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## ENCLOSURES

1. **Organization charts**
  - Weir Group PLC
  - Weir Netherlands b.v.
  - Sales department Weir Netherlands b.v.
2. **Certificates**
4. **Reference list BEGEMANN PUMPS**
5. **Reference list ROTO-JET PUMPS**
6. **Reference list Service & Repair**

## 1. Corporate details

Company name : Weir Netherlands b.v.  
Address : Egtenrayseweg 9 - 5928 PH Venlo - The Netherlands  
P.O. Box 249 - 5900 AE Venlo - The Netherlands  
Phone : +31(0)77-3895200  
Fax : +31(0)77-3824844 (sales/general)  
+31(0)77-3824824 (purchase)  
+31(0)77-3870569 (board/management)  
E-mail : [weir@weir.nl](mailto:weir@weir.nl)  
Web Site : [www.weir.nl](http://www.weir.nl)  
Established : 1916  
Registration No. : 12032525  
Bankers : A.B.N. Amro - Amsterdam  
Account No. 57.94.24.588 / Account No. 48.78.96.254  
Post Office Giro : 1032899  
BTW/VAT No. : NL802996413B01  
Managing Director : C.J. de Koning  
Controller : H. Ittmann (Finance and Administration)  
Director : H. van Dijk (Marketing, Sales and Aftermarket)

Weir Netherlands b.v. has been approved by Lloyd's Register Quality Assurance Limited to:

- The quality management system standards: **NEN-ISO 9001:2000**.
- The safety management system standard; **VCA \* Veiligheids Checklist Aannemers Rev. 2000-03 (Safety Checklist Constructors)**. This safety management is relevant to the installation, repair and maintenance of pumping installations.

The company is also an official member of the American Petroleum Institute (API).

## 2. Company's principal business

The principal business is development, design, manufacturing, sales and service of centrifugal, piston and piston diaphragm pumps and pump systems under the trade names GEHO PUMPS and BEGEMANN PUMPS. The company also sells the patented high-pressure ROTO-JET pumps in Europe and the Middle and Far East.

## 3. Parent corporation

Weir Netherlands b.v. is part of the Weir Group PLC:  
149 Newlands Road, Cathcart, Glasgow G44 4EX, Scotland  
Phone: (44)141-6377111, fax: (44)141-6372221, website: [www.weir.co.uk](http://www.weir.co.uk)  
Chairman: Sir Robert Smith  
Chief Executive: Mark Selway

## 4. Annual turnover

Annual turnover for the last four financial years

2003	Euro 50,7 million
2002	Euro 38,4 million
2001	Euro 46,9 million
2000	Euro 34.3 million

90% of the annual turnover is exported worldwide: Europe: 56 %; North-America: 19 % and the rest of the world: 25 %.

## 5. Total number of personnel

Company employees : 280

Number of personnel by discipline

• management	: 3
• human resources	: 1,5
• sales/applications/after market/service	: 38
• design/calculation/documentation	: 29
• research & development	: 4
• materials management	: 12
• quality control	: 7
• production	: 83
• warehouse	: 11
• assembly (incl. welders)	: 28 (5)
• test department	: 7
• field service/installation engineers	: 9
• administration/ information	: 16
• project management & operations planning	: 13
• production planning & engineering calc.	: 11,5
• public relations	: 1
• others	: 2

Normal office hours : 8

Working days per week : 5

Production works 2 shifts : 6.00 - 14.30/ 14.30 - 23.00

Names of Unions represented: F.N.V.Bondgenoten/ De Unie / V.H.P. Metalektro

Working Agreement: C.A.O. Metaal Industrie

Number of man-days lost per year over the past five years due to strikes: none.

## 6. History

In brief, the history of Weir Netherlands b.v.:

1916: "Gebroeders HOlthuis" (brothers Holthuis) take over an old foundry

1929: Manufacturing of the first pumps under the name GEHO

1959: Manufacturing of the first contractor pumps, type ZD, the basis a specialised pump company

1963: Foundry closed, construction of new facilities, specialisation in pumps

- 1968: Development of first piston diaphragm pumps (90 kW) and start of export activities
- 1975: Production of 1100 kW piston diaphragm pump unit
- 1984: Inauguration of a complete new plant
- 1987: Russian order for 5 of world's biggest triplex piston diaphragm pumps.
- 1988: Introduction of new series hydraulically driven piston pumps
- 1989: World premiere of the high temperature diaphragm slurry pump
- 1991: Integration in Baker Hughes Pump Group (now EnviroTech Pumpsystems)
- 1992: Take over of Begemann Pompen b.v. in Helmond, the Netherlands, a manufacturing company of centrifugal pumps established in 1871.
- 1993: Integration of all activities of BEGEMANN PUMPS in Venlo
- 1994: October 1st, Take-over of EnviroTech Pumpsystems by the Weir Group PLC and change of company name in EnviroTech Pumpsystems Netherlands b.v.
- 1995: World's first high density, high pressure fly ash disposal pipeline, Australia
- 1998: Patented GEHO horizontal dropleg pumps for nickel autoclave feeding
- 1999: First GEHO piston diaphragm pumps with GEHOGRAPHICS supervisory control panel
- 2000: BEGEMANN PUMPS sales department becomes European sales office for the Weir Process Group ("one-stop-shop" for the BEGEMANN, Girdlestone and Weir Pumps for the worldwide oil and petrochemical market)
- 2000: Largest order ever for BEGEMANN PUMPS: more than 200 API 610, 8<sup>th</sup> edition pumps for the Bouali Sina Petrochemical Plant in Iran
- 2000: Introduction of single-acting hydraulic driven one-cylinder GEHO piston pump (type SHC)
- 2001: Supply of the largest piston diaphragm pump ever build to Sicartsa, Mexico for transport of iron concentrate slurry
- 2003: name change to Weir Netherlands b.v.
- 2003: Begemann sales department becomes sales office for Weir Clear Liquid, responsible for Benelux, Germany, Austria and Switzerland.

### 7. Product range

Weir Netherlands designs, manufactures, markets and services high quality centrifugal pumps and pumps for the transportation of a wide variety of slurries and sludge, ranging from dirty water to slurries with solids concentration up to 90%.

The **GEHO PUMPS product range** comprises:

- A range of **piston pumps** with accessories for the international construction industry. This equipment is used for lowering the ground water table and to remove water from construction sites, in order to allow excavation and construction work to be carried out under dry conditions.
- **Crankshaft and hydraulic driven piston pumps** and **crankshaft driven piston diaphragm pumps** for transportation of slurries and sludge in the mining industry, minerals processing industry, pipeline industry and waste treatment. These pumps handle abrasive, viscous and corrosive slurries and sludge with high temperatures, with up to 90% solids content and up to 120 mm particle size.

The **BEGEMANN PUMPS product range** comprises:

- centrifugal pumps for applications in the petroleum, petrochemical and other process industries
- axial flow propeller pumps for application in the salt and process industries (in horizontal and vertical execution)
- non-metallic pumps for the chemical industry

The **BEGEMANN API centrifugal pumps** are designed and supplied in different types:

- vertical in line and horizontal end/top and top/top (process) single stage centrifugal pumps
- vertical (single-stage and multi-stage) centrifugal pumps according API 610

The BEGEMANN product line is part of the Weir Clear Liquid division. The provider of end to end pumping solutions for major oil and gas, power generation, water and waste water, hydrocarbon processing and general industrial projects. Market leading brands include, next to BEGEMANN PUMPS: Weir, Girdlestone, Lewis, Floway, Wemco and Roto-Jet.

Being part of the Weir Clear Liquid division, BEGEMANN PUMPS can offer:

- a complete product range for the oil/petrochemical market: an API centrifugal pump for **ALL** HPI/CPI process plant applications
- centrifugal pumps for applications in the water and chemical markets
- full technical support throughout the supply cycle for pumps world-wide
- a fully integrated after market service for commissioning, spare parts and service

The **high-pressure ROTO-JET PUMPS** (manufactured by Weir Specialty Pumps, Salt Lake City, USA) are supplied for various applications, i.e.:

- boiler feed and desuperheating
- central cleaning systems, hydro-blast cleaning
- spraying systems

The pumps are available in 3 models for the chemical, petroleum and process industry, the oil and mining industry and the paper and pulp industry.

Enquiries/orders can be addressed to:

Weir Netherlands b.v. / Weir Clear Liquid , P.O. Box 249, 5900 AE Venlo, The Netherlands

Sales Manager: Mr. J.M. Schutte +31-77-3895219/+31 65066320, [jm.schutte@weir.nl](mailto:jm.schutte@weir.nl)

Application Manager: B. Haen: +31-77-3895205, [b.haen@weir.nl](mailto:b.haen@weir.nl)

### 8. Spare parts

Spare parts inquiries/orders can be addressed to:

**Weir Netherlands b.v.**, P.O. Box 249, 5900 AE Venlo, the Netherlands

- Mr. P. Denessen +31-77-3895295, email: [p.denessen@weir.nl](mailto:p.denessen@weir.nl) – BEGEMANN/ROTO-JET
- Mr. C. Drüsedau +31-77-3895216, email: [c.drusedau@weir.nl](mailto:c.drusedau@weir.nl) – BEGEMANN/ROTO-JET
- Mr. W. Liebrecht +31-77-3895237, email: [w.liebrecht@weir.nl](mailto:w.liebrecht@weir.nl) – GEHO PUMPS
- Mrs. A. van der Horst, +31-77-3895167, email: [a.horst@weir.nl](mailto:a.horst@weir.nl) – GEHO PUMPS
- Mrs. D. Lamberts +31-77-389268, email: [d.lamberts@weir.nl](mailto:d.lamberts@weir.nl) – both productlines

Spare parts are kept on stock in:

- Australia (GEHO PUMPS)
- Canada (GEHO PUMPS)
- The Netherlands (GEHO & BEGEMANN & ROTO-JET PUMPS)
- United States (GEHO PUMPS)
- South America (GEHO PUMPS)

### 9. Representative network

Weir Netherlands b.v. has an extensive network of representatives and distributors:

- **GEHO PUMPS** has agencies in: Argentina, Australia, Bolivia, Brazil, Canada, Chile, China, Colombia, Czech Republic, Denmark, Egypt, Finland, France, Greece, Hungary, India, Iran, Jamaica, Japan, Korea, Kuwait, Libanon, Pakistan, Peru, Philippines, Poland, Portugal, Romania, Saudi Arabia, Singapore, South Africa, Ukraine, UK, United Arab Emirates, USA.

