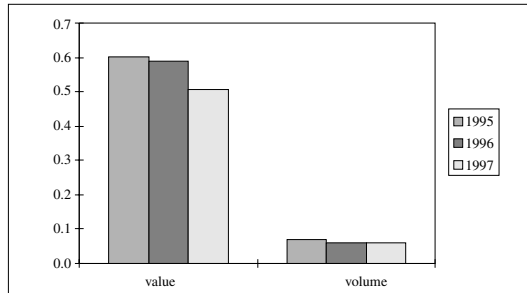
Source: Eurostat (1998)

Exports of pumps and compressors from Spain decreased by 20 percent from US\$ 0.6 billion in 1995 to US\$ 0.5 billion in 1997. The main destinations were France (32 percent), Germany (9 percent) and Italy (7 percent).

EXPORTS

Figure 4.9 Spanish exports of pumps and compressors (value in US\$ billion, volume in thousand tonnes)

- Total exports (1997): US\$ 0.5 billion (€2)
- Main product groups: pumps for internal combustion piston engines, compressors for refrigerating equipment, pumps for liquids
- Destinations of exports: France, Germany, Italy, Portugal, UK



Source: Eurostat (1998)

The leading exported product group is pumps for internal combustion piston engines, representing 28 percent of total exported pumps and compressors. Although exports of compressors for refrigerating equipment declined considerably between 1995 and 1997, they remained the second largest exported product group and accounted for 26 percent of total exports. Exports of pumps for liquids, parts of air or vacuum pumps and pumps for dispensing fuel or lubricants showed increases during the last three years, and amounted to respectively US\$ 46 million, US\$ 33 million, US\$ 3 million in 1997. In that same period, in contrast, Spanish exports of hand pumps halved from US\$ 1.3 million in 1995 to US\$ 0.6 million.

4.2.6 Belgium

Imports of pumps and compressors into Belgium fluctuated between US\$ 0.6 billion in 1995 to US\$ 0.8 billion in 1996, and more or less stabilised at US\$ 0.8 billion in 1997. The largest suppliers of pumps and compressors to Belgium were Germany and the USA, each accounting for 21 percent of total imports in 1997. Developing countries took 2 percent of total Belgian imports for their account, representing mainly South Korea and Thailand, which were respectively responsible for 39 percent and 21 percent of total Belgian imported pumps and compressors originating in developing countries.

IMPORTS

- Total imports (1997): US\$ 0.8 billion (€3)
- Main product groups: parts of air or vacuum pumps, parts of pumps, air pumps, air or other gas compressors
- Main supplying developing countries: South Korea, Thailand, Turkey, India

Parts of air or vacuum pumps were the leading imported product group, representing 19 percent of total imports of pumps and compressors into Belgium in 1997. Other key product groups imported into Belgium are parts of pumps (15 percent), air pumps and air or other gas compressors (13 percent) and compressors for refrigerating equipment (13 percent).

Table 4.10 Imports of pumps and compressors into Belgium (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	640,120	60,081	794,243	61,290	766,361	75,399
Extra-EU	197,593	15,640	223,588	16,655	256,426	20,942
Developing countries	10,128	967	16,360	1,698	14,470	2,328
Top 5 suppliers:						
Germany	163,458	11,036	166,745	12,542	162,431	16,670
USA	111,130	9,546	118,553	9,677	162,181	12,786
France	76,946	8,751	104,291	9,405	100,266	9,958
United Kingdom	48,726	4,057	62,629	4,845	79,550	10,179
The Netherlands	66,703	7,776	72,868	7,958	72,424	8,159
Developing countries:						
<i>South Korea</i>	4,583	202	7,936	404	5,615	308
<i>Thailand</i>	2,221	337	4,574	700	3,045	640
<i>Turkey</i>	108	8	278	51	1,428	745
<i>India</i>	1,389	171	1,719	203	1,327	178

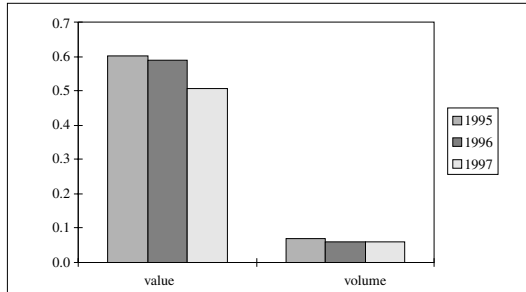
Source: Eurostat (1998)

In terms of value and volume, exports of pumps and compressors from Belgium increased during 1995 and 1997, and amounted to US\$ 0.6 billion or 40 thousand tonnes in 1997, reflecting increases of 16 percent and 42 percent respectively. Germany and France are the two largest destinations for Belgian exports. These two countries together took 26 percent of total Belgian exported pumps and compressors for their account.

EXPORTS

Figure 4.10 Belgian exports of pumps and compressors
(value in US\$ billion, volume in thousand tonnes)

- Total exports (1997):
US\$ 0.6 billion (≈)
- Main product groups:
parts of air or vacuum pumps
compressors for refrigerating
equipment, parts of pumps
- Destinations of exports:
Germany, France,
The Netherlands, Italy, UK



Source: Eurostat (1998)

The main exported product group is parts of air or vacuum pumps, accounting for 40 percent of total exported pumps and compressors in 1997. Other important product groups exported by Belgium are compressors for refrigerating equipment (18 percent) and parts of pumps (15 percent). Exports of pumps for use in civil aircraft and other and concrete pumps more than doubled between 1995 and 1997, reaching US\$ 5 million and US\$ 1 million in 1997.

5 ACCESS TO THE EUROPEAN UNION MARKET

5.1 Quality and grading standards

Quality is a main characteristic of a pump, based on the suitability to meet given requirements under a present situation. Pumps are the most commonly used kind of machine in the chemical industry, after electric motors. They make considerable demands on maintenance and replacement parts. These aspects are becoming more important in influencing the demands of professional customers. Not only safety, reliability and price of pumps and compressors are considered by buyers, but service costs are also included in purchase decisions.

- **ISO 9000**

The International Organisation for Standardisation (ISO) developed the generally accepted ISO 9000 series, which provides a framework for quality management and quality assurance. The ISO 9000 standards represent an international consensus on the essential features of a quality system. Manufacturers which 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.

The ISO 9000 series consists of five standards. The characteristics of each of the standards are briefly listed below:

ISO 9000 and 9004
<p>ISO 9000 is a document which guides the selection and use of the appropriate part of the ISO 9000 series which should be chosen by a company seeking certification. It defines key-quality terms and principles, but it is essentially advisory in nature and of value to all companies setting off on the track of registration. The ISO 9004 standard is a guide to overall quality management and to the quality system elements within the rest of the ISO 9000 series, providing extensive quality management guidance. It is designed to assist supplier organisations to develop and implement quality systems; it gives guidelines, which help determine the extent to which each quality system element is applicable to the company concerned.</p>
ISO 9001, 9002 and 9003
<p>The operative parts of the quality systems standard:</p> <ul style="list-style-type: none">→ ISO 9001 is the most comprehensive and assesses a company's ability to design, manufacture, inspect and test its products.→ ISO 9002 assesses an organisation's ability to manufacture, inspect and test the quality of products, but does not evaluate the design process.→ ISO 9003 assesses only the supplier's ability to inspect and test. Due to its limited scope, it has been of little interest to customers in the market place.

ISO operates a specialised information support unit, the ISO 9000 Forum. The forum acts as a central information desk, despatching information about ISO 9000. The forum provides answers to specific questions about certification procedures, experiences by other companies, the implementation process, etc. The forum also publishes a journal on developments in the field of quality in different industrial sectors and organises international meetings. The forum is open to membership. Enquiries may be directed to any national member body of ISO or to the ISO Central Secretariat in Geneva, Switzerland. Information can also be obtained from the ITC handbooks. Besides that, ISO also operates an Internet site: 'ISO on line', where information on certification, implementation procedures etc. can be directly accessed (see Appendix 2 for address).

- **Revision of ISO 9000**

The owning of a certificate of quality such as ISO 9000, or the supplying of a product bearing the CE marking, could be an indication of a good product. A complete revision of globally accepted ISO 9000 series is in preparation. This second revision is highly necessary because the present structure is no longer applicable to the situation in most businesses. The revision make the standard more user-friendly and more understandable. The new, improved standard will be more easily adaptable by organisations providing service and will be more focused on continuous improvements. The three present certification models for contractual situations ISO 9001, ISO 9002 and ISO 9003 will be consolidated into the single revised ISO 9001 standard.

Tailoring of the ISO 9001 requirements will be permitted to omit requirements that do not apply to an organisation. This model has been constructed as a loop, in such a way that it starts and ends with the customer. The revised ISO 9004 will have the same structure, be the guide for all sectors and is intended to lead beyond ISO 9001. ISO 9000 will now contain the quality definitions, ISO 9004 will be consistent with ISO 9001 and customer satisfaction will be given much more attention.

The revised ISO 9001 will not impose rules on the presentation of a quality manual. This will allow organisations to continue to document their quality management system in a manner reflecting their own ways of doing business. A major requirement of the revision process is that organisations will find it easy to transfer to the new standards.

Information relating to the introduction of these revised standards will be provided throughout the revision process. Final publication of the revised standards is planned for the second half of the year 2000.

- **Norms / Standards**

It is important to manufacture products according to accepted international standards. Norms not only specify sizes and tolerances but also give strength and finish requirements. Sales of a product will be difficult if the product is not manufactured according the required standards. Moreover, it will not be competitive with other products.

Every EU member state has its own normalisation institute and consequently its own norms. In many cases standards and norms will be comparable to those in other countries. By conforming to the best known standards in the EU, the Deutsche Industrie Norme (DIN - German Industry Norms), the British Standards (BS) or European Norms (EN norms), access to the European market is much more feasible.

DIN norms are more favourable than the most other norms and even in the UK they are more and more preferred over the British Standards (BS) norms. It also should be noted that sometimes other norms like the American API or ANSI are preferred over DIN norms as, for instance, is seen in the oil industry.

On the European level, the Comité Européen de Normalisation (CEN) is working on establishing European Norms (EN), which are called harmonised European Norms. At the moment, only a few norms are in existence. These European Norms are needed because of the new EU Directives in the field of safety.

The way to comply with the new EU Directives related to safety, health and the environment, the New Approach Directives, is to follow the harmonised EN norms. The European Norms do not have a legislative character, as normalisation is always a voluntary choice. EN norms are being established by CEN with contributions by all European normalisation institutes.

Standardisation institutes	
The most important bodies for issuing standards are:	
● API	● ASTM
● CEN	● BSI
● DIN	● VDI
● ISO	● VDMA
● ANSI	
● ASME	

Other standards, which do not refer to pumps directly, but contain essential information for both users and manufacturer, are CENELEC norms (Comité Européen de Normalisation Electronique). These norms deal with the electrical component parts and wiring.

- **EN norms**

The following EN norms are applicable to pumps and compressors:

EN 255
This norm specifies the terms and definitions for the rating and performance of air and water cooled air conditioners, liquid chilling packages, air/air, water/air heat pumps with electrically driven compressors as well as the properties of the units when used in heating mode. When these units are used for space cooling, then EN 814 applies. When these units are used for liquid cooling and heat recovery, the prEN 12055 applies.
EN 1012
EN 1012 applies to all types of compressors. The standard lists the significant hazards associated with compressors and specifies safety requirements applicable to the design, installation, operation, maintenance and dismantling of compressors during their foreseeable lifetime and subsequent disposal. Compressors intended for use in particular applications shall also comply with any specific standards relating to those applications.
EN 12076
This standards specifies methods for measurement, determination and declaration of the noise emission from compressors and vacuum pumps. This noise test code applies to stationary, portable compressors and vacuum pumps as specified in EN 1012.

For more detailed information, please refer to your national standard organisation or to CEN (see Appendix 2 for the address of CEN).

- **Frequently used norms for pumps and compressors**

<i>Standards pumps - prEN 733</i>
In West Germany and other European countries, there are standardised pumps for non-hazardous liquids. The German standard DIN 24255 is the most popular. This standard is in the process of being replaced by the very similar European standard prEN 733 (prEN means preliminary European norms). The standard relates to foot mounted horizontal pumps with a bearing bracket and a “back-pull-out” facility when driven through a spacer coupling. The standard defines only performance and physical dimensions. The intent of the standard was to allow interchangeability between manufacturers equipment and provide the user with a greater choice.

Machine tool coolant pumps

This type of pump is standardised in Germany in accordance with DIN 5440. This standard indicates both performance and those dimensions that have an influence on interchangeability. Due to the construction no shaft seal is required. BS 3766 classifies ten sizes in the form of dimensions and minimum performance characteristics. The French AFNOR standard NF E44301 incorporates DIN 5440 requirements.

Standard pumps - ISO 2858/ ISO 3069/ ISO 3661

The International Organisation for Standardisation (ISO) has prepared a standard recommendation, ISO 2858, for end-suction centrifugal pumps - pressure rating PN 16 (maximum pressure 1.6 Mpa). This is included in BS EN 22858 and DIN 24256. Pumps conforming to this standard are intended for chemical and corrosive applications, although pumps are available in high silicon iron and Ni-Hard steel for solids handling applications. Stuffing box and seal cavity dimensions conform to ISO 3069, which is based on parts of DIN 24960. Flanges conform to ISO 2084. Overall package dimensions, including motors and baseplates, are given in ISO 3661. ANSI inch standards (American National Standards Institute) are also available. The ANSI B73 standards were originally produced for the chemical industries. The standards were based on recommendations by users and compiled by a committee consisting mostly of manufacturers. The ANSI B73 standards specify materials and mechanical seal options. In this context, the API 610 standard is also of importance. API is the American Petroleum Institute, which is predominantly a trade association of pump users concerned with oil and gas production and refining. The API standard is not a dimensional standard, allowing interchangeability between manufacturers, but it is a standard securing robustness. The first two requirements are a 20-year service life and the capability of three years uninterrupted operation.

End suction pumps - API 610

This is the most popular process pump. Basic design is similar to PreEN 733 and ISO 2858. The minimum material readily available is carbon steel. Standard flanges are in inches to ANSI standards B16.1, B16.5 or B16.42. Both suction and discharge flanges must have the same pressure rating.

Not as popular as the end suction pump is the double suction pump, which probably covers 10 percent of the process market.

As mentioned earlier, API and ANSI norms are mainly found in the oil and chemical industry as an American heritage.

Positive displacement pumps; reciprocating, dosing and rotary

These are covered in API 674, 675 and 676. VDMA 24286 covers procurement, testing, supply and dispatch. DIN 5437 covers semi-rotary hand pumps. DIN 24289 covers specification, installation and data sheets for reciprocating pumps.

Compressors

Norms applicable to compressors are ISO 1217, ISO 5390, ISO 8662 and ISO 8662. These norms cover acceptance tests, classification and measurement of mechanical fibres on the handle.

● **Safety norms**

General machinery is covered by EN 292. Pump safety will eventually be covered by EN 809.

An important factor in applying safety considerations is the ability of the system to withstand pressure. Pumps, pipes, valves and flanges are, therefore, constructed to withstand specific pressure ratings associated with temperatures.

The pressure/temperature ratings for flanges, pipes, valves and fittings can be found in:

- | | | | |
|---------------|---------------|---------------|-----------|
| ● ISO 7005 | ● ANSI B16.42 | ● ANSI B93.75 | ● BS 3293 |
| ● ANSI B16.1 | ● ANSI B16.47 | ● BS 10 | ● BS 4504 |
| ● ANSI B16.24 | ● ANSI B16.5 | ● BS 1560 | |

The construction and dimensions of pipe fittings are standardised in:

- | | | | |
|-------------|------------|-----------|-----------|
| ● ISO 49 | ● ISO 3501 | ● BS 759 | ● BS 3799 |
| ● ISO /R508 | ● ISO 3503 | ● BS 1256 | ● BS 4346 |
| ● ISO 2045 | ● ISO 4145 | ● BS 1640 | ● BS 4772 |
| ● ISO 2531 | ● ISO 4179 | ● BS 1740 | ● BS 5114 |
| ● ISO 3458 | ● ISO 8179 | ● BS 1965 | |
| ● ISO 3459 | ● BS 143 | ● BS 2051 | |

With regard to electrical standards, the following standards will be reviewed:

- | | | | |
|------------|------------|-------------------|-----------|
| ● IEC 34-1 | ● IEC 34-5 | ● EN 60034 Part 5 | ● BS 5345 |
|------------|------------|-------------------|-----------|

Safety requirements for liquid pumps and pump aggregates technical have been defined in DIN 24295.

The following harmonised norms are applicable to pressure vessels of simple form,:

- | | |
|------------|------------|
| ● EN 268-1 | ● EN 268-4 |
|------------|------------|

Using these norms will make it easy to prove that the vessel conform to the Directive for pressure vessels of simple form. See further for safety regulations.