- **BEGEMANN PUMPS** has agencies in: Argentina, Bahrein, Belgium, China, Colombia, Egypt, Ecuador, Finland, France, Germany, Greece, Indonesia, Iran, Israel, Italy, Japan, Korea, Kuwait, Malaysia, New Zealand, Nigeria, Norway, Oman, Philippines, Portugal, Qatar, Saudi Arabia, Singapore, Spain, Syria, Thailand, Turkey, United Arab Emirates and Venezuela.
- **ROTO-JET PUMPS** has representative agencies in the Middle East and Europe. For the UK, France and the Far East only for API Applications.

## 10. Area/facilities

Complete area: 47.300m<sup>2</sup>.

Buildings: 14.200m<sup>2</sup> (manufacturing 11.500m<sup>2</sup>, office facilities 2.700m<sup>2</sup>)

## 11. Production facilities

**Machine shop:** 95% is produced by Weir Netherlands b.v. The company has almost no subcontracting.

### Machining Equipment:

Centre Lathe			
Qty.	Fabricate/Type	Application Diam. x L	Power/kW
1	Cazeneuve HBY 590	φ 590 x 1000	11 kW
1	Boehring DM 550	φ 550 x 3000	18,5 kW
1	Ravensburg KD 46	φ 1300 x 4500	30 kW

Centre Lathe Teach-In			
Qty.	Fabricate/Type	Application Diam. x L	Power/kW
1	Padovani Labor 200 E	φ 400 x 1000	5,5 kW
2	Padovani Labor 255 E	φ 515 x 1500	11,5 kW
1	Padovani Labor 350 E	φ 810 x 1500	17,5 kW
2	Weiler E50	φ 570 x 2000	20 kW
1	Weiler E80	φ 800 x 2000	30 kW

Centre Lathe CNC			
Qty.	Fabricate/Type	Application Diam. x L	Power/kW
1	Montforts RNC 4	φ 300 x 600	18,5 kW
1	Montforts RNC 602	φ 360 x 600	30 kW
1	Montforts FNC 1000	φ 475 x 1000	60 kW
1	Montforts FNC 1068	φ 475 x 1000	54 kW

**Vertical Lathe CNC**

Qty.	Fabricate/Type	Application Diam. x H	Power/kW
1	Comau VLN-14	φ 1700 x 1250	59 kW
1	Webster/Bennet 48	φ 1220 x 635	49 kW

**Grinding Machine**

Qty.	Fabricate/Type	Application Diam. x L	Power/kW
1	Cincinnati 14P	Φ 380 x 2000	-
1	Kellenberger 1500 U	Φ 500 x 1500	-

**Thread-rolling Machine**

Qty.	Fabricate/Type	Application Diam. x L	Power/kW
1	ORT R24	Φ 50 x 180	-

**Balancing Machine**

Qty.	Fabricate/Type	Application Diam. x L	Power/kW
1	Schenck H30K	Φ 1260 x 1300 (max.weight 440 kg)	-

**Horizontal/Vertical Operation Centre**

Qty.	Fabricate/Type	Operation details	Power/kW
1	Burkhardt + Weber MC 120HV	<ul style="list-style-type: none"> <li>• 2 pallets 1000 x 1400 mm (5700 kg each)</li> <li>• 20-8000 rpm</li> <li>• workstroke x-y-z 2000 x 1250 x 1800 mm</li> <li>• max. diameter φ 2000 mm</li> <li>• 160 tools in warehouse</li> </ul>	50 kW (main motor)
1	SHW UFZ 42	<ul style="list-style-type: none"> <li>• workstroke x-y-z 1000 x 800 x 750 mm</li> <li>• tablesize 1100 x 840 mm</li> </ul>	18 kW

**Horizontal Milling/Drilling Machine CNC**

Qty.	Fabricate/Type	Workstroke x - y - z	Table Size	Power/kW
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## COMPANY PROFILE

Excellent  
Engineering  
Solutions



1	Scharmann FB 90	1200 x 1000 x 1400	1000 x 1200	10 kW
1	Scharmann Ecocut 1.1	2400 x 1600 x 1400	1250 x 1600	45 kW
1	Wotan Rapid 2	4500 x 1900 x 2000	2500 x 3000	20 kW



**Vertical Milling Machine Teach-In**

Qty.	Fabricate/Type	Workstroke x – y – z	Table Size	Power/kW
1	Vic Cinch-Mill	1050 x 500 x 530	1370 x 305	3,5 kW

**Vertical Milling Machine CNC**

Qty.	Fabricate/Type	Workstroke x - y - z	Table Size	Power/kW
2	Toss FNG 40	500 x 400 x 400	800 x 400	10 kW
1	Supermax YCM VMC 135	1350 x 700 x 700	1700 x 650	15 kW
1	Supermax YCM THV 180	1800 x 740 x 1132	2000 x 600	15 kW

**Drilling Machine**

Qty.	Fabricate/Type	Max. Dr. DIA	Table Size
1	MAS VR2	φ 25	780 x 1070
1	Irsasa RSH 32	φ 30	1300 x 650
1	Aba VLP 600	φ 28	760 x 400
1	Toss VO 50	φ 50	1800 x 950
1	Donau CNC Danummeric 440	φ 50	600 x 800

**Plane-Grinding Machine**

Qty.	Fabricate/Type	Workstroke	Table-size
1	Jacobson	400 x 200	400 x 200

**Sawing Machines**

Qty.	Fabricate/Type	Saw dimension
1	Mega 360 HA	360 x 360
1	Kasto HBA 360 Autm.	360 x 360
1	Bauer VG 450	450 x 490

**Key Way Slotting Machines**

Qty	Fabricate/Type	Width x stroke
1	Misal GS 200	22 x 200
1	WGW 36/360	25 x 325

**Building bay and crane data**

Bay dim. (m)	Type crane	Capacity	Height under hook	Electric or Manual
20	Demag	40 ton	10	Electric
20	Demag	20 ton	10	Electric
20	Demag	10 ton	10	Two units electric
15	Demag	6,3 ton	6 or 10	Ten units electric
15	Demag	2,3 ton	4	electric

In addition several smaller cranes are available.

**Welding Procedure Qualification Record (PQR)** - conform Lloyd's Register qualification registration system:

Process	Material Group	Thickness Range	Diameter Range	Qualification Code	No. of Qualified Welders
GTAW	P1	1.6 – 7.4 mm	≥ 21.3	ASME IX	5
GTAW	Group 1	3 – 7.4 mm	10.6 – 42.6	EN 288-3	2
GTAW	P8	1.6 – 7.4 mm	≥ 21.3	ASME IX	5
GTAW	Group 9	3 – 7.4 mm	10.6 – 42.6	EN 288-3	5
GMAW/ FCAW	P1 Group 2	4.8 – 30 mm	≥ 73	ASME 1X	5
GMAW/ FCAW	P1	4.8 – 200 mm	≥ 73	ASME 1X	5
GTAW	P1 Group 2	4.8 – 70 mm	≥ 21.3	ASME 1X	5

Baking oven at temperature 300°C (±10°C). Holding oven at temperature 25°C (+2°C/-8°C); hydro max. 60 %

**12. Engineering**

The Engineering Department is responsible for:

- Tailor made pump designs
- Pump material selection

- Drive systems selection
- Pump room layout

Various codes and standards are followed in the design:

<ul style="list-style-type: none"><li>• PED</li><li>• DIN/EN standards</li><li>• AD/Merkblätter</li><li>• IEC</li></ul>	<ul style="list-style-type: none"><li>• API 610 9th edition</li><li>• ASTM/ASME</li><li>• ISO</li></ul>	<ul style="list-style-type: none"><li>• BS 4082</li><li>• Shell DEP/ Exxon Basic Practice etc</li><li>• NFPA (general pump design)</li></ul>
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### Available CAD applications:

- 18 workstations Hicad
- 2 workstation CADdy
- 1 plotmanager for 1 laserprinter A3-A4 and 1 laserprinter A1-A2
- 2 Hicad viewers

### 13. Laboratory

- component testing
- material testing
- slurry testing
- field research
- field experience evaluation
- computer evaluation of test results

### 14. Test facility

#### 1500m<sup>2</sup> test facility

- 4 closed loop systems with tanks 80, 20, 10 and 2 m<sup>3</sup> for testing piston and piston diaphragm pumps, centrifugal pumps and ROTO-JET pumps
- piping work with swivel arms for easy suction and discharge pump connection
- tanks with mechanisms to create vacuum or overpressure
- low noise discharge control valves, motor actuated
- 1 closed loop systems NW1100 for testing propeller pumps
- 2 controlled level pits with adjustable height supports for testing vertical pumps
- 17 available test beds

#### Power supply

- high voltage 2, 3, 5 and 6kV, 500kW, 50Hz
- low voltage 400 and 500V, 300kW, 50Hz
- dc drives up 22, 75, 150 and 300kW
- diesel engine aggregate 1600kW with fluid coupling and gear-box with 3 output shafts
- 60Hz diesel/generator aggregate 60kW

#### Fixed test equipment

- magnetic inductive flow meters up to NW1100
- piezo-resistive pressure sensors up to 500bar
- digital power meters up to 2000kW

- torque measuring shafts up to 300kNm
- all field sensors connected to data-acquisition systems
- 2 control rooms

### Portable measurement equipment

- vibration analyzers B&K2548
- noise level meters B&K2236
- tachometers
- piezo-electric, special piezo-resistive and ceramic pressure sensors Kistler for high dynamic pressures measurements 1000bar with high accuracy at low adjusted ranges and for high temperature pressure measurements 500°C
- 16-channel data-acquisition systems HBM Spider8 with lap-top and printer
- 8-channel pressure, flow and speed measurement system for hydraulic driven pumps with digital oscilloscope and printer

### Testing

- performance test
- complete unit test
- NPSH test
- vibration test
- noise test
- electrical control panel test
- instrumentation test
- mechanical running test
- duration test
- internal inspection
- dimension check
- final wiring check after painting

### Non-destructive test equipment

- Dye penetrant (PT) Fabricate: Helling
- Magnetic particle (MT) Joch UM7 / 220 V.
- Ultrasonic (UT) USL 31 Krautkramer
- Radiographic (RT) Subcontracted by:RTD. Roosteren
- All relevant measurement instruments and standards for the execution of:
  - inspections of the manufacturing equipment to their relevant standards
  - calibrations of the manufacturing and testing measure instruments to the National Standards

## 15. Shipping and transport

### Shipping methods

- road transport
- air transport
- sea transport

### Shipping locations

- nearest port Rotterdam (150 km) or Antwerp (200 km)
- nearest airport Eindhoven (60 km), Düsseldorf, Germany (60 km) or Amsterdam (200 km)
- nearest railway/goods station Venlo (5 km)

## Maximum shipping capacities

Road	rail/sea
<ul style="list-style-type: none"> <li>• max. width 3.5 m</li> <li>• max. height 3.8 m</li> <li>• max. length 6.6 m</li> <li>• max. weight 50,000 kg</li> </ul>	<ul style="list-style-type: none"> <li>• max. width 2.5 m</li> <li>• max. height 2.3 m</li> <li>• max. length 12 m</li> <li>• max. weight 26,000 kg</li> </ul>

## 16. Service & Repair

Weir Netherlands b.v. has well qualified and experienced service engineers. The Service & Repair department is both locally and internationally engaged in the revision and repairs of BEGEMANN & ROTO-JET PUMPS and **all other makes of centrifugal pumps**.

The service activities include:

- international upgrading, revision, repair and commissioning of all makes of centrifugal pumps
- analyses and estimates on repairs for proper budgeting
- service engineering for design changes and problem solving
- autonomous spare parts manufacture reducing repair time
- computerized test stand for full performance testing
- service contracts for overhaul of plants

The after sales and service activities for GEHO PUMPS are mainly concentrated on installation and commissioning of new pumps and training of operators and maintenance crew. If a problem does arise, the customer service team is readily available, offering technical and administrative assistance throughout the world.

The Service & Repair department has furthermore the complete backup of the Weir Netherlands organization like quality assurance, quality control, engineering department and test facilities. This together with the facilities at our works will ensure that we can assist our customers in any possible field, if necessary during a 24 hours circle.

For service please contact: Mr. Peter Károly, Manager Service & Repair, phone (+31)77-3895169, fax (+31)77-3824844, Email: [p.karoly@weir.nl](mailto:p.karoly@weir.nl)

## 17. Safety Assurance System

Since July 23, 1998 Weir Netherlands has been awarded a VCA\* certificate. This stands for Safety Assurance System and is a guarantee to clients that service engineers of Weir Netherlands are familiar with necessary safety rules and regulations. Every service engineer has received safety training (i.e. how to handle in case of hazardous fluids). The Safety Assurance System has been assessed and approved by Lloyd's Register Quality Assurance Ltd. and is a continuation of the Total Quality Management of Weir Netherlands b.v.

## 18. Sub suppliers

Based on the data supplied by the Material Requisition Department, the Purchase Manager decides at which supplier respectively sub-contractor the order will be placed. With regard to sub-contractors he is limited to the list of approved sub-contractors. New sub-contractors in which this list not provides, will be evaluated by the Quality Organisation. The Quality Assurance

Manager decides to add or delete a sub-contractor or supplier to or from the approved vendor's list. Regular audits by the Quality Control Manager are conducted to evaluate quality and performance of the supplier or sub-contractor.

The Engineering Department is responsible for the specifications of required materials. The Quality Control Department will inspect against these specifications and is also responsible to prepare the quality requirements in a specific order to supplier or sub-contractor.

### References (International):

- EPN 400 Selection and evaluation sub-contractors
- EPN 401 Order procedure for goods and services required by Material Requisition Dept.
- EPN 402 Sub-contracting of work
- L 004 List of accepted sub-contractors

### Quality control of received goods:

Inspectors are responsible for checking products, measure- or production equipment. They carry out inspections in line with instructions, given to them in conformity with their job descriptions. Inspection will be certified by signing the relevant records and/or documents. Reporting of non-conformance occurs in conformity with the internal procedure note to the QC Manager. The information and names given below are examples. The company is not limited to this list.

### Type of work sub-contracting and typical sub-suppliers:

Hardening : Mamesta, Bodycote  
Chrome plating : DMI Holland  
Rubber Lining : Freudenberg, Merkel, Trelleborg  
Pipework : Roks Montage, HCG, Oostendorp  
Steelcasting : Dörrenberg, Bennink & Ten Cate, Grossmann, FWH, Junker  
Iron casting : Eickhoff, Hulvershorn, Sanders  
Forgings : Morandini, Stooss, Hammerwerk Erft, Skoda  
Mechanical seals: John Crane, Flowserve, Burgmann  
X-Ray : RTD

## 19. Quality Management System

Since 1983 Weir Netherlands maintains a Quality Management System. A Quality Assurance and Quality Control System that ensures design demands and requirements, which are agreed on with the customers will be met.

The policy regarding this Quality Management System is documented in:

- The Weir Quality Assurance Manual,
- Weir Procedure Notes (WPN's),
- Weir Norms (WN's), and
- Weir Instructions (WI's)

The Quality Management System is approved in 1993 by Lloyd's Register Quality Assurance and certified according the NEN-ISO 9001 requirements.

Within the Quality Management System, the Quality Department is responsible for executing tasks, which result from this system. We distinct the following activities:

- Quality Assurance: internal co-ordination of the Quality Management System and a further development and adjustment according to management and ISO 9001 guidelines,
- Quality Control: supervision regarding the functioning of the Quality Management System and the execution of described prescriptions and instructions.

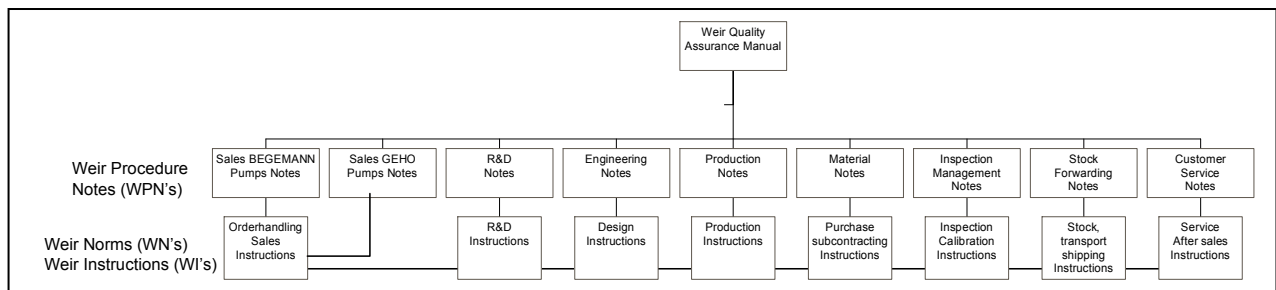
Other activities of the Quality Department are related to the products/processes. The most important activities are:

- Receiving goods, in-process and final inspections and tests,
- Control of inspection, measuring and test equipment,
- The drawn-up and control of inspection prescriptions,
- Control of quality records and non-conforming products,
- The release of products for delivery.

The qualification of controllers is as follows:

- DYE Penetrant level 2
- Magnetic level 2
- IK level 2

The organisation of procedures and instructions of the Weir Quality Management System:



A typical example of a quality control plan for BEGEMANN PUMPS:

INSPECTION PLAN PUMP						
Act No.	Activity	Procedure/ specification	Acceptance criteria	Inspection/ reports	Signed for compl.	Rev.
				Weir		
1)	Visual inspection castings	ASME V, Art.9	MSS-SP55	D		
2)	Magnetic particle- or dye penetrant inspection on pressure castings (only critical areas)	ASME VIII, Div.1, App. 6/8	ASME VIII, Div. 1, App. 7	D		
3)	Magnetic part-or liquid penetrant inspection on pressure welds/wrought (only plate edges)	ASME V., Art. 7/6	ASME VIII, Div.1, App.6/8	D		
4)	Radiographic examination on pressure welds (10%)	ASME 94 + 142	ASME VIII, Div. 1, UW52	D		
4a	Additional for Class I: Radiographic examination on pressure castings (only critical areas)	ASME 94 + 142	ASME VIII, Div. 1, UW52	D		
4b	Radiographic examination on pressure welds (100%)	ASME 94 + 142	ASME VIII, Div. 1, UW51	D		
5)	Hydrotest pressure parts	WN 3.01	Zero leakage / no pressure drop	D		
6)	Balancing of impeller	ISO 1940/1	G 2.5	D		
7)	Clearances/Thickness check	API 610, 8th ed.	API 610, 8th ed.	M		
8)	Run-out measurements	API 610, 8th ed.	API 610, 8th ed.	M		
9)	Shop inspection – Dimensional		Outline drawing	D		
10)	Shop inspection - Internal		API	M		
11)	Painting/preservation inspection	WN 19.01	WN 19.01,scheme	M		
12)	Packing/Shipping inspection	Order specification	Order specification	M		
13)	Final inspection	Order specification	Order specification	M		
14)	Document control	Order specification	Order specification	M		
15)	Release note	Order specification	Order specification	D		
TEST PLAN						
1.	Mechanical running test	WN 16.01	DEP.31.29.02.30-Gen.	D		
2.	Performance test	WN 16.01	DEP.31.29.02.30-Gen.	D		
3.	NPSH test	WN 16.01	DEP.31.29.02.30-Gen.	D		
4.	Vibration test	WN 16.01	DEP.31.29.02.30-Gen.	D		
5.	Noise test	WN 16.01	Noise datasheet	D		
MATERIAL CERTIFICATES PUMP UNIT						
1.	Pump casing	EN.10204-3.1.B	Material specification	D		
2.	Pump cover	EN.10204-3.1.B	Material specification	D		
3.	Impeller	EN.10204-3.1.B	Material specification	D		
4.	Diffuser	EN.10204-3.1.B	Material specification	D		
5.	Casing studs/nuts	EN.10204-3.1.B	Material specification	D		
6.	Drain piping	EN.10204-3.1.B	Material specification	D		
7.	Vent piping	EN.10204-3.1.B	Material specification	D		
8.	Seal piping	EN.10204-3.1.B	Material specification	D		
9.	Shaft (motor)	EN.10204-3.1.B	Material specification	D		
10.	Casing wearing	EN.10474-3.1.B	Material specification	D		
11.	Impeller wearing	EN.10474-3.1.B	Material specification	D		
H	Holdpoint	M	Manuf. Inspection or examination			
W	Witness random specified (production continues)	D	Document provided by Weir and/or inspection representative			
R	Review and acceptance of documents					