● **Vibration and noise**

Standards dealing with noise and vibration are basically concerned with the evaluation of maximum permissible vibration levels for various types of machinery. Vibration levels are measured as vibration velocity mm/s rms. Standards dealing with this subject are: VDI 2056, ISO 2372 and BS 4675 / Part 5/ 1976, IEC and EN 60994 for vibration and pulsation measurement at site for rotodynamic pumps and turbines.

When tackling the noise problem, consideration must be given to the complete pump package and not just the pump. Specific areas can be designated “ear protection zones” where ear protectors must be worn. Typical noise level restrictions in current specifications call for 84 dBA maximum. Regarding measurement, evaluation and presentation of noise data, the following standards should be reviewed for suitability of any specific application: ISO 3740, ISO 3744, ISO 3475, ISO 3746, ISO 3747, ISO 4412, ISO 4871, ISO 6081/2, EN 27574, ANSI B93.71, ANSI B93.72, ANSI S1.4a, ANSI S1.6, ANSI S1.13, API 615, BS 4196, BS 7025 and DIN 45635.

The standards ISO/R 1680, IEC 34-9 and BS 4999 Part 109 are applicable for noise generated by electric motors.

● **Norms for components**

The following standards are the most popular for shape and dimensions of flanges:

- | | | |
|------------------------------|-------------------------|--------------|
| ● ISO 7005 (metric and inch) | ● DIN 2543 to 2549 | ● DIN 2628 |
| ● SAE (all inch) | ● DIN 2569 (all metric) | ● ANSI B16.5 |
| | ● DIN 2531 to 2533 | ● BS 1650 |
| | ● DIN 2631 to 2638 | ● BS 1650 |

Shaft end dimensions are given in ISO 775 (BS 4506). Shaft centre heights and tolerances for driving and driven machines are standardised in ISO 496 and BS 5186.

Shaft seals are covered by: DIN 3780 (covers stuffing box dimensions for soft packing), DIN 24960 (for mechanical seal cavities and material codes), ISO 3069, API 610, ANSI B73.1 and B73.2, API 382 (covering all aspects of mechanical seals).

- **Testing**

Normally, reference is made to an acceptance testing standard, which contains instructions regarding the testing procedure and permissible tolerances. The following standards for testing pumps have been issued:

ANSI B63.95	Hydraulic pumps & motors	BS 5860 (IEC 607)	Very large pump/turbines
API 610	Centrifugal pumps	BS 6335 hydraulics	Pressure ripples in
API 674	Reciprocating pumps	BS 7250 (ISO 8426)	Capacity of hydraulic pumps/motors
API 675	Metering & dosing pumps	DIN 1944	Centrifugal pumps
API 676	Rotary positive displacement pumps	DIN 14410	Portable fibre pumps
API RP 11S2	Submersible pumps	DIN 14420	Fire pumps
ASME PTC 7, 7.1, 8.2, 18.1	Rotodynamic pumps	DIN 19760	Effluent pumps
BS 4617= ISO 4409	Hydraulic pumps and motors	Hydraulic Institute 1.6	Centrifugal pumps
BS 5316 Part 1 (ISO 2548)	Rotodynamic pumps	Hydraulic Institute 6.6	Reciprocating pumps
BS 5316 Part 2 (ISO 3555)	Rotodynamic pumps	ISO 8278	Pressure compensate hydraulic pumps
BS 5316 Part 3 (ISO 5198)	Rotodynamic pumps, laboratory precision	VDMA 24284	Positive displacement pumps

- **Social accountability**

In addition to the aforementioned importance of rules and regulations in the field of quality, health, safety and environment, social issues are also taking on increased significance, both in the arena of international negotiation on trade, and for consumers.

Media coverage and the attention which multinational companies are paying to their codes of conduct mean that European consumers are nowadays well informed about labour conditions in the so-called sourcing countries. The importance of ‘business conscience’ as a selection criterion for consumers is growing. As a result, importers and large-scale retailers have to include business ethics, integrity and social accountability in their assessment of suppliers all over the world. The last thing a company wants is that its treasured brand names should be placed in connection with ‘sweat shops’ or child labour.

Social accountability standards

The Social Accountability 8000 (SA8000) is an international standard for social accountability. The objective is to ensure ethical sourcing of goods and services. It is a voluntary standard and can be applied to any size of organisation or business across all industries. The standard can replace or augment company or industry-specific social accountability codes. SA8000 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. The requirements in the standard itself are based on recommendation by the International Labour Organisation and on agreements and conventions of the United Nations (Human Rights, Rights of the Child).

SA8000 is not an official standard, but has the backing of major companies and organisations over a wide spectrum of interests. This backing and the demand by consumers for world-wide social standards will ensure that an SA8000 certificate will be recognised.

Companies from New York to China have already applied for SA8000 certification. Accreditation is valid for a span of three years, with surveillance and observation audits every six months, covering each or any country where the certification body audits ten or more facilities. Those that meet the requirements will be accorded the right to display the SA8000 certification mark.

More information concerning SA8000 can be obtained from the Council on Economic Priorities Accreditation Agency (CEPAA, see Appendix 2 for address).

● **The New Approach Directives**

The EU adopted a New Approach to its technical legislation, mechanisms and procedures concerning standardisation and quality assurance practices. These new arrangements concern industrial products sold in all European Economic Area countries. Because of the size of this market and its importance for many exporters in developing countries, these developments should be followed closely by current and potential suppliers to the EU.

The main concern behind the New Approach to standardisation and quality control is to ensure that only products which are safe and which meet health, environmental and consumer protection requirements circulate in the European Economic Area. Certain industrial products marketed in the EU must comply with these “Essential Requirements”, which are established by the EU’s “New Approach Directives” for broad product categories.

The parties responsible for attesting to the compliance of the products with these requirements may include the producer, the importer, the distributor or independent institutions, such as third party inspection agencies or testing and certification bodies. Such bodies must be officially authorised and work under supervision of a recognised accreditation body, such as the “Board for Accreditation”.

Notified bodies

To be authorised to carry out the conformity assessment for a specific directive, a testing inspection or certification organisation must have been notified to the EU Commission by the EU member state in which it is located. Such organisations are referred to as “approved”, “competent” or “Notified Bodies”. A certification body located outside the EU (such as in developing countries) may also be recognised as an approved body for the purposes of the directive, in which case the government concerned and the EU Council must conclude an agreement on mutual recognition of tests and certificates of conformity. The list of Notified Bodies is published in the “*Official Journal of the European Communities*”.

The CE marking

Everyone, who deals with a product for which directives exist, will usually wish to know that the product conforms to the set demands. Therefore, each product for which this has been established must be provided with an identifying mark calling the CE marking. Without the CE marking, a product (not components) may not even be traded or used. It is the responsibility of the national government of a member state to ensure this. Exporters should take this marking into consideration as products must bear the CE marking if they are to be admitted to the EU. In the case of separate pumps and compressors, the CE marking cannot be affixed. It is only when they are connected to an electric motor, that they are regarded as a machine, and thus covered by the directive, then a CE marking must be affixed.



The application of the CE marking is only permitted if it can be demonstrated that a product conforms to the applicable Directives and preferably to applicable EN norms. Before the CE marking can be put on the product, it first has to be certified and/or approved either by the manufacturer or by a third party.

There are two forms of certification:

Products with a low or acceptable safety risk

The producer or importer may himself write a declaration to the effect that the product conforms. He may then, without the involvement of a third party, affix the CE marking on the products after he has drawn up a “*Declaration of Conformity*”.

Hazardous products

The producer or importer/exporter then needs a certificate from an independent institute or inspection body, the so-called “Notified Bodies”, which states that the product conforms to the applicable Directives. Only the producer or the importer/exporter possess this certificate, he may draw up a “*Declaration of Conformity*” and put the CE marking on the product.

Besides testing the product or having it tested by a Notified Body, there is one other important detail a manufacturer should remember. The manufacturer also must compile a file called the “*technical construction file*”.

This file has to contain the following documents:

- drawings of the machine;
- results of calculations and tests executed during the design stages;
- a list giving elementary requirements of the Directive, norms, technical specifications;
- description of elementary safety features;
- technical documents, certificates;
- test results of own test or by certified testing institutes;
- a copy of the manual.

The “*Machinery Directive*” is also applicable to parts of machines and to transmission components. This means that a manufacturer of, for instance, gearboxes has to conform to these regulations as well. The only difference is that it is not allowed to affix the CE marking to these components. As the components will be used to build a complete machine, the manufacturer wants proof that the parts he uses conform to the “*Machinery Directive*”. Such a statement is the “*Manufacturer’s Statement*” which should be shipped with the product.

Most products dealt with in this report will not be independently-working machines, therefore, the CE marking should not be affixed to the product; however, a “*Manufacturer’s Statement*” should be handed over with the product.

In the case where the Directive refers to norms for details, then those norms must be followed. The European EN or international ISO norms, which have a voluntary and non-obligatory character, then take the status of prescribed regulations.

Even if the Directives do not explicitly demand the use of certain norms or standards, it is recommended to follow these, as it is easier to state conformity to a set norm than to a self-invented equivalent.

EC Directives applicable to pumps and compressors

Five New Approach Directives that can be applicable for pumps and compressors are:

The Machinery Directive (89/392/EC, 91/368/EC, 93/44/EC, 93/68/EC)

As a result of the New Approach to Technical Harmonisation and Standards, the Directive on machines, the Machinery Directive, came into force on January 1, 1995 in the entire European Economic Area. From that date onwards, all machinery, as defined by the Directive, must have a CE marking to be allowed onto and operated in the European market.

According to the European Directive a **machine** is: *“An assembly of linked parts or components, at least one of which moves, with the appropriate actuators, control and power circuits, joined together for a specific application, in particular for the processing, treatment, moving, or packaging of a material”*.

As this Directive aims at health and safety, the following requirements are made:

- design
- control
- safeguarding against other dangers
- materials
- safeguarding against mechanical risk
- maintenance
- lighting
- shields and safety precautions
- indications on the machine

Some categories of machines are subject to specific stricter requirements, such as woodworking machines and machines for the food industry. Directive 91/368/EC added specific requirements regarding:

- the specific dangers as a consequence of the mobility of machines
- the specific dangers of hoisting and lifting machines
- machines for underground activities.

Components for machinery, and therefore pumps and compressors without drives, are in most cases governed by the Machinery Directive. For this reason, they have to comply with those requirements. Regarding products (components) designed and manufactured to be incorporated in a machine, the issuing of a *“Manufacturers Statement”* is appropriate and the CE marking need not to be affixed.

The Electro-Magnetic Compatibility Directive (EMC) (89/336/EC, 92/31/EC, 93/68/EC)

Electro-Magnetic Compatibility (EMC) is the ability of electric equipment, installations and systems to work together in the same environment without causing or receiving interference. The EMC is applicable to electric and electronic appliances, equipment and installations containing electric and/or electronic components, which can generate electro-magnetic noise and/or of which the proper functioning can be influenced by this. As a result, this will include almost every apparatus incorporating electric energy, from battery-powered products to high-voltage installations. This means that all appliances causing electromagnetic disturbances, or that can be influenced by them,

continued

fall under the jurisdiction of this Directive. It should be noted that it is important for a manufacturer or importer to know if his equipment complies with EMC standards.

The Low Voltage Directive (73/23/EC, 93/68/EC)

In the basic safety regulations, there is a reference to the Low Voltage Directive for electrical goods (73/23/EC). If a machine incorporates voltages within the range 50-1000V AC and/or 75-1500V DC, the product should comply with this Directive. As a result, any machine or component within those power ranges is governed by this Directive. The Low Voltage Directive does not incorporate formalities. The Directive purely aims at safety and outlines the safety features with which a product should conform. The safety purpose of the Low Voltage Directive is summarised in harmonised norms. Although it is not imperative, conformity with the harmonised norms implies compliance with the Directive.

If the main safety risk of a machine concerns the use of electricity, then the machine only has to comply with the Low Voltage Directive. It is sometime hard to determine if the safety risks involved are purely of an electrical origin. The European Commission acknowledges this problem and has made a list of products that have to comply with the Low Voltage Directive. It should be kept in mind that the Low Voltage Directive does not incorporate any regulations to reduce the risk of mechanical hazards.

Simple Pressure Vessels (87/404/EC)

The Directive concerns marketing and putting into service of serially produced pressure vessels of simple form. This regards: a welded pressure vessel with an inside pressure of more than 0.5 bar and which is designed to contain air or nitrogen and which is not meant to be subjected to flames. The provisions of the Directive became effective on 16 September 1992. No such pressure vessels without CE marking may be brought onto the market.

Other criteria for products to come under this Directive are:

- the parts and connections which are important for the strength of the pressure vessel must be produced from non-alloyed quality steel, non-alloyed aluminium or aluminium alloys which do not show dispersion hardening;
- the pressure vessel must consist of a cylindrical part with a circular diameter covered by curved bottoms with the hollow side inwards, or by flat bottoms; these bottoms have the same rotation axis as the cylindrical part.
- two curved bottoms with a similar rotation axis. The maximum operational pressure of the pressure vessel is at the maximum equal to 30 bar and the product of this pressure and the content of the vessel (PS x V) are not higher than 10,000 bar x litre. The minimum operational temperature may not be lower than -50 °C, the maximum operational temperature may not be higher than 300 °C for pressure vessels made of steel and 100 °C for pressure vessels made of aluminium or aluminium alloys.

Pressurised Equipment Directive (PED) (97/23/EC)

This Directive pertains to pressure vessels, pipelines including connections and attachments such as flanges, LPG equipment and pressurised air equipment.

The PED applies to pressurised equipment designed for use with an overpressure of more than 0.5 bar. The Directive came into operation on May 29th, 1999. A transitional period up to 29 May 2002 has been installed. After that date, pressure equipment which does not carry the CE marking may no longer be brought onto the market or put into service in the European Economic Area.

The new Directive particularly focuses on equipment for the processing industry and closely related industries, as well as safety devices to protect all sorts of pressurised equipment. This Directive defines pressurised equipment as general pressurised equipment such as installation pipelines, safety pressure components, fittings, valves and pressure systems composing of these components.

The PED distinguishes between four groups of pressure equipment depending on the hazardous nature of the material. Specific requirements have been set for these four groups. In general, all four groups are bound to requirements for the design, the manufacturing and the materials used. A subdivision of these three aspects leads to products needing to comply with requirements for:

Design

- general
- design for adequate strength (pressure, containment, resistance and stability)
- safe handling and operation
- means of examination, draining and venting
- corrosion or other chemical attack
- wear
- assembly
- provisions for filling and discharge
- protection against exceeding the allowable limits of pressure equipment
- safety accessories
- external fire

Manufacturing

- manufacturing procedures
- final assessment
- marking and labelling
- operating instructions

Materials

- materials specifications

The assessment of the Directive is stated in modules. The modules contain specific test regimes as well as indications as to whether a Notified Body has to be called in.

After testing of a product by a Notified Body, the producer or his European importer affixes the CE marking. The declaration of conformity must be kept on file.

If a product falls within the bounds of one or more directives, it has to comply with all those directives. Besides formalities which have to be obeyed, a product has an intrinsic duty of safety towards people and the environment. A visual indication that a product is produced according to a New Approach Directive is the CE marking which must be visibly and non-detachably affixed to the outside of the product. If a product falls under more than one directive, one CE marking will declare that it conforms to all directives concerned. The different directives to which the product complies are stated in the “*Declaration of Conformity*” which have to be handed over with the product.

- **General Product Safety**

The EC Directive on General Product Safety 92/59 (commonly known as the Product Safety Directive) was approved by the EC Council on June 29, 1992. The directive became fully operational in June 1994 and applies to the safety of products from the time that they are first placed on the EU market and extends throughout the product’s foreseeable life. The directive covers both new and reconditioned products, though not second-hand products clearly identified as antiques or in need of repair or reconditioning. The EC has felt the need to introduce the obligation for producers and distributors to trade only in safe products, in the framework of completing the unification of the internal market. Although product safety directives already existed for many product categories, a number of products was not covered in this way at European level.

The directive requires that products intended for consumers do not present any unacceptable risks and that potential users of such products are adequately warned for any remaining risks. Guidance on what is a safe product is contained in the directive. In general, the Product Safety Directive will not apply to those safety aspects of a product or category of products already covered under an EC Directive.

The Product Safety Directive is aimed at end-user products (food and non-food), insofar as there are no other specific EC regulations for these products. If this is the case, the directive does not apply.

For more information on harmonisation and Directives, please refer to the CBI’s publication “*European regulations manual*”.

- **The Product Liability Act**

Manufacturers of pump and compressors will indirectly be dealing with the new European Product Liability Act. This new Act only applies to movable goods, their spare parts and electricity. The most significant divergence from the old law lies in the consumer being able to submit a complaint to an authorised judge, asserting the manufacturer’s or importer’s liability. This manufacturer then has to prove that he cannot be held liable, for instance because he has, to the best of his ability, manufactured and checked the product. He has to demonstrate that he has, in the process, utilised the most recent recognised techniques, norms and means of control. An ISO 9000 certificate or other proof of quality could be of great assistance, although it will not exempt the manufacturer from the liability. If the manufacturer should not be able to disprove his culpability in the accident, the judge will rule that he pays the indicated claim, which is called risk responsibility.