**20. ICT Information and Communication Technology**

The following hard- and software is active at Weir Netherlands b.v.:

Hardware	Software programs: Operating systems:	Software programs: Applications:
<ul style="list-style-type: none"> <li>• Unix Host: NCR Mainframe 4300 &amp; 4400</li> <li>• Unix Host: HP L9000</li> <li>• Laserprinters Type HP</li> <li>• IBM Intel servers</li> </ul>	<ul style="list-style-type: none"> <li>• Unix System 5 release 4 (AT&amp;T)</li> <li>• HP UX 11.x</li> <li>• Novell Netware (5.1)</li> <li>• Windows NT 4.0</li> <li>• Windows 2000</li> </ul>	<ul style="list-style-type: none"> <li>• Oracle ERP (Enterprise Resource Planning)</li> <li>• ISD 2 and 3D CAD-software</li> <li>• EXAPT CAM-software</li> <li>• MS-97 Suite incl. Excel 5.0 and Microsoft Access</li> <li>• Electro-Caddy</li> <li>• MS Project</li> <li>• Persmaster</li> </ul>

**21. Company experience**

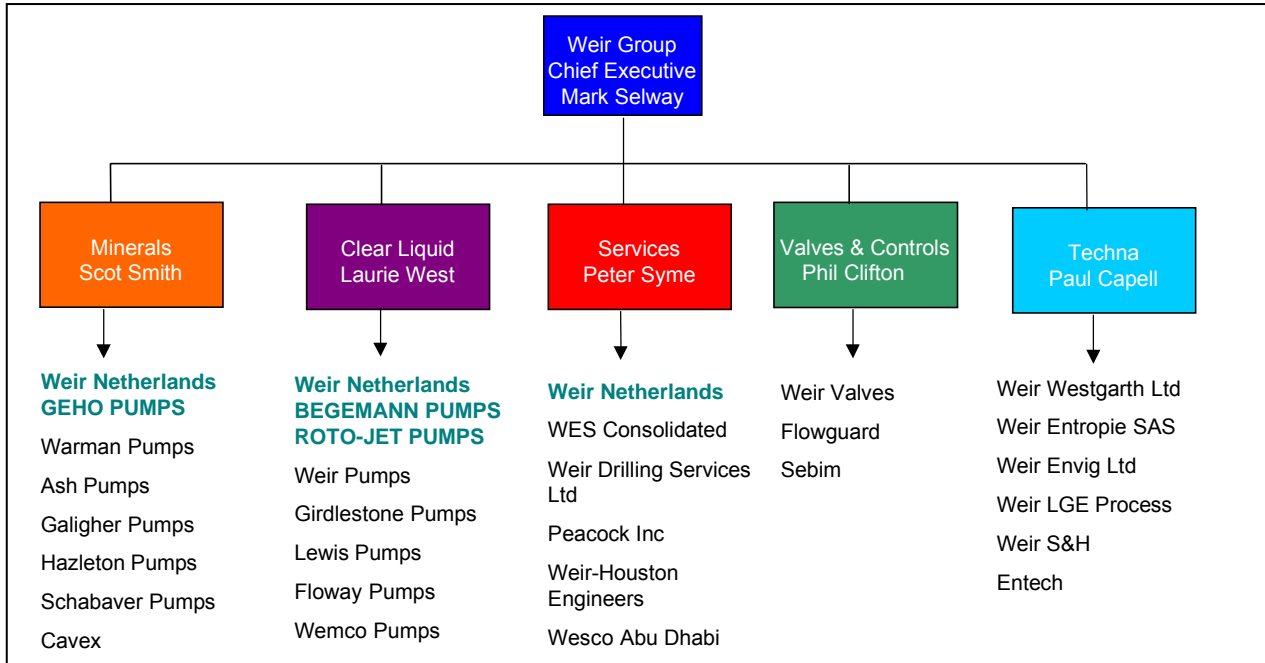
Reference lists of the BEGEMANN and ROTO-JET product line and service activities are enclosed:

# COMPANY PROFILE

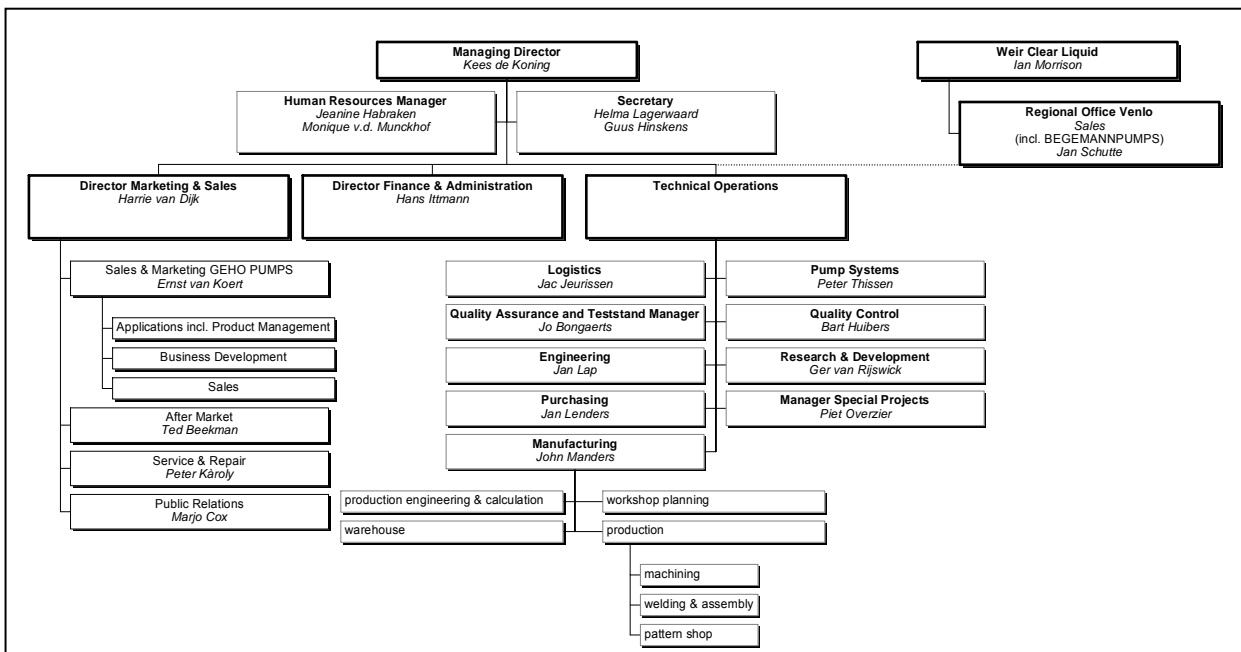


## Enclosure 1: Organization charts

### The Weir Group PLC



### Weir Netherlands b.v.

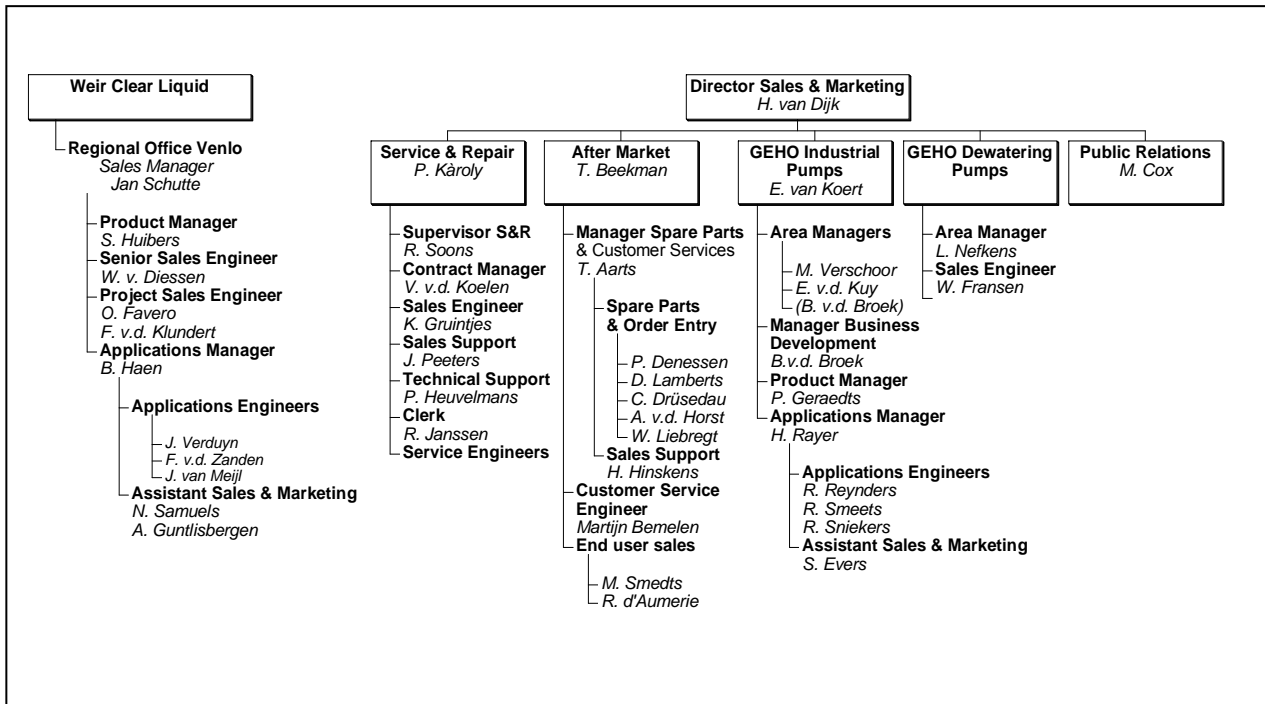


# COMPANY PROFILE

Excellent  
Engineering  
Solutions



## Sales Department Weir Netherlands b.v.



**Enclosure 2: certificates**

Weir Netherlands b.v. has been awarded the following certificates:

- Certificate of Approval ISO 9001:2000 – *certificate for the Quality Management System of Weir Netherlands b.v.*
- Certificate of Approval VCA \* Rev. 2000-03 (Safety Checklist Constructors): *a Dutch certificate for safety management systems for the installation, repair and maintenance of pumps and sewage treatment installations*
- Certificate of API Membership: *American Petroleum Institute*
- Certificate of Lloyd's Register - Maersk Oil and Gas as Harald West Dev. Project
- Certificate “Erkend Leerbedrijf SOM”: *a Dutch certificate of the National Organisation for Vocational Education – training in metal*
- Certificate “Erkend Leerbedrijf Kenniscentrum Handel”: *a Dutch certificate of the National Organisation for Vocational Education – training in trade*



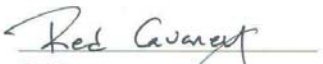
# COMPANY PROFILE

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## Weir Netherlands b.v.

is a 2004 Member of the American Petroleum Institute

  
Red Cavaney  
President and Chief Executive Officer

We keep America  
**going strong®**

	ENGINEERING SERVICES 29 Wellesley Road, Croydon CR0 2AJ Telephone 0181-681 4040 Fax 0181-681 6814 Telex 28636	Page 1 of 2 Document number PSD I-53243 Issue number 2
	DESIGN APPRAISAL DOCUMENT	
	Date 19 April 96 Quote this reference on all future communications IPSY45497/O/O-8220/KIT	

MAERSK OIL AND GAS AS HARALD WEST DEV. PROJECT  
ENVIRO TECH - UTILITY PUMPS  
TAG NOS. HWAA-P-5001/5002

1. The document listed below have been examined from Mechanical (Piping Systems) aspects, in conjunction with related correspondence and documentation, for the specified maximum operating conditions of 6000 rpm, 0.8 bar suction pressure and 124.1 bar discharge pressure. The design complies with the Danish Energy Agency Guidelines for Design etc., for Fixed Marine Installations, Danish Laws and to Maersk Oil & Gas As Technical Standards as far as safety is concerned and will be assigned an appraisal status as indicated, subject to the following comment.

1.1 The pressure testing and any other tests carried out on the pumps as required by the applicable codes/standards are to the attending Surveyor's satisfaction.

Plan No	Issued	Title	Appraisal Status
960.035.962	12/1/96	Cross Sectional RO(H)A 3x2	A
960.035.985	12/6/95	Cross Rotor APT ROA	A
		Parts List for RO(H)A 3x2/S-375 Pump (Item. No. 813.8001.010)	N

Appraisal Status Key

A = Approved, provided the installation is to Lloyd's Register's Surveyor's satisfaction and the remaining requirements of the Rules/Regulations/Codes/Standards are complied with.

N = Noted as supporting document for information.

Customer	Project name	Products
Akzo	Salt Plant	<ul style="list-style-type: none"> <li>Crystalliser pump (Q)</li> <li>Brine pumps (RK)</li> </ul>
Akzo Nobel Chemicals - Delfzijl	Melamine	Axial Flow Pump (Q)
Delamine B.V.	Delamine	Vertical Axial Flow Pump
DSM	Caprolactam Plant	Axial Flow Pumps
Anilina de Portugal	Anilina de Portugal	Axial flow pump (Q)
Dansk Salt - Denmark	Dansk Salt – Denmark	Axial flow pump (Q)
Didier Engineering	Nanjing China Caprolactam Plant	Pulsator
Dow Stade	Phenol/Bisphenol	Crystalliser pump (Q)
Enholco Pte. Ltd. Singapore	Asean Bintulu Feritlizer Sdn. - Malaysia	Axial flow pump (Q)
Evatherm, HPD	Courtaulds PLC (UK) ASS Plant Grimsby	Propeller pump (QCL) contin. recirculation
F.K.I. Srl. Italy	Crystallisation	Axial flow pumps (Q)
HPD Evatherm AG - Switzerland	Frima Zoutindustrie Harlingen	Axial flow pump (Q)
Messo Chemietechnik GmbH	Enka B.V. Ede	Axial flow pump (Q)
Nirma Limited - India	Nirma - Soda Ash Plant India	Axial flow pumps (Q)
Stork Friesland	Avebe TAK Eiwit Project	PC
Suiker Unie Dinteloord		<ul style="list-style-type: none"> <li>Sludge pumps (RK)</li> <li>Sludge pumps (PS)</li> <li>Sugar juice pumps (RK)</li> </ul>
Suiker Unie Roosendaal		<ul style="list-style-type: none"> <li>Suger juice pumps (A/RK)</li> </ul>
Sulzer Chemtech AG	Pimai - Thailand	Axial Flow Pump (Q)
Sulzer Escher Wyss	Yinkow China	Circulation Pump (QCL)
Sulzer Escher Wyss	Yincheng China	Circulation Pump (QCL)
Tata Chemicals - India	Tata Chemicals - India	Axial flow pump (Q)
Tsukishima Kikai - Japan	Ammonium Sulphite Plant Korea	Axial flow pump (Q)
Unimills Zwijndrecht		Vertical sump pumps (PCVN/AVN)
Unimills Zwijndrecht	Bleeklijn II/Stomer II	Vertical in-line heavy duty process pump (BS/PC)

<b>Customer</b>	<b>Project name</b>	<b>Products</b>
USF/HPD Procesos y Sistemas de Separación	Kemira Fredericia Denmark	Axial flow pump (Q)
USF/HPD Procesos y Sistemas de Separación	Sulfato Sodico, Burgos	Axial flow pump (Q)
British Salt	Crystalliser	Axial Flow Pumps
Chiyoda Yokohama	Urea Plants Kuwait, Japan, Saudi Arabia	Axial Flow Pumps
Va-Tech Wabag AG	Miaoli '99 China	Axial flow pumps (Q)
Wellman Process	NaCl Cryst. Project	QLP continuous

Customer	Project name	Products
Al Abdulkarim Trading	Saudi Aramco/Ras Tanura - Phase I	Vertical semi-submerged pumps (VS4)
Amec London	BP Grangemouth	<ul style="list-style-type: none"> <li>Horizontal end-suction pump (OH2)</li> <li>Vertical in-line pumps OH5a)</li> <li>Vertical semi-submerged pump (VS4)</li> </ul>
Amoco	P15/P15C	Vertical in-line heavy duty process pumps (BS) + skid
Amoco Norway	HOD-platform	Deepwell (utility)
Aramco	Berry	Deepwell pumps
Badger	Shell Whangarei	Vertical in-line heavy duty process pump
Badger	Total Vlissingen	Vertical sump pumps (PCVN)
Bechtel France SA	Reliance Petroleum Ltd. /Jamnagar Complex	<ul style="list-style-type: none"> <li>Horizontal end-suction pump (OH2)</li> <li>Vertical in-line pumps OH5a)</li> </ul>
Bechtel/Snamprogetti	Karachaganak Development Project	Horizontal end-suction pumps (OH2)
Bouygues Offshore St. Quentin	Mobil Oil Nigeria EDOP	<ul style="list-style-type: none"> <li>Sump pumps (AVN)</li> <li>Single stage API 610</li> <li>Process pump</li> </ul>
Brown & Root Ltd.	Amerada Hess A/S	<ul style="list-style-type: none"> <li>Vertical in-line close coupled pumps (BS)</li> <li>Horizontal single-stage centreline mounted API process pumps (PA)</li> </ul>
Chiyoda – Foster Wheeler Joint Venture	Oman LNG LLC	Vertical in-line close coupled pumps (BS)
Chiyoda Corporation - Japan	Thai Oil-HDS/Sriracha	Vertical in-line pumps (OH5a)
Chiyoda Corporation - Japan	Shell Seraya - Singapore	<ul style="list-style-type: none"> <li>Horizontal API top/top</li> <li>Vertical in-line API</li> </ul>
Chiyoda Corporation - Japan	Petromin Lube Oil Refinery Co./ Luberef II	Vertical in-line heavy duty API 610 process pump



Customer	Project name	Products
Chiyoda Corporation - Yokohama	Melaka Refining Co. Malaysia	Vertical in-line heavy duty process pump
Chiyoda Corporation - Yokohama	QAFAC MTBE/Methanol Qatar	Heavy duty vertical in-line pump API 610
Chiyoda Japan	Thai Oil	Vertical in-line heavy duty process pump (BS)
Chiyoda Japan	Thai Oil	Sump pumps (AVN)
Chiyoda Japan	Adgas Abu Dhabi	Vertical cooling water pumps
Comprimo Engineering Cons. RUWI – Oman	Japex Al-Khuwair Daleel Oil Field	Single stage API 610 process pumps
Conoco	Logger/Kotterfield	Deepwell and vertical in-line heavy duty process pumps
Costain Oil Gas & Process Ltd.	Yibal Butane Plant - Oman	Vertical in-line heavy duty process pump
EIMCO Process Equipment Co.	Maraven S.A. Venezuela	Vertical in-line heavy duty API 610 process pump
Enholco Ptd. Ltd. Singapore	Shell Port Dickson	Deepwell pumps
Esso Belgium	Esso Antwerp	Vertical in-line heavy duty
Esso Belgium	High Flash Tankfarm	Vertical in-line process pump (BS-C)
Esso Belgium	DAV II Debottlenecking	Fractionator overhead pump (PA)
Fluor Daniel	Shell Per+ project, the Netherlands	<ul style="list-style-type: none"> <li>Vertical in-line close coupled pumps (BS)</li> <li>Vertical line shaft sump pumps (PCVN/AVN)</li> </ul>
Fluor Daniel	Shell U.K. Stanlow	Cantilever pumps (RVV)
Fluor Daniel Inc. Irvine	Philippinas Shell Petroleum	Vertical in-line heavy duty process pumps (BS)
Foster Wheeler Energy Ltd.	Shell Stanlow	Vertical in-line heavy duty process pumps (BS) + skid
Foster Wheeler Energy Ltd.	Esso Standard Thailand	<ul style="list-style-type: none"> <li>Heavy duty chemical process pump (PCVN)</li> <li>Single stage API 610 process</li> </ul>