One should bear in mind that products can be used for totally other purposes than those for which they are intended, but that the manufacturer can still be judged responsible for the damages suffered. When designing and manufacturing a product, it, therefore, has to be taken into account that every consumer uses a product in his or her own way.

The Product Liability Directive (85/374/EC) includes the following:

“A product is faulty when it does not offer the safety which one has the right to expect, taking into consideration all circumstances, in particular:

- a) the presentation of a product
- b) the use of the product which can reasonably be expected
- c) the point in time at which the product was put into circulation.”

5.2 Packaging, marking and labelling

The most important regulations regarding packaging and labelling of products for sale in the markets of the European Union are the directives issued by the Council of the European Commission. Environmental considerations are playing an increasingly greater role in determining the legal requirements for packaging and labelling. In early 1995, the EU Council of Ministers approved Directive 94/62/EC on Packaging and Packaging Waste which sets common objectives for all member countries for the recovery and recycling of packaging. The Directive establishes:

- recovery and recycling targets;
- essential requirements and conformity symbols for all packaging; and
- broad criteria for national waste management systems.

Packaging legislation can differ considerably between EU member states.

Packaging legislation will, however, become more stringent in the near future.

Since alterations in the environmental policy follow each other at a rapid pace, exporters are advised to ask the importer about the latest regulations and/or requirements related to packaging. Exporters can also contact the Ministry of Housing, Spatial Planning and the Environment (VROM) in The Netherlands, for more information on the environmental policy and measures taken in order to reduce packaging waste (see Appendix 7 for the address).

Protection is by far the most important packaging aspect where instruments are concerned. This can be subdivided as:

Protection against mechanical damage
Handling is the main hazard of transport and instruments undergo a great deal of this. Most of the damage occurs during the handling of the pack, in operations such as truck loading, truck unloading, palletising and depalletising.

Protection against climatic damage

The most harmful effect of climatic damage is that caused by condensation of water vapour. In general, a relative humidity which rises above 70 percent RH may cause corrosion on metal surfaces which have not been properly protected by preservatives or lacquers. The effect of corrosion is accelerated when combined with high temperatures. In the case of condensation (the RH rises to 100 percent), the water vapour is so finely dispersed that the attack on metal surfaces is far more intensive than in the case of plain liquid water.

For more detailed information, please refer to CBI's publication "*Packaging manual*".

It is particularly important that exporters in developing countries are aware of these regulations and take appropriate measures, in order to become or remain interesting trade partners for European importers. Packaging policy does not specifically affect "foreign" manufacturers because the importers will be held responsible for the packaging. Generally, sound marketing requires taking the obligations for the importer into consideration, meaning that packaging (transport packaging, surrounding packaging and sales packaging) materials should be limited and re-usable or recyclable. The importer will otherwise be confronted with additional costs, thus reducing the competitive position of the exporter.

5.3 Trade-related environmental measures

Besides the safety standards, more environmental regulations can be expected in the coming years. The European Act of 1987 set guidelines for the government of the Member States to work on their own environmental laws. The industry fears for unfair competition, if these regulations are not applied on a European scale. The manufacturers of liquid pumps, however, are not expected to suffer from growing environmental pressures. Demand has risen for waste water pumps, partly due to the guideline addressing the management and processing of urban waste water.

Noise pollution has been considered a major problem for the industry, but due to steady improvements in production techniques and processes, noise has been reduced. Furthermore, thanks to growing environmental pressures reflected in demand, the industry has been induced to manufacture less polluting pumps, with less leakage. Technologically developed manufacturers could take advantage of the environmental pressure, if their products are able to meet the environmental requirements.

● **EU regulations**

Asbestos ban	
<p>Asbestos is sometimes used in gaskets and sealing compounds for high temperature applications. Yet, according to legislation at EU level, and in Germany, The Netherlands and most EU member states products containing asbestos are prohibited. The relevant legislation is:</p>	
EU	ordinance 91/659/EEC, Directive 76/769, 83/478 and amendments 87/217, 89/678 and 91/339
Germany	Art. 9, 1 and Annex II Hazardous Substances Decree. Budesgesetzblatt I, no. 54p.1724, 20-10-93
The Netherlands	Staatscourant 1983 (Stb. 418), 18-7-1983. Last amendment 15-8-1994 (Stb. 674)
Energy reduction	
<p>On EU level, a new Directive which is expected to be effective from the year 2000, contains demands that will be set on power consumption by refrigerators and freezers. The Netherlands Building Decree contains as of 15th July, 1995 the energy-saving norm setting a maximum for total (weighed) consumption by installations in a building. This decree may lead to customer demand, on the power consumption and/or efficiency of pumps, being part of the heating system and other installations.</p>	
Noise production engine compressor	
<p>EU Directives have been set concerning the noise production of many building machines. This also holds for the transportable engine legislation of the member states and is, therefore, effective in the whole EU.</p>	
<i>Permitted normalised nominal capacity Q (m³/min)</i>	<i>noise production level (dB(A))</i>
Q ≤ 5	100
5 < Q ≤ 10	100
10 < Q ≤ 30	102
Q > 30	104
<p>Applicable regulations:</p> <ul style="list-style-type: none"> ● ordinance 79/113/EEC, 08.02.79 ● ordinance 84/532/EEC and 84/533/EEC, 19.11.84 ● ordinance 85/405/EEC and 84/406/EEC, 30.08.85 	
continued	

Important: import, sale and use of engine compressors is prohibited if not provided with a “Certificate of agreement” and a “noise label” to prove that the equipment meets standards. The EU certificates are valid for a period of five years. Both of them must meet a laid down model. The national governments have commissioned an organisation that performs the tests that are valid for the entire EU. For information on the testing of noise production levels, please refer to the foundation “Aboma + Keboma” (see Appendix 2).

In order to meet legal demands on noise production for the location as a whole, purchasers of pumps and compressors can make stricter demands. Generally, a maximum noise level of 80 dB(A), although in residential areas 70 dB(A), is acceptable.

Compressed air condensate

The norm for compressed air condensate already has been established at 15-20 mg/litre in Germany as well as The Netherlands. This means, for compressor manufacturers, that these norms and regulations may effect the customer requirement. Higher product requirements need to be set up, for meeting standards.

The care for the environment and the conscious use of the available resources is a major issue in The Netherlands and in other European countries. It is a trend affecting all products and now also for services.

● **Ecolabels**

Ecolabels indicate that the product has a reduced impact on the environment compared to similar products. The EU Ecolabel is a voluntary scheme, and manufacturers can choose whether or not to apply for the ecolabel. The scheme is based on Council Regulation (EEC) No. 880/92 of 23 March 1992. Except for foods, drinks and pharmaceuticals, no other products will be excluded. The award of the label to individual products is based on the definition of the relevant product groups and the related environmental criteria. At present no Ecolabels exist or are being developed for pumps and compressors.

- **Sustainable development**

The main tools available to manufacturers for assessment and change in their products and processes are:

Life Cycle Assessment (LCA)		
<p>LCA is also called the “cradle to grave” approach. Manufacturers (have to) look at the total environmental aspects of their product. A material which is very environmentally sound when the product is used could be very polluting, energy consuming or difficult to break down in the excavation, refining, production or discard stage of the life cycle. Thus the use of a material which is less environmentally sound when the product is used, could be justified because the impact on the environment is less in another stage of the life cycle. On a European scale the European Commission decided that the LCA method will be the technique to decide if a product is produced in an environmentally conscious way or not.</p> <p>Processes to analyse in the production of pumps and compressors:</p>		
● metal	production use disposing	<i>extraction, melting, refining, casting painting, preserving, machining melting, shredding, dumping</i>
● synthetics	production use disposing	<i>extraction, refining, composing preserving, colouring</i>
Cleaner production		
<p>Cleaner production is the conscious use and production of (existing) products and processes to prevent the pollution of air, water and land. This means that a careful look is taken at the overall processes and waste materials. A process liquid could be re-used instead of being discarded, simple measures could increase the efficiency of a machine, toxic process liquids could be replaced by non-toxic etc.</p>		
Ecodesign		
<p>Ecodesign basically means giving the environment a place in (new or improved) product development. This means that during product design, efforts are made to reduce the use of raw materials, minimise waste, energy used and toxic emissions. This will ultimately lead to a reduction in the raw materials and energy used. Although these tools are used by manufacturers to reduce the impact of their product(ion) on the environment, it is known that other benefits can arise, like a reduction in product(ion) costs.</p>		

If manufacturers use tools like LCAs, cleaner production and Ecodesign properly, their products will be more environmentally sound than the products of their competitors. This will give them a marketing advantage over the competition, because consumers increasingly take the environmental soundness of a product into account. For the manufacturer to prove this, there are norms with which he can comply or hallmarks he could apply for.

- **Environmental standards**

While environmental labelling procedures are purely aimed at the products (i.e. the product with a label has a lesser impact on the environment than other similar products), environmental management standards allow the manufacturer/exporter the opportunity to indicate to external parties that he is manufacturing in an environmentally conscious way. At the moment, three norms are operational:

- **ISO 14000** The ISO 14000 Environmental Management standard was published in September 1996. The International Organisation for Standardisation will, in the short term, not specifically address the implementation difficulties which SMEs and companies in developing countries may encounter. Other organisations, such as the International Network for Environmental Management, have stated that they will start working on development manuals to assist in the implementation of ISO 14000.
- **EMAS** The Ecological Management Audit Scheme is the standard introduced by the European Commission. Although it is operational there are still uncertainties as to how ISO 14000 certified companies can obtain EMAS registration.

- **Information**

For more background information on environmental issues, please refer to the Eco Trade Manual, a joint publication of CBI, NORAD, DIPO and Sida (addresses in Appendix 6). The Eco Trade Manual describes issues related to the environment, trade and technology. It gives a clear view on environmentally conscious production, elaborates on production techniques and possible alternatives and describes regulations, Ecolabelling and their relationship with export marketing.

Information can also be obtained through CBI's online database GreenBuss®, which contains information similar to the Eco Trade Manual but is more extensive and detailed. GreenBuss® will be regularly updated (Address in Appendix 7). More detailed information can be found in the Quick Scan for "Machinery".

5.4 Tariffs and quotas

The European Union applies the Common Customs Tariff to imports from non-EU sources. Imports of pumps and compressors originating in ACP countries or in least developed countries (LDCs) are given import exemptions. However, this exemption only applies when consignments are accompanied by an official certificate of origin: Eur 1 for ACP and least developed countries, Form A for other developing countries.

Table 5.1 Import tariffs by product group, tariffs as a percentage of CIF value, excluding duties and VAT

HS codes	Description	Customs duty (%) developing countries
8413	<i>Pumps for liquids</i>	0
8414	<i>Air or vacuum pumps and compressors</i>	0

For exact and up-to-date information one should contact local Chambers of Commerce or Trade Promotion Offices. Information can also be obtained from the Chamber of Commerce in Rotterdam (see Appendix 7 for address).

5.5 Terms of the trade

5.5.1 The contract

A contract is not necessarily a document. If two parties agree on something verbally, this verbal agreement is a contract according to most European laws. However, because it is very difficult to prove something particular has been agreed in the case of a verbal contract, it is strongly recommended that the agreement should be confirmed in writing. Standard, world-wide accepted contracts are most common in the trade of pumps and compressors.

The Contract

Details which must be mentioned in a contract are:

1. The contract parties: the seller, the buyer, the broker and/or buying/selling agent. All names and addresses must be correctly spelled.
2. The product, price and quality of the product are sufficiently specified, so that no misunderstandings can arise.
3. The quantities should be mentioned. If the buyer and the seller agree to more or less than the agreed quantity, this is to be specifically mentioned.
4. The delivery terms are mentioned according to the description of the Incoterms 2000 (available at the International Chamber of Commerce).
5. The payment terms are to be spelled out in detail.
6. The delivery time is a vital piece of information on which the seller and the buyer will have to agree.
7. Packaging details, including measurements and weights.
8. If one of the parties has negotiated special conditions, this is to be mentioned in the contract.
9. What will be done if the two parties disagree with each other?
To which arbitration court / district will they go?

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 the product does not meet the expectations of the importer, this will immediately backfire on the business relationship with the exporter. A prospective long term relationship may be damaged.

The complaints most often heard are:

- Not meeting the delivery date;
- Payment problems;
- Not satisfying the high quality requirements of the European market.

The contract must state that the goods have to be delivered in a condition which is in full accordance with EU regulations. If there is any objection at the Customs, the whole consignment may be rejected by the Customs' authority responsible for clearing goods at the time of import.

5.5.2 Payment methods and delivery terms

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 to have 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 the availability, quantity and quality of the goods he buys, before he pays the agreed price.

Importers of pumps and compressors have indicated that the most popular payment methods for traders are the irrevocable LC and cash against documents (D/P or CAD).

General methods and terms of payment

Clean payment

The process is fast and reliable, depending on the credit worthiness of the importer. The bank carries out the transactions through swift electronic data system and the transfer costs are not very high.

Documents against payment (D/P)

Also known as cash against documents (CAD). The buyer takes possession of the goods only after payment. Although this method is not very popular, it is very safe and the costs amount to one pro mille. One can also make use of a 'documents against acceptance of a bill of exchange'. However, the bill of exchange is not commonly used in the European Union and it does not guarantee that the bill will be paid; it is less secure than the D/P.

Letter of Credit (LC)

The irrevocable LC is very often used at the beginning of a business relationship when the importer and exporter do not yet know each other very well. The LC is irrevocable and will always be paid. The costs are higher when compared to the D/P method, namely five pro mille. This method is widely used in the European Union when dealing with exporters from outside Europe.

Bank guarantee

The buyer's bank will present a bank guarantee for the amount of the invoice.

Cheques

Bank guaranteed cheques are generally no problem though cashing may take some time, up to six weeks. Not all personal cheques are accepted.

Payment on consignment basis

Payment on consignment basis is mostly used in the trade of perishable products, for example fresh fruit and vegetables. The products are sold at a predetermined price after a mutually appointed arbitrary person (General Super Intendance Company (GSC)) has controlled the quantity, quality and other aspects of the sold products at the moment of acceptance/sale. If the products do not meet the conditions as described in the contract, the contract is not valid and, depending on the conditions of the contract, prices are generally adjusted. An open account is used to make the payment 14 days after the acceptance/sale.

Terms of delivery, whether on CIF or FOB basis, form a subject for negotiation and arrangement between supplier and importer.

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.

5.5.3 Business practice

In general, the following steps are recommended when trying to establish business contacts.

Taking into consideration the complexity of the market, as described above, a new prospective exporter to The Netherlands or other EU countries should study information on potential markets from such sources as:

- his own national trade promotion organisations, associations, chambers of commerce, banks etc.;
- ITC;
- import promotion organisations such as CBI;
- reports published by the other (commercial) agencies.

Furthermore, the exporter should take out subscriptions to specialised trade magazines and collect information on products, prices and sizes.

The next step for an exporter who wishes to enter the EU market is to select potential trade partners. Names and addresses of relevant importing parties in The Netherlands can be found in Appendix 9. When the exporter has pre-selected a number of potential trade partners, the next step is to communicate by mail, e-mail, fax or phone. When corresponding by mail, documentation on both the company and the corresponding products and, if applicable, information on quality certificates, should be sent in English and in full detail. The qualities and possibilities of the company need to be clearly communicated, like the production capacity, processing facilities. It is not advisable to exaggerate the capacity. Most importing companies visit producers and exporters before placing orders, to get to know the business partner and to see for themselves the production and/or processing facilities and conditions.

The followed step that is recommended is visiting the markets. A business trip to The Netherlands/EU allows the exporter to establish direct and personal business contacts with the prospective partners. At the same time, it is possible to compare price, quality, and packaging in the market place.

One should also combine the visit with attending major trade fairs and visit the various distribution channels to see the product ranges on sale and prepare a list of prospective importers/buyers. In addition, studying the export regulations concerning your own country, (especially the tariff situation) and the import regulations for The Netherlands/EU, particularly with regard to the quality and the safety standards, are advisable.