Customer	Project name	Products
		pump (PA) <ul style="list-style-type: none"> <li>Vertical in-line heavy duty process pumps (BS-C)</li> </ul>
Foster Wheeler Italiana	Sasref/Thermal Gasoil Unit GT Project	Vertical in-line pumps (OH5a)
Halliburton Brown & Root Ltd.	Shell Petroleum Development Company of Nigeria – EA Field Development	<ul style="list-style-type: none"> <li>Vertical in-line close coupled pumps (BS)</li> <li>Horizontal single-stage centreline mounted API process pumps (PA)</li> <li>Vertical line shaft pumps (PCVN)</li> </ul>
JGC-KBR Joint Venture	Malaysia LNG Tiga Plant project	Vertical in-line close coupled pumps (BS)
JGC Corporation - Yokohama	Thai Lube Base Oil Refinery – Sriracha	Heavy duty chemical process pump
JGC Japan	Shell Hong Kong/Tsing Yi Inst.	Vertical in-line pumps (BS)
John Brown	Exxon Eureka Meerhout P.P.	Medium duty (PA)
Kala Naft Ltd.	N.I.O.C./Bandar Abbas	<ul style="list-style-type: none"> <li>Vertical semi-submerged pump (VS4)</li> <li>Vertical suspended axial flow (VS3)</li> </ul>
Kayan General Trading & Contr.	Kayan, Kuwait	Sump pump
Kvaerner Eureka	Norsk Hydro-Njord Project	Vertical in-line heavy duty API 610 process pumps
Kvaerner John Brown	S.N.C. B.V./Phoenix Project	<ul style="list-style-type: none"> <li>Horizontal end-suction pump (OH2)</li> <li>Vertical in-line pumps (OH5a)</li> </ul>
Lummus Crest	Petroland Harlingen	Sump pumps (AVN)
M.W. Kellogg Company	Maraven S.A. Venezuela	Vertical in-line heavy duty API 610 process pump
Mannesmann Demag	Adco/Asab Gas Gathering & Injection Project	Vertical semi-submerged pumps (VS4)
Matthew Hall Engineering	Shell Gannet	Glycol booster pumps

Customer	Project name	Products
Matthew Hall Engineering	Top Sides Design Project	Flare k.o. drum pumps
Matthew Hall Engineering	Shell U.K. Expo	Oil metering pumps general transfer pumps (BS)
Mitsui Engineering & Shipbuilding	National Fertilizer Complex, Thailand	Vertical turbine sea water intake pumps
Mitsui Engineering & Shipbuilding	Kuwait National Petroleum Co. KSC	Horizontal API 610 process pump
NASR Petroleum Egypt	(same)	Vertical in-line duty API 610 process pumps
Nederlandse Aardolie Mij. B.V.	N.A.M. locatie Emmen	Vertical turbine pump
Overseas Bechtel Inc.	Maraven Refinery Expansion project, Venezuela	<ul style="list-style-type: none"> <li>• Vertical in-line close coupled pumps (BS)</li> <li>• Horizontal single stage centreline mounted API process pumps (PA)</li> <li>• Vertical turbine pumps (DG)</li> </ul>
Petrochemical Industries Design and Engineering Company (PIDEC)	N.P.C. of Iran – Bouali Sina Petrochemical company	<ul style="list-style-type: none"> <li>• Horizontal single stage centerline mounted API process pumps (PA)</li> <li>• Horizontal radially split 1 and 2 stage between bearing pumps</li> <li>• Submersible pumps</li> <li>• Metering pumps</li> </ul>
Shell Expro	Shell Expro U.K.	Vertical in-line heavy duty API 610 process pump
Shell Gabon	Rabi and Gamba Field Dev.	Vertical in-line heavy duty process pumps (BS) + skid
Shell Nederland Raffinaderij	Several	Vertical in-line heavy duty process pumps (BS)
Shell Nederland Verkoop Mij B.V.	Shell Nederland-Arnhem	Vertical in-line heavy duty API 610 process pump
Shell U.K. Ltd.	Shell U.K./Carillon Polymers	Vertical in-line heavy duty API 610 process pump

Customer	Project name	Products
Snamprogetti	ADNOC Yarn Yaphour Abu Dhabi U.A.E.	<ul style="list-style-type: none"> <li>• Sump pumps (AVN)</li> <li>• Process pumps (PA-PCVN)</li> </ul>
Stone & Webster Engineering	Shell Nederland Chemie – MARS project Moerdijk	Vertical in-line close coupled pumps (BS)
Stone & Webster Engineering	Saih Rawl Integrated Power Station, Oman	<ul style="list-style-type: none"> <li>• Vertical in-line close coupled pumps (BS)</li> <li>• Horizontal single stage API process pumps (PA)</li> <li>• Vertical line shaft sump process pumps (PCVN)</li> </ul>
Sunkyoung Engineering & Construction	Thai Aromatics/Map Ta Phut	Vertical in-line heavy duty API 610 process pump
TBM Consortium	Elf Exploration UK/ Elgin/Franklin Field Development Project	<ul style="list-style-type: none"> <li>• Vertical semi-submerged pumps (VS4)</li> <li>• Deepwell pumps</li> </ul>
Technil Abu Dhabi	Gasco Ruwais Facilities Upgrading Project – U.A.E.	<ul style="list-style-type: none"> <li>• Vertical in-line close coupled pumps (BS)</li> <li>• Vertical line shaft pumps (PCVN)</li> <li>• Horizontal non-metallic end-suction pumps (K)</li> </ul>
Technip	Al Jubail	Sump pumps
Thai Refinery Constr. Nld.	Rayong Refinery Co. Thailand	Vertical in-line duty heavy API 610 process pump
TSKJ - Servicos de Engenharia Limitada	Nigeria LNG/Bonny Island	Vertical in-line heavy duty API 610 process pump
TSKJ-Servicos de Engenharia Limitada	Nigeria LNG Expansion Project	Vertical in-line pumps (OH5a)
Union Oil	Helm Platform	Deepwell and vertical in-line heavy duty process pumps
Weir Pumps Ltd.	BP Eastern Through Area Project	Horizontal end-suction pump (OH2)
Weir Pumps Ltd.	Electricity of Vietnam	Horizontal end-suction pumps OH5a)
Weir Pumps Ltd.	Texaco North Sea U.K./ Captain Expansion Project	Horizontal end-suction pumps OH5a)

**Boiler feed**

CUSTOMER	SERVICE	PUMP TYPE/ CONSTRUCTION	LIQUID	FLOW (m3/h)	HEAD (m)	SPEED (rpm)	DATE
Air Liquide - Netherlands	boiler feed	ROA/S-600 (2)	deaerated BFW	31,0	463	3675	1996
Akzo Chemie-Netherlands	boiler feed	K11B ST STL	water (105/140 °C)	10,0	428	5015	1986
Borden Ltd.	boiler feed	ROB/S-484	demin water(198 °C)	13,6	109	2100	1988
Carnot	boiler feed	ROB/S-375 (2)	water (130 °C)	10,9	622	4100	1989
Carnot	boiler feed	ROB/S-266	water (134 °C)	5,7	622	4040	1989
Dow Chemicals	boiler feed	RGA/S-375	demin water	10,0	286	2950	1987
Exxon	boiler feed	ROA/S-484 (2)	Water (105 °C)	21,0	267	2950	1987
Fina Refinery	boiler feed	ROB/S-484 (2)	Water				1988
ICI Chemicals	boiler feed	ROA/D-600 (2)	demin water	51,0	445	2950	1989
ICI Ethylene Oxide	boiler feed	ROA/S-375 (2)	water + eth.ox.	7,7	304	2950	1989
ICI Plastics	boiler feed	ROA/S-375 (2)	demin water	13,6	457	2950	1983
Karlshamn-Sweden	boiler feed	ROA/D-600	water (130 °C)	66	500	3953	1991
Karlshamn-Sweden	boiler feed	ROA/D-600 diesel	water (130 °C)	66	500	3953	1993
Karlshamn-Sweden	boiler feed	ROA/D-600	water (130 °C)	66	500	3953	1994
Karlshamn-Sweden	boiler feed	R11/D-433	water (130 °C)	24	263	4112	1994
Tamoil-Italy	boiler feed	ROA 3*2/S-600 (2)	water	30	663		1993
J. Vilaseca S.A.	boiler feed	RGB/S-375	water	3,4	500	3710	1988
Pasminco Budel Zinc	boiler feed	RGB3*2/S-484	water (105 °C)	10-24	550	4030	1999

**NOX**

CUSTOMER	SERVICE	PUMP TYPE/ CONSTRUCTION	LIQUID	FLOW (m³/h)	HEAD (m)	SPEED (rpm)	DATE
Akzo Chemie-Netherlands	water injection	ROA/S-266 (2)	demin water	6,0	310	2950	1986
Balt. Gas & Electric	water injection	ROA/D-600 (2)	demin water	59,0	633	4400	1993
Coyote Springs	water injection	ROH/D-600 (2)	demin water	69,0	661	4656	1994
EGT/Castle Peak	water injection	ROH/D-600 (4)	demin water	75,0	661	4656	1993
INE	water injection	ROA/S-375	demin water	12,0	457	3550	1994
Israeli Electric	water injection	ROA/S-375 (2)	demin water	12,0	457	3550	1994
Midwest Power	water injection	ROA/S-600	demin water	36,0	663	4224	1993
MMWEC	water injection	ROA/D-600	demin water	59,0	633	4400	1993
Southern Co.	water injection	ROA/S-600 (3)	demin water	41,0	640	4400	1994
Teco	water injection	ROH/D-600	demin water	69,0	661	4656	1994
Thomassen Intl. - Netherlands	water injection	RGB/S-375 (3)	demin water	11,0	668	4335	1997
Transco	water injection	ROH/D-600 (4)	demin water	69,0	661	4656	1994
U.K. Medway	water injection	ROH/D-600 (4)	demin water	75,0	661	4656	1993

**Paper**

CUSTOMER	SERVICE	PUMP TYPE/ CONSTRUCTION	LIQUID	FLOW (m3/h)	HEAD (m)	SPEED (rpm)	DATE
Alier S.A.-France	shower	RGB 3*2/S-375 (2)	Water	69	400	3450	