Customs, habits and traditions are often problems which arise in business contacts, even after both partners have carried out sound preliminary investigations. Netherlands importers are careful in their selection of a supplier. Furthermore, they are characterised by a no-nonsense approach. In some cases this may lead to a culture shock for exporters from developing countries. The following list is a summary of points which can be the key to success when dealing with firms in the EU:

- *correspondence is important, since it is the presentation of your company and should be as correct, accurate and neat as possible;*
- *business comes first;*
- *consistency, punctuality, reliability and honesty are very important. Be honest and direct about delivery times, quality and production capacity. If necessary, the EU partner can offer probably assistance in order to improve your shortcomings either directly or through the assistance of a third party. It will increase your credibility and possibly allow for long-term export agreements;*
- *appointments are always made prior to any visit. Once an appointment is made it is final (in case of delay, inform the company as soon as possible).*

Exporters dealing with EU importers should be willing to adapt to importers' requirements. A survey run among importers in The Netherlands lists the following frequently encountered when doing business with exporters from developing countries (and appropriate actions):

bad communication with the supplier

- ☞ telephone and fax are indispensable; telex is hardly used any more in The Netherlands. E-mail and Internet are rapidly gaining popularity;

delayed replies

- ☞ answer any question as soon as possible, if not straight away, at least let the importer know you are working on the answer to his question;

late delivery

- ☞ make sure you can deliver on time, never exaggerate your capacity. In case of delay, inform promptly and state the reason;

product quality leaves a lot to be desired

- ☞ investigate product improvement possibilities if necessary, but never ship poorer quality goods than those demanded and agreed upon;

high exporters' margins

- ☞ adopt a positive attitude towards long-term relations instead of incidental exports, even if it leads to smaller margins. Quote realistic prices;

bad packaging

- ☞ research packaging problems (mutually) to reduce transportation costs and improve product quality and appearance;

violating exclusive rights clause in contract

☞ never try to breach your contract by selling to other trade partners.

You will find that you may lose both partners, since the market is highly organised.

5.6 Promotion

5.6.1 Trade fairs

Trade fairs are well known in Europe as an international promotional platform, as well as being a meeting point for traders. Participants are exporters, importers, wholesalers, selling and promotion organisations. Activities concentrate on specific potentially interested buyers/importers. Information in this respect may be obtained by contacting the European branch organisations (see Appendix 3).

The most important targets for the participating companies from developing countries are:

- establishing personal contacts with buyers;
- promotion of pumps and compressors;
- European market orientation.

The following fairs can be interesting to visit or participate:

Trade fair	Where?	When?	What?
Achema	Germany	every three years, 22 -27 May 2000	International meeting on chemical engineering and biotechnology exhibition.
AQUA-THERM	Germany	biennial, 28-31 March 2000	<i>Main product groups/sectors:</i> heating, installation materials, pumps, tubes, sanitary technology, tools.
BIEMH	Spain	biennial, 13-18 March 2000	<i>Main product groups/sectors:</i> machine tools, CAD/CAM, hydraulic and pneumatic instruments, assembly machines and instruments.
Eurochem	UK	every three years, 5-7 June 2001	<i>Main product groups/sectors:</i> control systems, drives, filtration, heat exchangers, motors, pipes, pumps.
ENKON	Germany	biennial, 24-26 November 1999	<i>Main product groups/sectors:</i> energy production, electrical energy supply, energy management, services, noise protection.

continued

Trade fair	Where?	When?	What?
Fluidtrans compomac	Italy	biennial, 8-11 March 2000	International exhibition of power transmission, drive and control equipment and engineering design.
Hannover Messe	Germany	biennial, 20-25 March 2000	<i>Main product groups/sectors:</i> factory equipment, tools, compressed air technology.
IFEST	Belgium	biennial, 24 -27 October 2000	International trade fair for environmental and safety technologies.
Machevo process equipment	The Netherlands	biennial, 9-13 October 2000	International exhibition for the chemical, petrochemical, oil and gas industries, for energy and environment technology.
Pumps & Valves	The Netherlands	biennial, 26-28 October 1999	Technological exhibition on pumps, valves, flanges, seals, accessories and services.

Please refer to Appendix 4, for the names and addresses of the organisers.

5.6.2 Trade press

The following are the main (inter)national trade magazines which can be relevant to exporters of pumps and compressors, who want to develop a better insight into EU markets:

Magazine	Country	Language	Frequency	Topics
<i>Antriebstechnik</i>	Germany	German	monthly edition	Construction, development and possibilities for transmissions and control
<i>IEN</i>	Belgium	English	9 times a year	Industrial engineering news
<i>Industriepumpen+ Kompressoren</i>	Germany	German	every three months	Technology of pumps and compressors
<i>MM</i>	Germany	German	weekly edition	Magazine for the industry

continued

Magazine	Country	Language	Frequency	Topics
<i>O + P - Ölhydraulik and Pneumatik</i>	Germany	German	monthly edition	Magazine for hydraulics and pneumatics
<i>Pumps and Systems</i>	UK	English	monthly edition	Development of pumps
<i>Pumps Magazine</i>	Belgium	Dutch and English	monthly edition	Belgian and Netherlands pump development
<i>Umwelt</i>	Germany	German	9 times a year, 2 special editions	A German engineering association for emission control, waste and water quality control
<i>VMT</i>	The Netherlands	Dutch	every two weeks	The Netherlands and food industry
<i>World Pumps</i>	UK	English	edition	International journal for pumps users

Please refer to Appendix 5, for the names and addresses of the publishers.

5.6.3 Assistance with market entry

Before approaching organisations abroad, an exporter should first check with the local trade promotion organisations, chambers of commerce and foreign representatives in his/her country whether the information required is readily available. There are a great many organisations in the EU and in other European countries which are important in the field of general representation, promotion and public relations activities for exporters from developing countries.

Import Promotion Organisations

In most EU countries, there are organisations which promote imports from developing countries through specific export promotion programmes. The services of Import Promotion Organisation can include:

- information:
 - statistics and publications about the national market
 - regular news bulletins
 - databases of importers
 - product market opportunities
- individual assistance:
 - management training
 - product testing/exhibitions
 - product adaptation services

- establishing contacts:
 - collective trade fair missions
 - selling missions.

Branch organisations / trade organisations

In most European countries, producers, wholesalers and sometimes retailers 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 which can be of assistance in entering the European Union market, can be found in Appendix 6 and Appendix 3 respectively.

5.7 Checklist

This checklist can be used to verify the subjects treated in the previous chapters:

- Check the European quality and grading standards for pumps and compressors (see Section 5.1).
- Conduct market research on pumps and compressors and your product in particular: market size; segmentation; imports; main competitors; consumption patterns and trends.
- Check that packaging, marking and labelling meet the requirements of legislation of your individual trading partners (see Section 5.2).
- Be aware of the importance of environmental measures and check the opportunities and threats linked to environmental topics (see Section 5.3).
- Check the tariff and non-tariff barriers for your products (see Section 5.4).
- Verify the conditions of contracts (see Section 5.5.1).
- Verify the payment methods used (see Section 5.5.2).
- Check the trade fairs that may be of interest for you (see Section 5.6.1).
- Study the business practices in The Netherlands and the EU (see Section 5.6.3).
- Most important: If necessary, see if you can adapt your product or production process to meet the requirements indicated above.

1 DETAILED IMPORT/EXPORT STATISTICS

This section lists Eurostat import statistics for the main product groups covered in this survey, both for The Netherlands and the EU. The three leading supplying countries are highlighted. It should be noted that some developing countries are among the three leading supplying countries. For the sake of clarity, all developing countries included are printed in italics.

IMPORTS

THE NETHERLANDS

Imports of pumps and compressors into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	695,765	35,537	785,190	43,654	710,584	45,951
Intra-EU	518,505	26,382	565,886	29,486	533,492	31,991
Developing countries	10,688	1,537	12,110	2,744	13,463	4,401
Top 3 suppliers						
Germany	251,395	10,358	258,478	10,591	229,231	11,253
United Kingdom	79,597	4,420	83,476	5,822	108,694	6,293
USA	70,290	3,687	74,440	4,253	72,131	4,187
<i>Developing countries</i>						
<i>China</i>	1,629	570	1,525	557	2,962	574
<i>Slovenia</i>	762	303	1,741	320	1,879	266
<i>India</i>	970	52	1,078	112	1,498	131
<i>South Korea</i>	784	34	1,405	210	1,474	128

Source: Eurostat (1998)

Total imports of pumps for liquids into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	417,450	21,601	433,721	24,516	398,482	27,441
Intra-EU	317,150	15,707	335,851	16,572	305,067	18,257
Developing countries	4,992	831	6,273	1,581	7,867	3,530
Top 3 suppliers						
Germany	173,299	6,840	173,176	6,296	153,956	7,106
USA	45,196	1,465	47,023	1,710	48,610	1,910
United Kingdom	33,661	1,659	38,183	2,000	41,635	1,753
<i>Developing countries</i>						
<i>China</i>	328	110	696	603	1,824	2,189
<i>Slovenia</i>	757	313	769	330	1,620	702
<i>India</i>	636	169	983	222	1,261	406
<i>Brazil</i>	307	39	239	106	556	46
<i>Malaysia</i>	400	46	596	106	488	83

Source: Eurostat (1998)

Imports of air or vacuum pumps and compressors into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	278,315	13,936	351,469	19,138	312,101	18,510
Intra-EU	201,355	10,675	230,035	12,914	228,425	13,734
Developing countries	5,695	706	5,838	1,163	5,596	871
Top 3 suppliers						
Germany	78,097	3,518	85,301	4,295	75,275	4,147
United Kingdom	45,936	2,028	45,294	2,253	67,059	2,434
Japan	9,939	280	25,606	1,258	24,880	1,372

continued

continued	1995		1996		1997	
	value	volume	value	volume	value	volume
<i>Developing countries</i>						
<i>South Korea</i>	482	12	1,091	184	1,184	102
<i>China</i>	1,302	489	829	333	1,138	444
<i>Liberia</i>	0	0	0	0	539	33
<i>Brazil</i>	34	1	766	67	507	43
<i>Algeria</i>	579	8	79	0	467	3
<i>Malaysia</i>	58	6	60	6	380	48
<i>Slovenia</i>	5	0	973	398	259	27
<i>India</i>	334	50	95	54	237	120
<i>Egypt</i>	806	2	51	3	184	1
<i>Thailand</i>	249	1	60	0	162	5

Source: Eurostat (1998)

Imports of pumps for dispensing fuel or lubricants into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	3,738	129	4,801	219	3,049	155
Intra-EU	3,028	78	4,048	182	1,632	80
Developing countries	123	9	90	11	60	6
Top 3 suppliers						
United Kingdom	574	15	1,038	24	1,104	40
USA	177	31	188	12	649	42
Switzerland	410	11	450	11	555	21
<i>Developing countries</i>						
<i>Turkey</i>	119	9	89	11	60	6

Source: Eurostat (1998)

Imports of pumps for use in civil aircraft and other into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	3,059	125	3,983	131	6,886	222
Intra-EU	2,434	110	3,064	100	5,346	78
Developing countries	3	0	5	0	358	112
Top 3 suppliers						
Sweden	560	40	1,306	28	3,357	9
United Kingdom	791	23	679	24	1,235	37
Switzerland	222	4	654	10	721	10
Developing countries						
<i>India</i>	0	0	0	0	358	112

Source: Eurostat (1998)

Imports of hand pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	4,149	505	9,456	1,288	6,718	2,430
Intra-EU	1,778	89	5,663	283	2,398	136
Developing countries	144	65	524	520	1,740	2,136
Top 3 suppliers						
USA	1,162	68	1,881	111	1,952	105
China	48	45	491	515	1,669	2,115
Germany	1,002	28	1,596	52	1,122	50
Developing countries						
<i>China</i>	48	45	491	515	1,669	2,115
<i>India</i>	14	1	4	1	46	18
<i>South Korea</i>	19	3	19	3	18	3

Source: Eurostat (1998)

**Imports of pumps for internal combustion piston engines into The Netherlands
value in US\$ thousand, volume in tonnes), 1995-1997**

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	72,165	1,601	73,651	1,440	61,518	1,308
Intra-EU	63,225	1,297	63,776	1,072	53,806	909
Developing countries	444	41	645	71	433	101
Top 3 suppliers						
Germany	50,399	848	52,294	616	45,278	539
Japan	6,188	214	6,300	219	4,806	199
Sweden	2,425	122	2,998	106	2,167	93
<i>Developing countries</i>						
<i>India</i>	137	32	406	62	318	92
<i>South Korea</i>	40	3	39	4	63	4
<i>Brazil</i>	21	1	0	0	23	0

Source: Eurostat (1998)

**Imports of concrete pumps into The Netherlands (value in US\$ thousand, volume in
tonnes), 1995-1997**

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	4,416	274	5,246	587	3,480	371
Intra-EU	4,396	258	4,415	552	3,480	371
Developing countries	10	1	810	34	0	0
Top 3 suppliers						
Germany	4,218	252	3,791	483	3,010	342
Italy	173	6	459	27	471	29

Source: Eurostat (1998)

Imports of reciprocating positive displacement pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	34,587	1,193	30,479	1,135	30,472	1,080
Intra-EU	26,373	755	21,158	727	19,007	602
Developing countries	26	3	118	26	176	11
Top 3 suppliers						
USA	5,737	166	8,240	305	10,045	334
Germany	16,956	456	12,235	343	9,185	218
Sweden	3,506	104	3,731	209	6,771	303
Developing countries						
<i>Croatia</i>	4	0	0	0	101	4
<i>Liberia</i>	0	0	0	0	17	1
<i>China</i>	5	1	35	3	14	1

Source: Eurostat (1998)

Imports of rotary positive displacement pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	33,523	887	29,464	930	28,160	1,635
Intra-EU	22,767	569	21,783	681	19,895	1,391
Developing countries	948	3	646	29	344	1
Top 3 suppliers						
Germany	13,564	348	12,411	372	10,833	1,080
United Kingdom	2,741	57	3,201	107	3,836	94
USA	3,465	116	3,498	72	3,684	106
Developing countries						
<i>Iran</i>	179	0	0	0	96	0
<i>Algeria</i>	103	0	43	0	68	0
<i>Ghana</i>	14	0	18	0	49	0
<i>Indonesia</i>	102	0	293	1	21	0
<i>Ivory Coast</i>	9	0	1	0	20	0
<i>China</i>	36	0	16	1	19	0

Source: Eurostat (1998)

Imports of centrifugal pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	75,848	5,249	92,516	6,734	79,221	7,974
Intra-EU	68,121	4,767	84,570	6,229	71,550	7,443
Developing countries	271	54	509	55	694	39
Top 3 suppliers						
Germany	33,175	2,224	39,319	2,502	33,093	2,623
United Kingdom	11,882	870	13,301	1,122	12,335	982
Italy	8,068	755	12,704	1,203	10,536	1,347
<i>Developing countries</i>						
<i>Libya</i>	0	0	0	0	231	1
<i>Brazil</i>	74	6	145	10	226	21
<i>Sri Lanka</i>	0	0	0	0	131	4

Source: Eurostat (1998)

Imports of pumps for liquids into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	24,715	1,446	25,410	1,562	29,926	1,864
Intra-EU	9,863	663	9,989	767	14,466	898
Developing countries	387	98	408	90	555	151
Top 3 suppliers						
USA	8,572	372	9,654	402	9,391	409
Belgium & Luxembourg	431	23	791	43	4,941	284
Germany	3,626	138	2,006	95	3,075	127
<i>Developing countries</i>						
<i>Turkey</i>	21	1	16	3	139	15
<i>Slovenia</i>	0	0	3	0	98	46
<i>China</i>	67	34	80	28	88	72
<i>Maldives</i>	0	0	0	0	84	6

Source: Eurostat (1998)

Imports of parts of pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	161,250	10,192	158,715	10,490	149,053	10,402
Intra-EU	115,165	7,121	117,388	5,979	113,487	6,349
Developing countries	2,637	557	2,519	745	3,508	973
Top 3 suppliers						
Germany	48,160	2,500	47,031	1,722	47,976	2,099
Italy	20,236	1,187	20,650	1,259	17,524	1,303
USA	21,044	476	17,868	549	17,061	594
Developing countries						
<i>Slovenia</i>	756	313	689	289	1,513	656
<i>India</i>	392	116	486	146	505	171
<i>Malaysia</i>	281	46	563	100	486	82
<i>Brazil</i>	172	32	76	96	307	25
<i>Slovakia</i>	12	2	0	0	202	6
<i>South Korea</i>	190	14	163	15	170	17
<i>Croatia</i>	30	5	56	0	138	3

Source: Eurostat (1998)

Imports of vacuum pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	25,791	943	48,063	1,962	30,912	1,359
Intra-EU	19,376	695	29,398	1,010	20,073	656
Developing countries	262	2	1,665	175	1,632	186
Top 3 suppliers						
Germany	12,212	365	16,783	443	9,713	308
United Kingdom	2,070	65	3,988	179	4,956	100
Switzerland	3,185	165	7,339	365	3,991	250

continued

continued	1995		1996		1997	
	value	volume	value	volume	value	volume
<i>Developing countries</i>						
<i>South Korea</i>	0	0	720	100	652	91
<i>Brazil</i>	32	1	684	61	388	32
<i>Malaysia</i>	0	0	4	0	292	41
<i>Thailand</i>	0	0	0	0	137	4
<i>China</i>	0	0	0	0	111	16

Source: Eurostat (1998)

Imports of hand- or foot-operated air pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	4,705	1,058	4,423	994	3,972	925
Intra-EU	1,971	360	2,015	340	1,684	278
Developing countries	1,184	471	503	293	967	463
Top 3 suppliers						
Germany	1,329	262	1,336	225	1,130	181
China	1,078	448	434	270	808	400
Taiwan	868	129	979	169	620	94
<i>Developing countries</i>						
<i>China</i>	1,078	448	434	270	808	400
<i>India</i>	0	0	36	18	139	59
<i>Pakistan</i>	41	7	33	5	17	4

Source: Eurostat (1998)

Imports of compressors for refrigerating equipment into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	34,222	2,186	35,129	3,245	32,675	4,047
Intra-EU	27,304	1,697	22,748	2,309	19,359	3,123
Developing countries	55	2	405	89	172	11
Top 3 suppliers						
Germany	9,830	537	9,838	1,067	9,528	1,316
Japan	2,113	117	6,989	430	7,672	421
USA	3,887	262	3,619	231	4,917	258
Developing countries						
<i>Mexico</i>	0	0	0	0	67	3
<i>China</i>	15	0	19	3	34	6
<i>Nigeria</i>	0	0	0	0	27	1

Source: Eurostat (1998)

Imports of air compressors into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	8,030	824	8,818	876	7,902	788
Intra-EU	7,525	667	8,460	835	7,624	759
Developing countries	1	2	163	9	36	6
Top 3 suppliers						
Belgium & Luxembourg	3,394	250	3,830	290	3,987	359
United Kingdom	2,734	255	3,474	342	2,860	316
Germany	541	40	549	82	379	21
Developing countries						
<i>Ghana</i>	0	0	0	0	35	6

Source: Eurostat (1998)

Imports of air pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	95,584	5,005	98,823	5,247	88,873	5,659
Intra-EU	67,257	4,129	63,641	4,041	69,610	4,791
Developing countries	1,596	133	713	94	1,215	156
Top 3 suppliers						
United Kingdom	19,124	1,039	15,890	1,054	25,205	1,645
Germany	22,976	1,031	20,206	771	20,923	619
France	5,746	321	8,646	533	7,400	509
<i>Developing countries</i>						
<i>Liberia</i>	0	0	0	0	539	33
<i>China</i>	121	23	264	41	182	22
<i>Algeria</i>	102	0	79	0	171	0
<i>South Korea</i>	433	10	0	0	92	4
<i>Malaysia</i>	36	4	11	1	80	7
<i>India</i>	312	49	44	35	76	58

Source: Eurostat (1998)

Imports of parts of air or vacuum pumps into The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	109,983	3,920	156,215	6,814	147,767	5,732
Intra-EU	77,922	3,127	103,774	4,379	110,074	4,127
Developing countries	2,597	96	2,390	503	1,574	49
Top 3 suppliers						
United Kingdom	13,834	368	18,363	501	33,776	347
Germany	31,209	1,283	36,590	1,707	33,602	1,702
Japan	4,805	94	13,515	704	13,239	761

continued

continued	1995		1996		1997	
	value	volume	value	volume	value	volume
<i>Developing countries</i>						
<i>South Korea</i>	49	2	58	7	438	7
<i>Algeria</i>	477	8	0	0	296	3
<i>Slovenia</i>	0	0	973	398	219	7
<i>Egypt</i>	787	2	1	0	183	1
<i>Brazil</i>	1	0	83	6	119	11

Source: Eurostat (1998)

EXPORTS

THE NETHERLANDS

Exports of pumps and compressors from The Netherlands (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total pumps and compressors	533,006	22,797	551,058	23,328	616,421	31,397
Intra-EU	275,223	14,290	309,171	15,035	335,133	18,534
Developing countries	144,119	4,173	119,588	3,978	138,253	6,404
Total compressors for liquids	351,506	14,609	348,169	13,421	342,758	16,886
Intra-EU	173,159	8,280	179,166	7,156	150,082	8,335
Developing countries	90,892	2,723	78,484	2,665	87,383	4,086
Total air/vacuum pumps and compressors	181,500	8,188	202,889	9,907	273,662	14,511
Intra-EU	102,064	6,010	130,005	7,879	185,051	10,199
Developing countries	53,227	1,450	41,104	1,313	50,870	2,318
Parts of pumps	172,810	6,587	177,349	5,438	156,462	6,078
Air pumps, air or other gas compressors	31,077	1,179	50,683	1,155	134,340	4,969
Parts of air or vacuum pumps	133,790	5,833	127,788	7,169	107,835	6,986
Centrifugal pumps	44,070	2,555	69,894	4,115	65,950	3,575
Reciprocating positive displacement pumps	30,360	990	30,040	788	36,705	1,323
Pumps for liquids	22,710	1,113	18,124	1,044	33,597	2,147
Rotary positive displacement pumps	21,511	843	22,818	1,144	21,063	994

continued

continued	1995		1996		1997	
	value	volume	value	volume	value	volume
Vacuum pumps	9,524	330	15,056	679	17,481	839
Pumps for internal combustion piston engines	22,077	758	17,280	471	15,725	466
Compressors for refrigerating equipment	5,041	398	6,450	334	11,066	1,024
Hand pumps	5,735	266	9,421	226	8,729	1,994
Air compressors	1,709	412	2,568	517	2,522	636
Pumps for use in civil aircraft and other	9,087	219	1,561	100	2,347	142
Pumps for dispensing fuel or lubricants	16,771	827	1,481	69	2,123	165
Hand- or foot-operated air pumps	359	36	345	53	418	57
Concrete pumps	6,374	451	201	26	57	2

Source: Eurostat (1998)

IMPORTS

EUROPEAN UNION

Imports of pumps and compressors into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	12,793,278	1,001,791	13,499,185	910,869	13,275,691	1,160,482
Intra-EU	9,320,192	765,180	9,669,096	655,184	9,343,164	885,788
Developing countries	410,505	61,171	450,635	58,318	459,509	65,339
Top 3 suppliers						
Germany	3,680,767	162,648	3,477,786	161,321	3,304,774	327,870
USA	1,169,813	67,459	1,366,418	77,664	1,524,886	83,644
France	1,226,964	167,029	1,380,741	78,513	1,364,767	93,875

continued

continued	1995		1996		1997	
	value	volume	value	volume	value	volume
<i>Developing countries</i>						
<i>Brazil</i>	125,489	14,348	114,800	9,884	112,645	9,176
<i>South Korea</i>	58,526	6,222	96,289	8,714	66,747	6,249
<i>Slovenia</i>	67,983	13,312	53,990	11,266	54,890	14,099
<i>Saudi Arabia</i>	18,932	122	39,236	128	45,887	244
<i>India</i>	28,107	2,870	30,504	3,424	42,502	3,991
<i>China</i>	31,044	10,657	28,591	10,471	38,245	13,132
<i>Turkey</i>	19,149	8,953	20,548	8,522	24,344	10,618

Source: Eurostat (1998)

Imports of pumps for liquids into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	7,586,516	495,101	7,873,635	417,751	7,738,524	482,046
Intra-EU	6,008,230	406,827	6,147,654	322,156	5,939,996	379,188
Developing countries	160,508	15,066	172,001	16,535	197,139	18,802
Top 3 suppliers						
Germany	2,756,040	93,559	2,594,258	92,670	2,479,078	116,164
France	801,950	136,123	861,681	45,502	858,207	56,529
USA	692,067	33,262	795,459	37,092	838,364	38,938
<i>Developing countries</i>						
<i>Brazil</i>	69,335	2,044	72,656	2,301	78,928	2,376
<i>India</i>	21,352	2,176	24,871	2,562	32,943	2,871
<i>Turkey</i>	7,214	759	9,133	830	11,567	1,292
<i>China</i>	8,034	5,034	8,776	5,469	11,491	6,170
<i>Slovenia</i>	13,223	2,317	12,531	2,398	11,231	2,418
<i>South Korea</i>	7,176	657	6,661	523	9,080	778

Source: Eurostat (1998)

Imports of air or vacuum pumps and compressors into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	5,206,763	506,690	5,625,550	493,118	5,537,167	678,436
Intra-EU	3,311,961	358,353	3,521,443	333,028	3,403,168	506,600
Developing countries	249,997	46,105	278,634	41,783	262,370	46,537
Top 3 suppliers						
Germany	924,727	69,089	883,529	68,651	825,697	211,706
Japan	744,779	33,438	759,888	39,093	726,372	41,905
USA	477,746	34,197	570,959	40,572	686,522	44,706
<i>Developing countries</i>						
<i>South Korea</i>	51,350	5,565	89,628	8,191	57,667	5,471
<i>Slovenia</i>	54,761	10,995	41,459	8,868	43,659	11,681
<i>Saudi Arabia</i>	12,904	74	31,409	59	40,334	214
<i>Brazil</i>	56,154	12,304	42,144	7,583	33,717	6,800
<i>China</i>	23,010	5,623	19,815	5,002	26,754	6,962

Source: Eurostat (1998)

Imports of pumps for dispensing fuel or lubricants into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	85,855	4,150	108,170	4,415	80,239	4,105
Intra-EU	77,348	3,568	98,711	3,792	69,596	3,472
Developing countries	672	61	720	84	396	26
Top 3 suppliers						
United Kingdom	24,909	1,237	41,065	1,449	27,866	1,277
Germany	13,287	574	14,353	620	14,639	691
Italy	9,218	604	10,766	654	9,484	604
<i>Developing countries</i>						
<i>Brazil</i>	277	27	181	21	237	13
<i>Turkey</i>	226	15	315	23	121	10
<i>China</i>	22	8	23	15	18	1

Source: Eurostat (1998)

Imports of pumps for use in civil aircraft and other into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	71,364	2,695	76,609	2,952	83,625	3,316
Intra-EU	46,675	2,080	52,556	2,317	57,271	2,558
Developing countries	1,082	77	816	37	1,145	134
Top 3 suppliers						
USA	15,853	270	13,508	266	14,134	288
Italy	12,765	852	16,134	1,237	13,049	1,083
United Kingdom	6,167	189	7,023	180	11,229	302
<i>Developing countries</i>						
<i>India</i>	26	6	244	22	393	116
<i>China</i>	98	7	14	1	174	10

Source: Eurostat (1998)

Imports of hand pumps into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	59,721	8,203	74,681	9,687	66,792	28,903
Intra-EU	42,419	2,745	54,485	4,009	47,300	23,343
Developing countries	3,642	3,762	3,745	3,759	3,949	3,781
Top 3 suppliers						
Germany	17,447	1,258	18,240	1,954	14,849	1,977
USA	6,302	444	9,179	634	9,091	829
United Kingdom	7,014	261	7,871	330	8,483	322
<i>Developing countries</i>						
<i>China</i>	3,277	3,666	3,306	3,693	3,127	3,615
<i>India</i>	120	52	100	30	327	107
<i>South Korea</i>	137	22	125	18	247	48
<i>South Africa</i>	12	1	21	0	77	4

Source: Eurostat (1998)

Imports of pumps for internal combustion piston engines into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	2,279,728	59,129	2,254,013	61,354	2,261,745	66,247
Intra-EU	1,917,666	46,507	1,864,063	47,904	1,804,325	50,396
Developing countries	82,948	2,916	82,545	3,161	96,908	3,640
Top 3 suppliers						
Germany	1,241,831	22,904	1,146,183	22,565	1,119,759	23,423
France	274,947	6,835	269,861	7,864	257,759	8,389
USA	94,139	3,610	116,913	4,002	153,603	5,014
<i>Developing countries</i>						
<i>Brazil</i>	55,696	1,187	54,138	1,309	59,550	1,274
<i>India</i>	11,923	563	15,536	824	20,934	1,063
<i>Argentina</i>	6,264	398	5,351	368	6,914	489
<i>South Korea</i>	4,524	512	3,255	386	5,034	503

Source: Eurostat (1998)

Imports of concrete pumps into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	26,102	2,434	27,569	2,997	22,247	17,814
Intra-EU	21,365	1,840	20,485	2,373	18,134	17,356
Developing countries	266	56	1,308	75	599	64
Top 3 suppliers						
Germany	13,745	1,025	13,175	1,447	11,290	16,497
Italy	4,543	485	4,988	612	4,735	538
USA	784	95	2,349	140	1,602	87
<i>Developing countries</i>						
<i>Croatia</i>	0	0	0	0	351	30
<i>Tunisia</i>	32	10	4	0	170	0

Source: Eurostat (1998)

Imports of reciprocating positive displacement pumps into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	535,581	17,703	517,008	18,531	486,929	17,694
Intra-EU	395,951	12,609	371,379	11,920	339,603	12,073
Developing countries	1,752	115	2,714	340	2,592	156
Top 3 suppliers						
Germany	238,887	7,144	225,940	6,446	204,443	6,598
USA	76,311	2,627	90,195	4,373	90,364	3,348
Italy	26,881	1,794	32,219	1,921	30,771	2,006
Developing countries						
<i>South Korea</i>	377	13	146	9	381	20
<i>UAE</i>	150	0	324	8	338	2
<i>Slovenia</i>	99	7	304	39	301	26
<i>China</i>	146	24	191	18	247	14
<i>India</i>	129	20	169	25	237	21

Source: Eurostat (1998)

Imports of rotary positive displacement pumps into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	648,536	26,427	674,046	29,102	681,109	33,728
Intra-EU	447,080	15,570	436,026	16,702	438,860	19,471
Developing countries	3,613	94	3,113	140	3,098	195
Top 3 suppliers						
Germany	255,150	8,162	224,131	7,578	210,427	9,447
USA	143,337	8,625	166,300	9,924	167,321	11,358
France	45,135	1,745	52,364	2,201	59,826	2,707
Developing countries						
<i>Saudi Arabia</i>	784	9	440	2	563	0
<i>Thailand</i>	34	1	279	9	480	18
<i>Taiwan</i>	431	30	446	46	385	24
<i>South Korea</i>	409	13	354	8	367	26
<i>Turkey</i>	419	16	146	6	301	23
<i>China</i>	150	20	144	39	176	58
<i>Indonesia</i>	104	0	294	1	144	10
<i>UAE</i>	68	8	110	2	141	25
<i>Brazil</i>	445	22	464	21	136	4
<i>India</i>	28	2	114	12	101	10

Source: Eurostat (1998)

Imports of centrifugal pumps into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	1,061,206	81,413	1,209,525	93,882	1,179,371	110,175
Intra-EU	958,858	75,218	1,099,728	87,584	1,058,703	102,274
Developing countries	10,695	1,404	14,310	1,522	15,008	1,741
Top 3 suppliers						
Germany	275,572	17,448	294,659	19,860	277,752	21,960
France	165,428	12,471	209,979	15,079	224,210	24,031
Denmark	148,351	11,305	174,588	14,351	157,920	14,261
<i>Developing countries</i>						
<i>Brazil</i>	839	42	4,389	139	3,380	174
<i>Slovenia</i>	3,731	427	3,515	409	2,620	386
<i>India</i>	582	111	1,019	423	1,764	561
<i>Libya</i>	0	0	36	1	1,695	2
<i>Mexico</i>	534	28	464	41	1,514	137
<i>China</i>	1,929	568	1,111	329	1,316	309

Source: Eurostat (1998)

Imports of other pumps for liquids into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	750,109	46,803	719,099	50,465	669,471	50,450
Intra-EU	484,898	33,360	440,490	37,043	427,365	37,074
Developing countries	18,597	2,106	16,929	1,543	18,393	1,332
Top 3 suppliers						
Italy	192,815	22,256	192,936	26,322	173,197	21,806
Germany	170,458	5,329	138,064	5,153	120,107	8,115
USA	113,937	5,239	123,689	5,555	117,327	6,379
<i>Developing countries</i>						
<i>Saudi Arabia</i>	4,710	29	3,458	1	4,222	11
<i>China</i>	1,127	494	1,331	429	2,643	573
<i>Slovenia</i>	3,575	673	3,193	530	1,712	145
<i>India</i>	1,789	253	508	45	1,610	57
<i>Turkey</i>	547	48	691	58	1,190	109
<i>South Africa</i>	430	44	796	97	948	158

Source: Eurostat (1998)

**Imports of parts of pumps into the EU (value in US\$ thousand, volume in tonnes),
1995-1997**

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	2,068,315	246,144	2,212,916	144,366	2,206,996	149,614
Intra-EU	1,615,969	213,330	1,709,731	108,512	1,678,840	111,171
Developing countries	37,241	4,475	45,803	5,874	55,051	7,733
Top 3 suppliers						
Germany	520,934	29,391	510,465	26,805	495,752	27,006
USA	211,490	10,780	239,813	10,290	243,760	9,546
France	244,937	112,677	263,911	18,112	240,611	18,692
Developing countries						
<i>Brazil</i>	11,606	738	10,758	700	14,756	861
<i>Turkey</i>	3,122	469	5,843	550	8,012	1,038
<i>India</i>	6,752	1,168	7,051	1,169	7,577	936
<i>Slovenia</i>	5,307	1,177	4,949	1,368	6,018	1,821
<i>Mexico</i>	1,028	141	3,356	447	4,097	520
<i>Slovakia</i>	2,282	310	2,530	375	3,776	651
<i>China</i>	1,007	221	2,550	913	3,476	1,556
<i>South Africa</i>	2,265	161	1,498	139	2,801	275
<i>South Korea</i>	1,218	81	838	61	1,905	128
<i>Malaysia</i>	925	131	1,741	233	1,362	201