Apura Germany	shower	R11 2*2/S-433	Process water	14,0	300		
Beukema -Netherlands	shower	R11 2*2/S-433 (2)	Water	18,0	400		
Jose Barneda Y Cia	shower	RGB/S-484	Water	18,0	422	3405	1976
Jose Barneda Y Cia	shower	RGB/S-600	Water	32,0	410	3346	1976
Chartham Papers	shower	RGB/S-375 (3)	Water	11,0	490	3650	1982/90
Crown v. Gelder-Neth.	shower	R11 2*2/D-433	Water	28,0	250	3940	1994
Davidson & Sons	shower	RGB/S-484 (2)	Water	18,2	350	3300	1990
Davidson & Sons	shower	RGB/S-375	Water	12,5	492	3900	1990
D.R.G.-United Kingdom	shower	RGB/S-484	Water	23,0	490	3800	1991
Elektroisola - Czech Rep.	shower	R11 2*2/D-433	Water	20	281	4000	2001
E.N. de Celulosas-Spain	shower	K11/S-252 (3)	Water	7,2	480	5175	1988
Fort Sterling	shower	RGB/S-375 (2)	Water	11,0	492	3650	1985
Fort Sterling	shower	RGB/S-484	Water	23,0	492	3850	1989
G. Leinfelder-Germany		ROH 3*2/D-600	Waste water	60,0	1000	5443	
Holder Pamac	shower	RGB/D-600	Water	38,0	413	3525	
Holmen Paper-Sweden	shower	RGB 2*2/S-375	Water				1995
Hyltebruks-Sweden	shower	RGB/D-600	Water	52,0	400	3560	1988
Hyltebruks-Sweden	shower	RGB/S-600	Water	40,0	660	4430	1988
Kappa Eskab.-Netherl.	shower	R11/S-252	Process water	4,5	250	3750	1994
Kimberly Clark	shower	RGB/D-600	Water	9,0	530	3750	1990
Kimberly Clark	shower	RGB/S-484 (4)	Water	47,7	274	2950	1990
Klippaus-Sweden	shower	RGB/S-375	Water	13,2	500	4000	1977

Klippaus-Sweden	shower	RGB/S-266	Water	3,6	700	4380	1977
La Montananesa S.A.	shower	RGB/S-375	Water	9,0	408	3470	1986
La Montananesa S.A.	shower	RGB/S-484	Water	21,6	408	3550	1988
Nycomed Imaging - Norway	shower	RGA/S-484 (5)	Water-salt-hydroc.	15	400	3370	2001
Papelera de Arzabalza	shower	RGB/S-375	Water	11,0	340	3000	1981
Papelera Riera S.A.	shower	RGB/S-266	Water	6,0	317	3346	1981
Pextrafil	shower	RGB/S-266	Water	6,5	612	3950	
Portals-United Kingdom	shower	RGB/S-375	Water	13,0	280	3500	1990
Portals-United Kingdom	shower	R11/S-433	Water	13,0	422	4200	1992
Portucel-Portugal	shower	ROB/S-375	Water	16,0	714	4417	
Portucel-Portugal	shower	ROH/S-375	Water	18,0	806	4910	
PWAG-Germany	shower	RGB 3*2/D-600 (2)	Process water	48,0	420		
PWAG-Germany	shower	R11 2*2/S-338	Process water	13,8	300		
Reed Aylesford	shower	RGB/S-600	Water	25,0	246	2850	
Reed Aylesford	shower	RGB/S-375	Water	9,0	457	3600	
Reed Aylesford	shower	RGB/S-484	Water	18,0	350	3300	
Reed Aylesford	shower	RGB/S-266	Water	5,7	527	3750	
Renova	shower	RGB/S-600	Water	22,5	367	3250	
Renova	shower	RGB/S-375	Water	9,0	418	3275	
Roermond Papier - Netherlands	shower	RGB/S-600	Water	40,0	386	3550	1997
Ruberoid Paper	shower	RGB/S-375	Water	13,0	563	3900	
Ruberoid Paper	shower	RGB/S-266	Water	7,0	563	3850	



Scott Page - Netherlands	shower	R11/S-433	Water	14,0	306	4278	1996
Soporcel-Portugal	shower	RGB/S-375	Water	13,0	704	4300	
St. Regis	shower	RGB/S-375 (2)	Water	12,5	528	3800	1988
St. Regis	shower	RGB/S-484 (3)	Water	18,2	352	3300	1988
St. Regis	boiler feed	ROA/D-600	Water	54,5	645	4560	1990
St. Regis	shower	K11/D-433	Water	23,0	290	4100	1990
St. Polten-Austria	shower	RGB 2*2/S-266	Water	9,0	700		
Triton Karton - Netherlands	shower	RGB/S-600 (2)	Water	25	366	3275	1996
Van Houtum Papier	shower	R11/S-252	Water	5,5	306	4145	1997
U.K. Paper	shower	R11/S-252 (3)	Water	6,0	352	4550	1989/91
United Papermill - Finland	shower	ROH/S-484	Water	20	818	4740	2001

### Petrochemical

CUSTOMER	SERVICE	PUMP TYPE/ CONSTRUCTION	LIQUID	FLOW (m3/h)	HEAD (m)	SPEED (rpm)	DATE
Adnoc - Abu Dhabi	feed pump	ROA 3*2/S-375 (2)	Water and oil	7,0	250		
Adnoc - Abu Dhabi	product pump	ROA 3*2/S-600 (4)	LPG	33,2	415	3643	1998
Air Liquide - Netherlands	boiler feed	ROA 3*2/S-600 (2)	Deaerated water	31,0	463,3	3675	1996
Air Liquide - Netherlands		ROA 3*2/D-600 (2)	MDEA solution	62,0	243	2925	1996
Air Liquide - Netherlands	boiler feed	ROA 3*2/D-600 (2)	Deaerated water	51,0	515	3955	1997
BASF-Belgium		RGB 3*2/S-266 (2)	Isobutane + amine	3,0	370		
BASF-Belgium		ROH 3*2/S-375 (2)	Process water	20	1100	5526	1996

Belgian Refining Co.	cleaning	ROA 3*2/S-266	Wash water	8,2	650	4205	1994
BP Chem.-Belgium	desuperheating	ROA 3*2/S-266	LP condensate	6,6	556	3860	1993
British Nuclear Fuels	hydraulic service	ROH 3*2/S-375 (3)	Water and oil	9,0	949	4810	1983
British Nuclear Fuels	hydraulic service	RGB 3*2/S-266 (3)	Water and oil	5,7	492	4100	1980
British Nuclear Fuels		K11B ST STL (6)	Dye solvent	2-10	100-400	VAR	1989
Cabot Carbon	Water injection	RGB 3*2/D-600 (3)	Water	29,5	240	2890	1987
Cargill - Netherlands	Feed pump	ROA 3*2/S-600	Process water	25,0	291	2950	1997
Cargill - Netherlands	Feed pump	ROA 3*2/S-600	Process water	30,0	530	3954	1997
Corinth Refinery-Greece	loading pump	ROH 3*2/S-484	Dewaxed lube oil	35,0	756	4871	1995
D.S.M. Agro - Netherlands		ROA 3*2/S-600 (2)	Water (trac. NH3)	31,5	387	3412	1996
D.S.M. Elastomers - Netherlands	Feed pump	R11/S-475 (3)	Hexane	8,0	364	4531	1997
Dow Chem.-Netherlands		ROA 3*2/S-266	MEA solution	5,0	520	3644	1991
Dow Chem.-Netherlands		RGB 3*2/S-375	Demin. water	10,0	400	3275	1992
Dow Chem.-Netherlands		ROA 3*2/S-266	MEA solution	5,0	520	3644	1992
Dow Chem.-Netherlands		ROA 3*2/S-266	Cumene heavies	3,0	400		1991
Dow Chem.-Netherlands	injection	ROA 3*2/S-266 (2)	Condensate	3,6	438	3298	1995
Dow Chem.-Portugal	boiler feed	RGB 3*2/S-375	Water	9,8	528	3775	1991
Dow Chem.-Belgium		ROA 3*2/S-484	Hexane & P.E.	15,0	221	2600	1992
Dupont-Netherlands	Yield recovery	ROA 3*2/S-484 (2)	H2SO + water	10,0	130	2000	1987
Dupont - Spain	Mac feed	ROHA 3*2/S-375	60% Mac conc.	23,4	1250	5960	1994
Esso-Thailand	Water injection	ROA 3*2/S-266 (2)	Water	9,2	620	4205	
Exxon Chemicals	feed pump	K11C DI	Hexane				1989

Exxon Chemicals	seal liquid	K11C ST STL	Seal liquid	4,3	142	2915	1988
Exxon Chemicals	feed pump	ROA 3*2/D-600	Ester				1989
Exxon Chemicals	feed pump	ROA 3*2/S-266	HOF 190 C	5,5	729	4280	1987
Fina Refinery		ROH 3*2/S-484	LPG	20,5	993	5180	1989
Fina-Belgium		ROA 3*2/S-375 (2)	Ucarsol	4,0	128	1791	1991
Finaneste		ROA 3*2/S-266 (2)	Gasoline	7,5	268	2950	1989
Finaneste	water injection	ROA 3*2/S-375	Condensate	10,4	280	2750	1989
Finaneste	boiler feed	ROA 3*2/S-484 (2)	Water	11,8	268	2750	1990
Gist Brocades-Netherl.		K11 2*2/D-433	Demin. water	20,0	270		1987
Hoechst-Germany		ROH 3*2/S-484	Water + sulphate	35,0	820	4871	1991
Hoechst-Germany		RGB 3*2/S-266	Methylene chlor.	7,0	288	3000	1991
ICI Ethylene Plant - Australia	reactor feed	ROA 3*2/S-375	Ethylene oxide	7,7	304	3200	1989
ICI Gas Plant		ROA 3*2/S-375	Benfield solution	11,4	303	2850	1990
ICI Plastics Factory	process feed	RGB 3*2/S-375	Water	9,1	422	3300	1979
Insursa - Spain		ROB/S-375	Hydrocarbon	15	570	3980	2001
Monsanto Europe -Belgium	injection	RGB 3*2/S-266	Water	6,0	760	4380	1994
Nodco Refinery - Qatar	LP Desuperheating	API R11/S-252 (2)	Water	2,4	167	2982	2000
OMG Kokkola Chemicals - Finland	injection	RGB 3*2/S-484	Water	5,0	451	3480	1997
ONGC	H.P. cleaning	RGB 3*2/S-484	Water				1992
Pertamina Cilacap - Indonesia		RGB 3*2/S-266	Water + H2S	3,5	536	3625	1996
Petrochemia Plock - Poland		R11/S-252 (2)	15% amine sol.	7,2	309,3	4438	1996
Petrochemia Plock - Poland		R11/S-252 (2)	Water	6,0	236	3848	1996