Source: Eurostat (1998)

**Imports of vacuum pumps into the EU (value in US\$ thousand, volume in tonnes),
1995-1997**

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	391,580	13,955	452,441	16,558	399,021	16,795
Intra-EU	269,405	10,070	296,385	11,194	266,278	11,757
Developing countries	3,907	267	5,341	410	4,406	318
Top 3 suppliers						
Germany	147,112	4,655	151,341	4,821	121,725	4,717
Switzerland	47,184	1,754	61,488	2,202	50,627	2,075
USA	45,100	1,165	53,518	1,682	42,252	1,374
Developing countries						
<i>South Korea</i>	1,303	109	1,988	154	1,634	130
<i>Brazil</i>	276	16	853	67	499	38
<i>China</i>	779	84	659	101	471	63

Source: Eurostat (1998)

Imports of hand- or foot-operated pumps into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	48,727	8,293	50,489	8,358	46,116	8,812
Intra-EU	25,772	2,334	26,798	2,620	22,009	2,559
Developing countries	10,232	3,797	9,676	3,572	11,999	4,742
Top 3 suppliers						
China	9,382	3,631	8,504	3,283	10,876	4,357
Germany	13,478	692	12,309	800	9,338	743
Taiwan	8,653	1,864	9,526	1,814	7,896	1,241
Developing countries						
<i>China</i>	9,382	3,631	8,504	3,283	10,876	4,357
<i>India</i>	168	62	690	224	668	318
<i>Malaysia</i>	281	45	235	37	382	60

Source: Eurostat (1998)

Imports of compressors for refrigerating equipment into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	1,588,689	200,160	1,631,810	199,742	1,637,610	230,713
Intra-EU	786,251	124,084	747,351	118,087	745,635	142,224
Developing countries	129,829	26,200	125,600	21,031	88,124	20,147
Top 3 suppliers						
Japan	442,158	19,714	474,611	25,059	478,806	29,328
USA	164,284	16,992	217,764	21,374	269,514	24,596
Germany	219,143	33,324	204,446	31,901	193,967	33,685
Developing countries						
<i>Slovenia</i>	36,902	8,238	26,124	6,076	28,427	8,298
<i>South Korea</i>	36,929	4,556	54,983	5,497	22,349	2,278
<i>Brazil</i>	41,636	10,872	29,285	6,806	20,443	5,344
<i>Egypt</i>	19	6	393	118	4,943	1,765

Source: Eurostat (1998)

Imports of air compressors into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	201,098	46,960	184,041	17,865	163,787	18,280
Intra-EU	189,814	45,538	171,724	16,523	153,916	17,058
Developing countries	2,112	365	2,674	380	2,564	456
Top 3 suppliers						
Belgium & Luxembourg	79,458	5,032	68,171	4,913	63,327	4,107
Germany	38,478	2,773	32,755	2,644	32,537	4,584
United Kingdom	32,000	2,830	27,856	2,768	24,695	2,423
<i>Developing countries</i>						
<i>China</i>	364	52	739	105	1,285	178
<i>India</i>	452	133	436	116	635	177
<i>Saudi Arabia</i>	12	6	60	5	170	12

Source: Eurostat (1998)

Imports of air pumps into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	1,550,559	99,403	1,703,573	105,615	1,634,326	109,216
Intra-EU	996,573	69,748	1,108,825	73,387	1,083,180	78,977
Developing countries	49,949	4,693	90,080	6,343	95,390	7,396
Top 3 suppliers						
United Kingdom	194,833	14,002	199,754	14,037	241,055	15,315
Germany	269,088	12,416	243,505	11,142	235,810	16,301
France	148,803	6,898	240,489	10,389	232,380	10,118
<i>Developing countries</i>						
<i>Saudi Arabia</i>	10,636	22	29,306	18	39,178	173
<i>South Korea</i>	11,142	831	30,828	2,484	24,738	1,972
<i>China</i>	7,936	1,266	7,539	1,129	9,219	1,490
<i>Slovenia</i>	12,443	1,788	9,810	1,495	8,741	1,552

Source: Eurostat (1998)

Imports of parts of air pumps into the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total	1,426,109	137,919	1,603,196	144,980	1,656,308	294,620
Intra-EU	1,044,147	106,579	1,170,360	111,217	1,132,150	254,025
Developing countries	53,967	10,783	45,263	10,047	59,887	13,478
Top 3 suppliers						
Germany	237,430	15,229	239,173	17,343	232,320	151,676
Italy	207,629	42,153	307,183	42,068	227,874	48,570
USA	138,217	8,807	145,451	9,080	211,570	10,484
Developing countries						
<i>Brazil</i>	12,955	1,222	9,543	557	10,103	790
<i>Turkey</i>	8,123	7,297	7,523	7,040	9,220	8,319
<i>South Korea</i>	1,763	47	1,736	46	8,910	1,089
<i>India</i>	4,830	305	3,415	310	7,311	495
<i>Slovenia</i>	4,867	953	5,314	1,285	6,255	1,796
<i>China</i>	2,709	385	1,840	305	2,707	359
<i>Thailand</i>	1,189	124	1,224	115	1,923	128
<i>Oman</i>	129	6	73	1	1,805	7

Source: Eurostat (1998)

EXPORTS

THE EU

Exports of pumps and compressors from the EU (value in US\$ thousand, volume in tonnes), 1995-1997

	1995		1996		1997	
	value	volume	value	volume	value	volume
Total pumps and compressors	17,018,210	1,042,204	17,940,404	1,092,796	18,000,745	1,176,745
Intra-EU	9,470,543	595,114	9,841,349	599,614	9,801,568	654,416
Developing countries	3,232,946	199,804	3,539,155	218,506	3,502,676	236,378
Total compressors for liquids	10,316,231	496,166	10,994,890	520,593	10,848,253	547,854
Intra-EU	6,221,772	286,130	6,579,436	292,311	6,320,648	302,734
Developing countries	1,752,847	92,010	1,932,776	100,252	1,928,440	107,766
Total air/vacuum pumps and compressors	6,701,980	546,038	6,945,514	572,203	7,152,492	628,891
Intra-EU	3,248,771	308,984	3,261,913	307,303	3,480,920	351,682
Developing countries	1,480,100	107,794	1,606,379	118,254	1,574,236	128,612
Parts of pumps	2,470,089	126,336	2,693,449	118,438	2,627,662	122,736
Air pumps, air or other gas compressors	2,180,054	130,799	2,177,504	126,528	2,509,121	146,702
Pumps for internal combustion piston engines	2,405,032	55,929	2,430,560	57,318	2,427,924	65,138
Parts of air or vacuum pumps	2,102,816	124,203	2,309,765	142,371	2,309,687	157,781
Centrifugal pumps	1,980,123	133,010	2,251,035	149,963	2,203,786	159,101
Compressors for refrigerating equipment	1,333,374	232,524	1,369,640	243,332	1,353,733	262,384
Pumps for liquids	1,023,713	88,660	1,119,884	93,598	1,080,685	94,657
Rotary positive displacement pumps	1,041,443	33,912	1,063,335	35,549	1,074,780	38,084
Reciprocating positive displacement pumps	879,479	28,621	916,716	35,549	860,719	31,191
Vacuum pumps	772,166	25,545	804,109	26,184	694,197	26,247
Air compressors	251,756	28,888	243,264	30,261	228,652	30,986
Pumps for dispensing fuel or lubricants	184,461	8,427	169,383	7,921	216,249	10,717
Concrete pumps	159,979	10,691	160,604	11,250	146,842	11,884
Pumps for use in civil aircraft and other	98,596	4,908	109,291	6,520	138,424	8,492
Hand pumps	73,315	5,672	80,634	4,487	71,182	5,854
Hand- or foot-operated air pumps	61,814	4,079	41,233	3,527	57,101	4,791

Source: Eurostat (1998)

2 STANDARDS ORGANISATIONS

INTERNATIONAL

Council on Economic Priorities Accreditation Agency (CEPAA)

Address: 30 Irving Place, New York NY10003, USA
Telephone: +1 212 3587697
Fax: +1 212 3587723
E-mail: info@cepaa.org
Internet: <http://www.cepaa.org>

International Standardisation Institute (ISO)

Address: Rue de Varembe 1, P. O. Box 56, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 749 01 11
Telefax: +41 22 733 34 30
E-mail: central@isocs.iso.ch
Internet: <http://www.iso.ch>

EUROPEAN UNION

Comité Européen de Normalisation (CEN)

European Normalisation Committee

Address: Third countries Unit, Rue de Stassart 36, B-1050 Brussels, Belgium
Telephone: +32 2 550 08 11
Telefax: +32 2 550 08 19
E-mail: infodesk@cencelbel.be
Internet: <http://www.cennorm.be>

Comité Européen de Normalisation de Electrotechnique (CENELEC)

Address: Third countries Unit, Rue de Stassart 36, B-1050 Brussels, Belgium
Telephone: +32 2 519 68 71
Telefax: +32 2 519 69 19
E-mail: cenelec@cencelbel.be

SGS European Quality Certification Institute E.E.S.V.

Address: P.O. Box 200, 3200 AE Spijkenisse, The Netherlands
Telephone: (31) 181-693750
Telefax: (31) 181-693582
Email: sgs.ti.nl@sgsgroup.com
Internet: <http://www/sgs/nl>

BELGIUM

Institut Belge de Normalisation (IBN)

Address: Avenue de la Braban-onnaan 29, B-1000 Brussels, Belgium
Telephone: +32 2 734 92 05
Telefax: +32 2 733 42 64
E-mail: belgische.normen@ibn.be

FINLAND

Suomen standardisoimisliito r.y. (SFS)

Address: P. O. Box 116, 00241 Helsinki, Finland
Telephone: +358 9 149 93 31
Telefax: +358 9 146 49 25

FRANCE

Association Française de Normalisation (AFNOR)

Address: Tour Europe - Cedex 7, 92080 Paris la Défense, France
Telephone: +33 1 429 15 555
Telefax: +33 1 429 15 656

GERMANY

Deutsches Institut für Normung eV (DIN)

Address: Burggrafenstrasse 6-10, D-10787 Berlin, Germany
Telephone: +49 30 260 11
Telefax: +49 30 260 11 263
E-mail: briesenmeister@vertr.de
Internet: <http://www.din.de>

RAL, Deutsches Institut für Gütesicherung & Kennzeichnung

Address: Siegburger Strasse 39, D-53757 Sankt Augustin, Germany
Telephone: +49 2241 1605 23
Telefax: +49 2241 1605 11

GREECE

Hellenic Organisation for Standardisation

Address: 313 Acharnon, 1145 Athens, Greece
Telephone: +30 1 2280001
Telefax: +30 1 2025917

ITALY

Ente Nazionale Italiano di Unificazione (UNI)

Address: Via Battinotti Stassi 11, 20100 Milano, Italy
Telephone: +39 02 700 24 1
Telefax: +39 02 701 06 106
E-mail: presidenzi@uni.unicei.it

IRELAND

National standards Authority of Ireland (NSAI)

Address: Glasnevin, Dublin 9, Ireland
Telephone: +353 1 807 38 00
Telefax: +353 1 807 38 44

THE NETHERLANDS

Stichting Aboma+Keboma

EC-Certification sound production motor compressors

Address: P. O. Box 141, 6710 BC Ede, The Netherlands
Telephone: +31 318 631481
Telefax: +31 318 632013
E-mail: info@aboma.nl

Nederlands Normalisatie Instituut (NNI)

Netherlands Standardisation Institute

Address: P. O.Box 5059, 2600 GB Delft, The Netherlands
Telephone: +31 15 269 0390
Telefax: +31 15 269 0190
Internet: <http://www.nni.nl>

PORTUGAL

Instituto Portugues da Qualidade (IPQ)

Address: Rua Cá Avenida dos Três Vales, 2825 Monte de Caparica, Portugal
Telephone: +351 1 2948102
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SPAIN

Instituto Español Normalization y Certificacion (AENOR)

Address: Genova 6, 28004 Madrid, Spain
Telephone: +34 91 432 6000
Telefax: +34 91 310 4032
E-mail: informacion@aenor.es
Internet: <http://www.aenor.es>

SWEDEN

Standardiseringskommissionen i Sverige (SIS)

Address: P. O. Box 6455, 11382 Stockholm, Sweden
Telephone: +46 8 6103000
Telefax: +46 8 307757
E-mail: info@sis.se

UNITED KINGDOM

British Standards Institution (BSI)

Address: 389 Chiswick High Road, London W4 4IL, United Kingdom
Telephone: +44 171 6299000
Telefax: +44 171 9967400
Internet: <http://www.bsi.org.uk>

3 TRADE ASSOCIATIONS

AUSTRIA

Fachverband der Maschinen-und Stahlbauindustrie Österreichs

Address: P. O. Box 430, 1045 Wien, Austria
Telephone: +43 1 502 25 3479
Telefax: +43 1 505 10 20
E-mail: maschinen@fms.at
Internet: <http://www.fms.at>

BELGIUM

Fédération des Entreprises de l'Industrie des Fabrications Métalliques (FABRIMETAL)

Address: Diamanten Building, A. Reyerslaan 80, 1030 Brussels, Belgium
Telephone: +32 2 706 7800
Telefax: +32 2 706 7801
E-mail: info@fabrimetal.be
Internet: <http://www.fabrimetal.be>

DENMARK

Foreningen af Danske Pumpefabrikanter

Address: 28 Attemosevej, 2840 Holte, Denmark
Telephone: +45 45 80 08 31
Telefax: +45 45 80 39 42

FINLAND

Metalliteollisuuden Keskusliitto

Address: Eteläranta 10, 00130 Helsinki 13, Finland
Telephone: +35 8 91 92 31 372
Telefax: +35 8 96 24 462
Internet: <http://www.met.fi>

FRANCE

Association Française des Constructeurs de Pompes

Address: Maison de la Mécanique, 39-41 rue Louis Blanc,
92400 Courbevoie, France
Telephone: +33 1 47 17 62 98
Telefax: +33 1 47 17 63 00
E-mail: afirascp@club.internet.fr
Internet: <http://www.afir-afcp.org>

GERMANY

Fachgemeinschaft Pumpen im VDMA

Address: P. O. Box 710864, 60498 Frankfurt, Germany
Telephone: +49 6966 03 1281
Telefax: +49 6966 03 1690
Internet: <http://www.pu.vdma.org>

ITALY

Assopompe c/o Fast

Address: Piazzale Morandi 2, 20121 Milano, Italy
Telephone: +39 02 7601 5672
Telefax: +39 02 78 24 85
E-mail: fast@fast.mi.it
Internet: <http://www.fast.mi.it>

SWEDEN

Swedish Pump Suppliers Association

Address: P. O. Box 5510, 11845 Stockholm, Sweden
Telephone: +46 8 782 08 00
Telefax: +46 8 782 09 00
E-mail: swepump@vi.se
Internet: <http://www.vi.se>

SWITZERLAND

Verein Schweizerischer Maschinen-Industrieller

Address: P. O. Box 8032, Zurich, Switzerland
Telephone: +41 1384 4844
Telefax: +41 1384 4848
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Internet: <http://www.vsm.ch>

THE NETHERLANDS

Holland Pump Group

Address: P. O. Box 190, 2700 AD Zoetermeer, The Netherlands
Telephone: +31 79 353 1263
Telefax: +31 79 353 1365
E-mail: hpg@fme.nl
Internet: <http://www.fme.nl/frames/branches/hpg.html>

UNITED KINGDOM

British Pump Manufacturers' Association

Address: 6th Floor, The McLaren Building, 35 Dale End,
Birmingham, B4 7LN, United Kingdom
Telephone: +44 121 200 1299
Telefax: +44 121 200 1306
E-mail: inquiry@ppma.org.uk
Internet: <http://www.ppma.org.uk>

4 TRADE FAIR ORGANISERS

Achema

DECHEMA

Address: P. O. Box 150104, 60061 Frankfurt / Mainz, Germany
Telephone: +49 69 756 40
Telefax: +49 69 756 4201
E-mail: info@dechema.de
Internet: <http://www.dechema.de>

Aqua-Therm International

Wiener Messen & Congress GmbH

Address: Postfach 277, A-1071 Vienna, Austria
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Telefax: +43 1 72 7204 43
E-mail: info@messe.at
Internet: <http://www.messe.at>

BIEMH

Feria Internacional de Muestras de Bilbao

Address: P. O. Box 468, 48080 Bilbao, Spain
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Eurochem

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ENKON

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Internet: <http://www.nuernbergmesse.de>

Fluidtrans Compomac

Promexpo srl

Address: Via L. Soderini 25, 20146 Milan, Italy
Telephone: +39 02 472 431
Telefax: +39 02 423 6919
E-mail: promexpo@aol.it
Internet: <http://www.sieremostri.it>

Hannover Messe

Messegelände

Address: Deutsche Messe AG, Messegelände, 30521 Hannover, Germany
Telephone: +49 511 890
Telefax: +49 511 893 2626
E-mail: info@messe.de
Internet: <http://www.hannovermesse.de>

IFEST

Exhibition Centre Flanders Expo

Address: Maaltekouter 1, 9051 Gent, Belgium
Telephone: +32 9 241 9211
Telefax: +32 9 241 9495
E-mail: ifest@flandersexpo.be
Internet: <http://www.ifest.be>

Machevo Process Equipment

Koninklijke Nederlandse Jaarbeurs

Address: P. O. Box 8500, 3503 RM Utrecht, The Netherlands
Telephone: +31 30 295 59 11
Telefax: +31 30 295 03 79
E-mail: info@jaarbeursutrecht.nl
Internet: <http://www.jaarbeursutrecht.nl>

Pumps & Valves

Fairtec NV

Address: Autolei 337, 2160 Wommelgem, Belgium
Telephone: +32 3 354 08 80
Telefax: +32 3 354 08 10
E-mail: info@fairtec.com
Internet: <http://www.fairtec.com>

5 TRADE PRESS

Antriebstechnik

Vereinigte Fachverlage GmbH

Address: P. O. Box 4068, 55030 Mainz, Germany

Telephone: +49 6131 992 01

Telefax: +49 6131 992 100

IEN

Elsevier-Thomas Publication

Address: Rue Verte 216, 1030 Brussels, Belgium

Telephone: +32 2 240 26 11

Telefax: +32 2 245 77 40

Industriepumpen + Kompressoren

Vulkan-Verlag GmbH

Address: Hollestraße 1g, 45127 Essen, Germany

Telephone: +49 201 82002 0

Telefax: +49 201 82002 40

E-mail: helga-pelzer@t-online.de

MM

Vogel-Verlag

Address: Max Planck Straße 7/9, 97082 Würzburg, Germany

Telephone: +49 931 418 0

Telefax: +49 931 418 20 22

E-mail: MM@vogel-medien.de

Internet: <http://www.maschinenmarkt.de>

O+P-Ölhydraulik and Pneumatik

Vereinigte Fachverlage GmbH

Address: P. O. Box 4068, 55030 Mainz, Germany

Telephone: +49 6131 99 20

Telefax: +49 6131 99 21 00

Pumps Magazine

Mainpress NV

Address: Belcrownlaan 5, 2100 Antwerpen, Belgium

Telephone: +32 3 326 56 16

Telefax: +32 3 326 56 36

E-mail: mainpress@euronet.be

Internet: <http://www.plub.euronet.be/mainpress>

Umwelt

VDI-Verlag GmbH

Address: Heinrichstraße 24, P.O. Box 101022 Düsseldorf, Germany
Telephone: +49 211 6188 0
Telefax: +49 211 6103 414
E-mail: vertrieb@technikwissen.de

VMT

Keesing Noordvliet BV

Address: Postbus 325, 3990 GC Houten, The Netherlands
Telephone: +31 30 6358585
Telefax: +31 30 6358500
E-mail: VMT@keesing.nl
Internet: <http://www.noordervliet.nl>

World Pumps

Elsevier Advanced Technology

Address: P. O. Box 150, Kidlington, Oxford OX5 1AS, United Kingdom
Telephone: +44 1865 84 32 84
Telefax: +44 1865 84 39 73
Internet: <http://www.elsevier.nl>

6 TRADE PROMOTION ORGANISATIONS

INTERNATIONAL

International Trade Centre (ITC)

Address: Palais des Nations, P. O. Box 10, 1211 Geneva 10, Switzerland
Telephone: +41 22 7300111
Telefax: +41 22 7334439
E-mail: itcreg@intracen.org
Internet: <http://www.intracen.org>

AUSTRIA

Austrian Federal Economic Chamber

Address: Wiedner Hauptstrasse 63, P.O. Box 150, 1045 Vienna, Austria
Telephone: +43 1 501050
Telefax: +43 1 50206255
E-mail: hotline@wkoe.wk.or.at
Internet: http://www.wk.or.at/wk/aw/aw_intl/

DENMARK

DIPO, Danish Import Promotion Office for Products from Developing Countries

Address: Danish Chamber of Commerce, Børsen, 1217 Copenhagen K, Denmark
Telephone: +45 33 950500
Telefax: +45 33 325216
E-mail: dok@commerce.dk
Internet: <http://148.81.17.99/index.htm>

GERMANY

GTZ/PROTRADE, German Agency for Technical Cooperation

Address: Dag-Hammarskjöld-weg 1-5,
P. O. Box 5180, 65726 Eschborn, Germany
Telephone: +49 6196 790000
Telefax: +49 6196 797414
E-mail: postmaster@gtz.de
Internet: <http://www.gtz.de/home/english/index.html>

BfAI, Federal Office of Foreign Trade Information; offices in Berlin and Cologne

Address: Scharnhorststrasse 36, P. O. Box 650268, 13302 Berlin, Germany
Telephone: +49 30 2014 52 00
Telefax: +49 30 2014 52 04
and:
Address: Agrippastrasse 87-93, P. O. Box 100522, 50455 Cologne, Germany
Telephone: +49 221 205 70
Telefax: +49 221 205 72 12
E-mail: 106035.377@compuserve.com
Internet: http://www.bfai.com/home_b3.htm

ITALY

ICE, National Institute for Foreign Trade

Address: Via Liszt 21, P.O. Box 10057, 00144 Rome, Italy
Telephone: +39 06 59921
Telefax: +39 06 5964 7438
E-mail: coopint@ice.it
Internet: <http://www.ice.it>

THE NETHERLANDS

CBI, Centre for the Promotion of Imports from developing countries

Address: P. O. Box 30009, 3001 DA Rotterdam, The Netherlands
Telephone: +31 10 2013434
Telefax: +31 10 4114081
E-mail: cbi@cbi.nl
Internet: <http://www.cbi.nl>

NORWAY

Norad, Norwegian Agency for Development Co-operation

Address: Tolbugaten 31, P. O. Box 8034 Deo, Oslo, Norway
Telephone: +41 22 314400
Telefax: +41 22 314403
E-mail: postmottak@oslo.norad.telemax.no

SWEDEN

SIDA, Swedish International Development Co-operation Agency - Department for Infrastructure & Economic Co-operation

Address: Sveavägen 20, S-105 25 Stockholm, Sweden
Telephone: +46 8 6985000
Telefax: +46 8 6208864
E-mail: sida@sida.org.se
Internet: <http://www.sida.se>

SWITZERLAND

SIPPO, Swiss Import Promotion Programme

Address: Avenue de l'Avant-Poste 4, CH-1001 Lausanne, Switzerland
Telephone: +41 21 320 32 31
Telefax: +41 21 320 73 37
E-mail: mdarbre@osec.ch
Internet: <http://www.goldnet.ch/osec/>

7 OTHER USEFUL ADDRESSES

INTERNATIONAL

International Chamber of Commerce

Address: 38, cours Albert 1er, 75008 Paris, France
Telephone: +33 1 49532828
Telefax: +33 1 49532942
Internet: <http://www.worldchambers.com>

EUROPEAN UNION

European Commission

Address: Directorate General for External Relations, 200, Rue de la Loi,
1049 Brussels, Belgium
Telephone: +32 2 2991111
Telefax: +32 2 2969931
Internet: <http://europe.eu.int>

Eurostat

Statistical Bureau of European Union

Address: Data Shop, 2, Rue Jean Ingling, 1466 Luxembourg
Telephone: +352 43352251
Telefax: +352 43352221
E-mail: dslux@euroshop.datashop.lu
Internet: <http://europa.eu.int/eurostat.html>

BELGIUM

Association of European Chambers of Commerce and Industry

Address: Rue Archimède 5, P.O. Box 4B, 1040 Brussels, Belgium
Telephone: +32 2 231 07 15
Telefax: +32 2 230 00 38
E-mail: Eurocham@mail.interpac.be
Internet: <http://www.ecu-notes.org/atoz997/eurocham.html>

Commission of the European Communities DG XI - A - 2

Address: Rue de la Loi 200, 1049 Brussels, Belgium
Telephone: +32 2 2957755
Telefax: +32 2 2955684
E-mail: ecolabel@dg11.cec.be

GERMANY

Federal Statistical Office

Address: Gustav-Stresemann-Ring 11, D-65189 Wiesbaden, Germany
Telephone: +49 611 752405
Telefax: +49 611 753330
E-mail: auskunftdienst@stba.bund400.de

THE NETHERLANDS

Central Statistics Bureau (CBS)

Address: P. O. Box 4000, 2270 JM Voorburg, The Netherlands
Telephone: +31 70 3373800
Telefax: +31 70 3877429
E-mail: infoserve@cbs.nl

Centrale dienst voor In- en Uitvoer

Central Service for Imports and Exports

Address: P. O. Box 3003, 9700 RD Groningen, The Netherlands
Telephone: +31 50 5239111
Telefax: +31 50 5260698

Greenbuss®

CBI's Environment-Trade-Technology database

Address: P.O. Box 30009, 3001 DA Rotterdam, The Netherlands
Telephone: +31 10 2013434
Fax: +31 10 4114081
E-mail: cbi@cbi.nl
Internet: <http://www.cbi.nl>

Stichting Milieukeur

The Netherlands Competent Body for the EU Ecolabel and for the Milieukeur label

Address: Eisenhowerlaan 150, P.O. Box 17186,
2502 CD The Hague, The Netherlands
Telephone: +31 70 3586300
Telefax: +31 70 3502517
E-mail: milieukeur@milieukeur.nl
Internet: <http://www.milieukeur.nl>

Chamber of Commerce

Association of Chambers of Commerce in The Netherlands

Address: Watermolenlaan 1, 3447 GT Woerden, The Netherlands
Telephone: +31 348 426922
Telefax: +31 348-424368
E-mail: info@datbank.kvk.nl
Internet: <http://www.kvk.nl>

Chamber of Commerce Rotterdam

Address: Beursplein 37, P.O. Box 30025, 3011 DA Rotterdam, The Netherlands
Telephone: +31 10 4057777
Telefax: +31 10 4145754
E-mail: post@rotterdam.kvk.nl
Internet: <http://www.kvk.nl>

Economische Voorlichtingsdienst (EVD)

Netherlands Foreign Trade Agency

Address: Bezuidenhoutseweg 181, P. O. Box 20105,
2500 EC The Hague, The Netherlands

Telephone: +31 70 3798933

Telefax: +31 70 3797878

E-mail: evdvp@euronet.nl

Internet: <http://www.evd.nl>

Keuringsdienst van Waren

Health and Safety Standards Inspectorate for Health Protection

Address: P. O. Box 5406, 2280 HK Rijswijk, The Netherlands

Telephone: +31 70 3407911

Telefax: +31 70 3407834

Max Havelaar Foundation (Stichting Max Havelaar)

Address: Eisenhowerlaan 150, 2517 KP The Hague, The Netherlands

Telephone: +31 70 3586300

Telefax: +31 70 3502517

E-mail: icreg@euronet.nl

Internet: <http://www.maxhavelaar.nl>

Ministry of Finance

Import duties, tariffs, taxes and regulations

Address: Korte Voorhout 7, 2511 CW The Hague, The Netherlands

Telephone: +31 70 3428000

Telefax: +31 70 3766022

SDU Service Centre

Government Publications Office (Staatsdrukkerij)

Address: P. O. Box 20014, 2500 EA The Hague, The Netherlands

Telephone: +31 70 3789880

Telefax: +31 70 3789783

E-mail: sdu@sdu.nl

Internet: <http://www.sdu.nl>

The Netherlands Ministry of Housing, Spatial Planning and the Environment (VROM)

Provides information on environmental regulations

Address: P.O. Box 30945, 2500 GX The Hague, The Netherlands
Telephone: +31 70 3393939
Telefax: +31 70 3391296

The Netherlands Ministry of Public Health, Welfare and Sports (VWS)

Provides information on safety and health regulation

Address: P. O. Box 20350, 2500 EJ The Hague, The Netherlands
Telephone: +31 70 3407911
Telefax: +31 70 3407834
Internet: <http://www.minvws.nl>

8 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 (e.g. South Korea).

Afghanistan	Guatemala	Pakistan
Albania	Guinea	Palau Islands
Algeria	Guinea-Bissau	Palestinian Admin. Areas
Angola	Guyana	Panama
Anguilla	Haiti	Papua New Guinea
Antigua and Barbuda	Honduras	Paraguay
Argentina	India	Peru
Armenia	Indonesia	Philippines
Aruba	Iran	Rwanda
Azerbaijan	Iraq	São Tomé & Príncipe
Bahrain	Jamaica	Saudi Arabia
Bangladesh	Jordan	Senegal
Barbados	Kazakstan	Seychelles
Belize	Kenya	Sierra Leone
Benin	Kiribati	Slovenia
Bhutan	Korea, Rep. of	Solomon Islands
Bolivia	Korea, South	Somalia
Bosnia & Herzegovina	Kyrgyz Rep.	South Africa
Botswana	Laos	Sri Lanka
Brazil	Lebanon	St. Helena
Burkina Faso	Lesotho	St. Kitts-Nevis
Burundi	Liberia	St. Lucia
Cambodia	Libya	St. Vincent and Gren.
Cameroon	Macao	Sudan
Cape Verde	Macedonia	Surinam
Central African rep.	Madagascar	Swaziland
Chad	Malawi	Syria
Chile	Malaysia	Tajikistan
China	Maldives	Tanzania
Colombia	Mali	Thailand
Comoros	Malta	Timor
Congo	Marshall Islands	Togo
Cook Islands	Mauritania	Tokelau
Costa Rica	Mauritius	Tonga
Côte d'Ivoire	Mayotte	Trinidad & Tobago
Croatia	Mexico	Tunisia
Cuba	Micronesia, Fed. States of	Turkey
Djibouti	Moldova	Turkmenistan
Dominica	Mongolia	Turks & Caicos Islands
Dominican republic	Montserrat	Tuvalu
Ecuador	Morocco	Uganda
Egypt	Mozambique	Uruguay
El Salvador	Myanmar	Uzbekistan
Equatorial Guinea	Namibia	Vanuatu
Eritrea	Nauru	Venezuela
Ethiopia	Nepal	Vietnam
Fiji	Netherlands Antilles	Virgin Islands (UK)
French Polynesia	New Caledonia	Wallis & Futuna
Gabon	Nicaragua	Western Samoa
Gambia	Niger	Yemen
Georgia	Nigeria	Yugoslavia, Fed. Rep.
Ghana	Niue	Zaire
Gibraltar	Northern Marianas	Zambia
Grenada	Oman	Zimbabwe

9 LIST OF NETHERLANDS IMPORTERS

Flowserve BV

Manufacturer petrochemical centrifugal pumps

Address: P. O. Box 25, 4870 AA Etten-Leur, The Netherlands
Telephone: +31 76 502 82 00
Telefax: +31 76 502 84 87

Charles Goffin BV

Manufacturer measuring pumps

Address: P. O. Box 5184, 6802 ED Arnhem, The Netherlands
Telephone: +31 26 364 30 40
Telefax: +31 26 362 12 05

Delaval-Stork vof

Manufacturer high pressure pumps, centrifugal pumps

Address: P. O. Box 329, 7550 AH Hengelo, The Netherlands
Telephone: +31 74 240 20 00
Telefax: +31 74 240 20 07
E-mail: dlsvof@global.wxs.nl

Duijvelaar pompen

Manufacturer centrifugal, sewage and submersible pumps

Address: P. O. Box 28, 2400 AA Alphen a/d Rijn, The Netherlands
Telephone: +31 172 48 83 88
Telefax: +31 172 43 31 37
E-mail: dp@dp.nl
Internet: <http://www.dp.nl>

Enviro Tech Pumpsystems BV

Manufacturer centrifugal, piston and diaphragm pumps

Address: P. O. Box 249, 5900 AE Venlo, The Netherlands
Telephone: +31 77 389 52 00
Telefax: +31 77 382 48 44
E-mail: envirotech@envirotech.nl
Internet: <http://www.envirotech.nl>

IHC Holland NV

Manufacturer centrifugal pumps for dredgers

Address: P. O. Box 50, 2960 AA Kinderdijk, The Netherlands
Telephone: +31 78 691 09 11
Telefax: +31 78 691 04 39
E-mail: sales@partservices.ihcholland.com
Internet: <http://www.ihc.com>

Nijhuis pompen BV*Manufacturer self-priming centrifugal pumps*

Address: P. O. Box 102, 7100 AC Winterswijk, The Netherlands
Telephone: +31 543 54 74 74
Telefax: +31 543 54 74 75
E-mail: nijhuis@nijhuispompen.nl
Internet: <http://www.nijhuispompen.nl>

v.d. Zwan Pompen*Manufacturer all kinds of pumps*

Address: Oosteinde 28, 3466 LB Waarder, The Netherlands
Telephone: +31 348 50 16 98
Telefax: +31 348 50 23 72
E-mail: info@zp.nl
Internet: <http://www.zp.nl>

Vopo Pompen en Machinefabriek BV*Manufacturer low pressure water and propeller pumps*

Address: De Volger 2, 1483 GA De Rijp, The Netherlands
Telephone: +31 299 67 13 12
Telefax: +31 299 67 33 58
E-mail: vopo@vopo-pompen.nl

Arbez*Distributor gearwheel and screw pumps*

Address: P. O. Box 4, 3340 AA H. I. Ambacht, The Netherlands
Telephone: +31 78 612 72 88
Telefax: +31 78 612 04 50

Bakker & Co BV*Distributor high pressure plunger pumps and centrifugal pumps*

Address: P. O. Box 1235, 3330 CE Zwijndrecht, The Netherlands
Telephone: +31 78 610 16 66
Telefax: +31 78 610 04 62
E-mail: bakkerzw@wxs.nl
Internet: <http://www.bakker-co.nl>

Bernard Kin BV*Distributor hobby and garden pumps*

Address: Stedenbaan 11, 5121 DP Rijen, The Netherlands
Telephone: +31 161 24 40 00
Telefax: +31 161 24 40 10

Beta BV Alfa Laval Flow

Distributor dosage, peristaltic and diaphragm pumps

Address: P. O. Box 1227, 2280 CE Rijswijk, The Netherlands
Telephone: +31 70 3199 700
Telefax: +31 30 3199 790

Eekels/Samson BV

Distributor diaphragm pumps

Address: P. O. Box 210, 3750 GE Bunschoten, The Netherlands
Telephone: +31 33 299 19 50
Telefax: +31 33 298 42 02

Homa pompen BV

Manufacturer + Distributor centrifugal, sewage, submersible and slurry pumps

Address: P. O. Box 214, 4200 AE Gorinchem, The Netherlands
Telephone: +31 183 62 22 12
Telefax: +31 183 62 01 93
E-mail: homapompen@wxs.nl

ITT flygt BV

Distributor sewage pumps

Address: P. O. Box 1126, 3300 BC Dordrecht, The Netherlands
Telephone: +31 78 654 84 00
Telefax: +31 78 651 09 36

Kalteren BV

Distributor dosage, centrifugal and magnet coupled pumps

Address: Nieuwstraat 44-48, 6811 HX Arnhem, The Netherlands
Telephone: +31 26 445 25 41
Telefax: +31 26 445 14 02
E-mail: kalterenbv@wxs.nl

KSB

Manufacturer + distributor chemical, sewage, centrifugal and self-priming pumps

Address: P. O. Box 211, 1160 AE Zwanenburg, The Netherlands
Telephone: +31 20 407 98 00
Telefax: +31 20 407 98 02
E-mail: ksb@wxs.nl
Internet: <http://www.ksbgroup.com>

Kuyl & Rottinghuis BV

Distributor self-priming centrifugal pumps

Address: P. O. Box 9684, 3506 GR Utrecht, The Netherlands
Telephone: +31 30 261 00 34
Telefax: +31 30 262 33 14

Reko Industrial Equipment BV

Distributor centrifugal, sewage, magnet coupled pumps

Address: P. O. Box 41, 3250 AA Stellendam, The Netherlands
Telephone: +31 187 49 29 88
Telefax: +31 187 49 27 81
E-mail: info@reko.nl
Internet: <http://www.reko.com>

Landre en Merrem NV

Distributor pumps

Address: P. O. Box 63, 4130 EB Vianen, The Netherlands
Telephone: +31 347 32 93 29
Telefax: +31 347 32 92 20

Transmark Nederland BV

Distributor all kinds of pumps

Address: P. O. Box 1100, 1300 BC Almere, The Netherlands
Telephone: +31 36 538 73 87
Telefax: +31 36 538 73 00
E-mail: info.tin@transmark.nl

Van den Borne

Manufacturer high pressure cleaners, distributor all kinds of pumps

Address: P. O. Box 200, 5550 AE Valkenswaard, The Netherlands
Telephone: +31 40 201 68 66
Telefax: +31 40 201 79 27

Verder Vleuten

Distributor all kinds of pumps

Address: Utrechtseweg 4A, 3455 GG Vleuten, The Netherlands
Telephone: +31 30 677 92 11
Telefax: +31 30 677 14 02
E-mail: info@verder.nl
Internet: <http://www.verder.com>

Watson-Marlow BV

Distributor high flow peristaltic pumps

Address: P. O. Box 11138, 3004 EC Rotterdam, The Netherlands
Telephone: +31 10 462 16 88
Telefax: +31 10 462 34 86
E-mail: wmbv@worldonline.nl
Internet: <http://www.watson.marlow.com>

Berko Wijchen BV

Manufacturer, distributor, rental company screw and piston compressors

Address: P. O. Box 4, 6600 AA Wijchen, The Netherlands
Telephone: +31 24 641 11 11
Telefax: +31 24 642 15 72

Creemers Compressors

Manufacturer and distributor of screw and piston compressors

Address: P. O. Box 7054, 5605 JB Eindhoven, The Netherlands
Telephone: +31 40 251 65 21
Telefax: +31 40 252 88 28
E-mail: info@creemers.nl
Internet: <http://www.creemers.nl>

Gietart Machinefabriek en Handelmaatschappij BV

Manufacturer and distributor screw and piston compressors

Address: P. O. Box 3, 7550 AA Hengelo, The Netherlands
Telephone: +31 74 245 24 52
Telefax: +31 74 245 22 45
E-mail: info@gietart.nl
Internet: <http://www.gietart.nl>

GrassAir Compressoren BV

Manufacturer screw and piston compressors

Address: P. O. Box 316, 5340 AH Oss, The Netherlands
Telephone: +31 412 63 29 56
Telefax: +31 412 63 97 65

Man Rollo BV

Manufacturer screw and piston compressors

Address: P. O. Box 595, 2700 AN Zoetermeer, The Netherlands
Telephone: +31 79 368 36 41
Telefax: +31 79 361 49 02
E-mail: mail@manrollo.nl
Internet: <http://www.manrollo.nl>

Mechatechniek

Distributor compressors and water pumps

Address: P. O. Box 497, 2800 AL Gouda, The Netherlands
Telephone: +31 182 53 88 77
Telefax: +31 182 57 10 11
E-mail: email@mechatechniek.nl
Internet: <http://www.mechatechniek.nl>

Airtec*Distributor compressors*

Address: P. O. Box 234, 8160 AE Epe, The Netherlands
Telephone: +31 578 62 78 66
Telefax: +31 578 62 78 39
E-mail: airtecnl@euronet.nl

All-Fitt Benelux BV*Distributor screw and piston compressors*

Address: Herfordstraat 4, 7418 EX Deventer, The Netherlands
Telephone: +31 570 63 72 22
Telefax: +31 570 63 72 62
E-mail: info@allfitt.nl

Atlas Copco Compressors Benelux*Distributor screw and piston compressors*

Address: P. O. Box 200, 3330 AE Zwijndrecht, The Netherlands
Telephone: +31 78 623 02 30
Telefax: +31 78 610 06 70
E-mail: toolsaisnl@atlascopco.com
Internet: <http://www.atlascopco.com/tools>

Boge Kompressoren BV*Distributor screw and piston compressors*

Address: P.O. Box 33, 6710 BA Ede, The Netherlands
Telephone: +31 318 647 159
Telefax: +31 318 633 592
E-mail: info@boge.nl
Internet: <http://www.boge.nl>

Contimeta BV*Distributor stationary and portable compressors*

Address: P. O. Box 40200, 3504 AA Utrecht, The Netherlands
Telephone: +31 30 248 48 48
Telefax: +31 30 241 06 33
E-mail: info@contimeta.nl

Ecoair Kompressoren BV*Distributor portable screw compressors*

Address: P. O. Box 9, 4130 EA Vianen, The Netherlands
Telephone: +31 347 329 393
Telefax: +31 347 329 500
E-mail: info@ecokompressoren.nl

Econosto Nederland BV*Distributor measuring equipment*

Address: P. O. Box 8988, 3009 TJ Rotterdam, The Netherlands
Telephone: +31 10 284 11 00
Telefax: +31 10 284 13 11

Geveke Werktuigbouw BV*Distributor screw, piston, turbo and vane compressors*

Address: P. O. Box 820, 1000 AV Amsterdam, The Netherlands
Telephone: +31 20 582 91 11
Telefax: +31 20 686 16 04
E-mail: info@wtb.geveke.nl

NIBM Ned. Industrie- en Bouwmachines Maatschappij BV*Distributor and rental company portable and stationary screw compressors*

Address: P. O. Box 269, 2800 AG Gouda, The Netherlands
Telephone: +31 182 53 00 33
Telefax: +31 182 53 11 90
E-mail: nibm1@xs4all.nl

Itho BV*Distributor hydraulic components and cooling compressors*

Address: P. O. Box 21, 3100 AA Schiedam, The Netherlands
Telephone: +31 10 427 85 40
Telefax: +31 10 427 88 88
E-mail: info@itho.nl
Internet: <http://www.itho.nl>

Ravebo BV*Distributor compressed air products*

Address: P. O. Box 280, 3230 AG Brielle, The Netherlands
Telephone: +31 181 419 419
Telefax: +31 181 412 757
E-mail: emenro@wxs.nl

Rietschle BV*Distributor low pressure compressors*

Address: P. O. Box 391, 1380 AJ Weesp, The Netherlands
Telephone: +31 294 41 86 86
Telefax: +31 294 41 17 06
E-mail: info@rietschle.nl
Internet: <http://www.rietschle.nl>

Sputtechniek BV*Distributor diaphragm, piston compressors*

Address: P. O. Box 8600, 3009 AP Rotterdam, The Netherlands
Telephone: +31 10 451 23 22
Telefax: +31 10 458 83 34

Van Duijvendijk Rotterdam*Distributor air start compressors*

Address: Ophemertstraat 98, 3089 JE Rotterdam, The Netherlands
Telephone: +31 10 429 39 55
Telefax: +31 10 429 87 35

Van Eijle BV*Distributor piston compressors*

Address: P. O. Box 129, 3130 AC Vlaardingen, The Netherlands
Telephone: +31 10 248 56 30
Telefax: +31 10 248 56 35
E-mail: alg@vaneijle.nl
Internet: <http://www.vaneijle.nl>

Verolme Trade and Service*Distributor compressors*

Address: P. O. Box 9466, 3007 AL Rotterdam, The Netherlands
Telephone: +31 10 482 53 00
Telefax: +31 10 479 26 65
E-mail: info@v.m.ij.nl

Zeevenhooven BV*Distributor and rental company stationary compressors, vacuum compressors*

Address: P. O. Box 11255, 3004 EG Rotterdam, The Netherlands
Telephone: +31 10 488 98 99
Telefax: +31 10 488 98 80

Busch BV*Manufacturer and distributor screw vacuum pumps*

Address: P. O. Box 2091, 3440 DB Woerden, The Netherlands
Telephone: +31 348 41 79 00
Telefax: +31 348 42 29 39
E-mail: info@busch.nl
Internet: <http://www.busch.nl>

Leybold NV*Distributor vacuum pumps*

Address: P. O. Box 90, 3440 AB Woerden, The Netherlands
Telephone: +31 348 57 74 11
Telefax: +31 348 42 04 89
E-mail: hdewit@wirehub.nl
Internet: <http://www.leyboldcav.de>

Sterling Fluids System*Manufacturer liquid ring vacuum pumps*

Address: P. O. Box 27, 1940 AA Beverwijk, The Netherlands
Telephone: +31 251 26 32 32
Telefax: +31 251 22 63 09
E-mail: info@sihi.nl
Internet: <http://www.sihi.nl>

Speck pompen Nederland BV*Manufacturer vacuum pumps*

Address: P. O. Box 218, 6900 AE Zevenaar, The Netherlands
Telephone: +31 316 33 17 57
Telefax: +31 316 52 86 18
E-mail: speck@pompen@inter.nl.net
Internet: <http://www.speck.nl>

Watts Ocean*Distributor vacuum pumps*

Address: P. O. Box 98, 6960 AB Eerbeek, The Netherlands
Telephone: +31 313 65 90 28
Telefax: +31 313 65 20 73
E-mail: 113322,1667@compuserve.com
Internet: <http://www.watsregulator.com>

Van Wijk & Boerma Pompen BV*Manufacturer liquid ring vacuum pumps*

Address: P. O. Box 95, 9700 AB Groningen, The Netherlands
Telephone: +31 50 542 16 21
Telefax: +31 50 549 59 01
E-mail: wijkboerma@iaf.nl
Internet: <http://www.wijkboerma.nl>

DeMaCo*Distributor high vacuum pumps*

Address: W. M. Dudokweg 78, 1703 DC Heerhugowaard, The Netherlands
Telephone: +31 72 574 47 24
Telefax: +31 72 574 02 47
E-mail: info@demaco.nl
Internet: <http://www.demaco.nl>

Kuyl & Rottinghuis BV*Distributor vacuum pumps*

Address: P. O. Box 9684, 3506 GR Utrecht, The Netherlands
Telephone: +31 30 261 00 24
Telefax: +31 30 262 33 14
E-mail: info@krpompen.nl

10 HOMEPAGE USEFUL LINKS

<http://www.pu.vdma.org>

VDMA is a German trade association of pumps and compressors. Their web site provides information on the German machinery and plant manufacturing sector. Here you will find information about industries, supply sources, current issues, member list and services. (Language: German and English)

<http://www.pump.net>

Pump.net is a pump engineer's toolbox of information. When this site is complete it will be a huge database detailing all aspects of pump engineering, from water friction to pipe and fitting dimensions. It is provided as a free service to the industry and as a means of sharing information and findings between the many professionals in the pump fields. (Language: English)

<http://www.pumpworld.com>

Pump World is dedicated to the advancement of the pump industry on the World Wide Web through the use of Educational Tutorials. (Language: English)

<http://www.pump-zone.com>

Pump-zone is an internet site with information from the magazine "Pumps and Systems". Here you will find news, business addresses, pump chat, advertisement opportunities and links. (Language: English)

<http://www.pumps-directory.com>

A complete directory of pumps, gaskets and flow-measuring technology manufacturers. On this site you will find information and links to pump manufacturers world-wide . (Language: English)

<http://www.fabrimetal.be>

On this web site you will meet Fabrimetal and its sectors, activities, services, regions. This web site provides information on key figures, publication, news, and a list of members. (Language: Dutch, French, English)

<http://www.vsm.ch>

The Swiss Association of Machinery Manufacturers VSM is the association of the Swiss mechanical engineering, electrical and metal-working sector. The VSM gathers, stores and publishes facts, figures, news and reports that have a bearing on the sector. Members are supplied with this information in various forms and free of charge. (Language: Italian, French, English)



PUTS YOU IN TOUCH WITH THE MARKETS OF EUROPE

CBI is the Centre for the Promotion of Imports from developing countries, operating since 1971 within the policy framework set by the Netherlands Minister of Foreign Affairs and the Minister for Development Co-operation. CBI supports small and medium-sized enterprises (SMEs) and trade promotion organizations (TPOs) in developing countries, in their promotion of exports to the European Union.

CBI offers export marketing services

CBI export marketing services are based on up-to-date market information and training and are organized in the form of Integrated Export Promotion Programmes for SME exporters and Bilateral Co-operation Programmes with TPOs. Those seeking CBI marketing services should fill in CBI's exporter's company profile form and provide all relevant information, such as prices, terms and product information.

CBI market information includes

- CBI News Bulletin (10 times annually), containing market news and publication of offers;
- CBI guide "Exporting to the EU, The Netherlands as the gateway to Europe";
- Product market surveys for 70 product groups;
- Quick scans on environmental, social and health issues, for 20 product groups;
- Trade Documentation Centre;
- Manuals on subjects such as technical and environmental regulations; packaging; trade fair participation, etc.
- Greenbuss® database on European trade-related environmental policy and technology.

CBI training includes

- Orientation seminars on export planning / management, trade promotion / marketing, and trade fair participation;
- Management seminars for TPO staff on the organization of collective trade fair participation;
- Workshops in developing countries.

CBI Integrated Export Promotion Programmes

For five product groups/year consist of:

- Product market testing (Special Promotions) in the CBI Product Display Centre in Rotterdam;
- Product adaptation advice at the exporter's factory;
- Export marketing seminar;
- International trade fair participation in the EU.

Market entry services

- International trade fair participation in the EU (for selected fairs other than those which are part of Integrated Export Promotion Programmes);
- Consultancy for incoming missions;
- Support to outgoing buying missions;
- Individual assistance to visitors;
- Assistance to Trade and Marketing Centres.

CBI Bilateral Trade Co-operation includes

Trade co-operation agreements with TPOs in developing countries on:

- integrated export promotion;
- trade promotion;
- business information and communication;
- training;
- market entry services.

CBI Multilateral Co-operation

CBI co-operates with multilateral organizations (ITC/WTO) and European import promoting organizations (FORUM) to globalize trade promotion.

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

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