Petrochemia Plock - Poland		R11/S-338 (2)	Hydrocarbons	10,0	176,8	3337	1996
PT Exspan Kalimantan - Indonesia	feed pump	ROA 3*2/S-600	Crude oil	33,2	406	3643	1997
Repsol-Spain	injection pump	ROH 3*2/S-266 (2)	Butodiene	3,4	900	4484	1982
Repsol-Spain	injection pump	ROH 3*2/S-266 (2)	Hexane			4720	1981
Repsol-Spain		ROA 3*2/S-484	Converse oil	24,0	409	3644	
Santa Fe	H.P. cleaning	RGB 2*2/S-266 (10)	Potable water	3,0	740	4100	1991-4
Saudi Aramco	injection pump	ROA 3*2/S-375	Stab. crude oil	13,6	450	3550	1996
Sevalco	carbon black	RGB 3*2/S-484 (3)	Feedstock oil	18,1	246	2950	1982
Tamoil-Switzerland		ROA 3*2/S-375 (2)	Water + H2S	7,0	305		1993
Tamoil-Italy		ROH 3*2/S-484 (2)	Unstab. naphtha	46,9	950	5297	1993
Tamoil-Italy		ROH 3*2/S-484	Gasoil	47,5	911	5315	1993
Solvay & Cie-Belgium	Feed pump	ROH 3*2/S-266 (2)	Isobuthane	2,5	858	4871	1991
Solvay & Cie-Belgium	Feed pump	ROA 3*2/S-484 (2)	Isobuthane	15,0	271	2980	1991
Solvay & Cie-Belgium	Feed pump	ROA 3*2/S-266 (2)	Hexene	5,0	194	2445	1991
Solvay & Cie-Belgium	Feed pump	ROA 3*2/S-266	Ethylene	5,0	579	3913	1991
Solvay & Cie-Belgium	Feed pump	ROA 3*2/S-266	Ethylene	5,0	579	3913	1991
Solvay & Cie-Belgium	Feed pump	ROH 3*2/S-484 (2)	Isobuthane	25,0	720	4871	1991
Saudi Petr. Company		R11 2*2/S-338 (2)	Methanol	7,3	290	4097	1994
Saudi Petr. Company		R11 2*2/S-252 (2)	Water + meth.	4,5	223	3550	1994
Saudi Petr. Company		ROA 3*2/S-600 (2)	C4 hydrocarbon	27,0	296	2935	1994
Saudi Petr. Company		ROA 3*2/S-484 (2)	C4 hydrocarbon	24,0	398	3550	1994
Syrian Petroleum Company	injection pump	ROHA 3*2/D-484 (25)	Water disposal	50	800	4790	1998

Shell Todd Oil - New Zealand	Offshore	ROA 3*2/S-266	Crude oil	5,0	451	3395	1995
Maersk - Denmark	Offshore	ROH 3*2/S-375 (2)	hydrocarbon/water	10,0	1417	6020	1996
Berol Nobel - Sweden	Reactor feed	ROH 3*2/S-375	Amonia/eth. oxide	18,0	1485	6270	
Dow Chem. - Netherlands	Injection	ROA 3*2/S-375	Pol. water (105 C)	17,0	547	3953	1995
Fertiberia - Spain		ROH 3*2/S-375	Amonia/CO2/water	19,0	1482	6282	

### Other industries

CUSTOMER	SERVICE	PUMP TYPE/ CONSTRUCTION	LIQUID	FLOW (m3/h)	HEAD (m)	SPEED (rpm)	DATE
British Nuclear Fuels	hydraulic service	ROH/S-375 (3)	water + oil	9,0	949	5000	1983
Fina Refinery		ROH/S-484 (2)	LPG	20,5	993	5180	1989
Hak Conserven – Netherlands	HP cleaning	R11/D-433	water	28.0	204	3675	1997
Jet Joint	reactor cleaning	ROH/S-375	demin water	10-12	459	4810	1986
Kemira Agro Oy – Finland	HP cleaning	ROHB/S-375	water	14.4	1027	5190	1997
NAM Phong-Thailand		RGB 2*2/S-375	water	14,0	414		
Opel Motors-Austria	coolant feed	ROH/S-484 (2)	water + oil	21,0	1015	5300	1992
Opel Motors-Austria	coolant feed	RGB 2*2/S-484 (2)	water + oil	18,0	500		
Portucel-Portugal	shower	ROH/S-375	water	18,0	800	4910	
Repsol-Spain	injection pump	ROH/S-266 (2)	hexane			4720	1981
Repsol-Spain	injection pump	ROH/S-266 (2)	butodiene	3,4	900	4484	1982
Stork Friesl.-Netherlands	feed pump	RGB 3*2/D-484	potato juice	40,0	380	3470	1994
Vauxhall Opel-U.K.	coolant feed	ROH/S-375	water + oil	21,0	770	4800	1992

Vauxhall Opel-U.K.	coolant feed	RGB 2*2/S-600 (2)	water + oil	29,7	470		1992
Vauxhall Opel-U.K.	coolant feed	RGB 2*2/S-600	water + oil	29,7	470		1995
Opel Motors-Germany	coolant feed	ROH 3*2/D-484 (2)	water + oil	39,5	800	4733	1994
Opel Motors-Germany	coolant feed	ROH 3*2/D-484 (2)	water + oil	46,6	700	4560	1994
Opel Motors – Austria	coolant feed	ROA 3*2/D-600 (2)	water + oil	56,0	596	4242	1996
Suiker Unie – Netherlands	HP washing	ROH 3*2/S-375	water	18,0	1009	5220	1996
De Smet Engineering – Singapore	reactor feed	ROB 3*2/S-266 (4)	fatty acids	5,91	440	3465	1995
Anderson Strathclyde	dust suppression	ROA/S-375	water	11,3	310	2950	
Anderson Strathclyde	test pump	ROA/S-600	water	36,4	690	4550	
Anderson Strathclyde	dust suppression	RGA/S-484	water	18,2	449	3710	
Anderson Strathclyde	dust suppression	RGA/S-484	water	18,2	373	3350	
Anderson Strathclyde	dust suppression	RGA/S-375	water	13,6	628	4200	
Anderson Strathclyde	dust suppression	RS-100	water	18,2	276	2950	
Anderson Strathclyde	dust suppression	RGA/S-484	water	17,3	591	4100	
Blaenant	dust suppression	RGA/S-484	water	18,2	373	3350	
Blaenant	dust suppression	RS-100 (2)	water	18,2	373	3350	
Dowthy Mining	dust suppression	RGA/S-484	water	18,2	450	3710	
Oakdale	dust suppression	RGA/S-484	water	18,2	373	3350	
Revecotes/Harworth	E.D. ventilation	ROH 3*2/S-375	water	13,6	1450	6200	
Vane Tempest	dust suppression	RGA/S-375	water	9,0	655	4200	

**Productline BEGEMANN PUMPS and ROTO-JET PUMPS**

Accordis	The Netherlands	1993-2001
AKZO Chemicals	The Netherlands	1985-1998
Amoco Petrochemical Company	The Netherlands	1993-2001
Aramco	Saudi Arabia	1998
Badger B.V.	The Netherlands	1998
BP Refineries	The Netherlands	1992-1998
Cont. Netherlands Oil Company	The Netherlands	1998
Defense Nato Pipelines	The Netherlands	1984-1998
Dow Chemical	Germany	1993-2001
DSM Chemicals	The Netherlands	2001
Exxon Petroleum Refineries	The Netherlands	1998
Fluor Daniel B.V.	The Netherlands	1985-1998
Frisia Salt	The Netherlands	2001
General Electric	The Netherlands	1993-2001
Hoogovens Steel/Corus	The Netherlands	1994
Maersk	Denmark	2001
Mannesmann Anlagen	Germany	1993-1998
Ministry of Defense	The Netherlands	1998
Mobil Oil Company	The Netherlands	1998
NAM Petroleum	The Netherlands	2001
National Iranian Oil Company	Iran	1998
Nedschroef B.V.	The Netherlands	2001
Netherlands Refining Company	The Netherlands	1998
Nuclear Power Plants (BWR & PWR)	The Netherlands	1981-2001
PFW	The Netherlands	2001
Philips	The Netherlands	1993-2001
Purac	The Netherlands	2000-2001
Rossmark Van Wijk & Boerma	The Netherlands	1998
Royal Navy Submarines	The Netherlands	1986-2001
Sewage stations	The Netherlands	2001
Shell Chemicals	United Kingdom	1992-1998
Shell Eastern Petroleum	Malaysia	1998
Shell Gabon	Gabon	1998
Shell Petroleum Development Corporation	The Netherlands	1998
Shell Petroleum Refineries	The Netherlands	1998
Shell Refineries	The Netherlands	1993-2001
Sonatrach	France	1998
South Arne	United Kingdom	2001
Suikerunie	The Netherlands	1993-1998
Tebodin B.V.	The Netherlands	1998
Unimills	The Netherlands	1989-2001
USF/HPD	Spain	2001
Wellman Process Engineering Ltd.	United Kingdom	1998
Xycarb	The Netherlands	1998

**Productline GEHO PUMPS**

AKZO Sassenheim	The Netherlands	1993-1994
Alcan Jamaica	Jamaica	1993-2001
Alken Maes	Belgium	1993-1998
Alsen	Germany	2000-2001
AWZI Dordrecht	The Netherlands	2001
Barrick Goldstrike	USA	1998
BASF	Belgium	2001
Bent Lonne	Germany	1993-1998
Bulong	Australia	1998
Collahuasi	Chile	1999-2001
Dumagami Mines	Canada	1998
EC Erdölchemie	Germany	1998
Engels Industriebedarf	Germany	1998
Escondida Mines	Chile	1994
Filox	Germany	1993-1998
Filtratec	Belgium	1993-2001
Galmoy	Ireland	1997
Guizhou Alumina Plant	China	2000-2001
Hindalco Alumina Plant	India	1997-2001
Indaver 1/2/3	Belgium	2001
Kali + Salz	Germany	1997
Kennecott Utah Corporation	USA	1993-1998
Kluge	Germany	1993-1998
Ledvice Power Plant	Czech Republic	1999-2001
Lihir	Papua New Guinea	1997
Lone Tree Mining	USA	1993
Los Pelambres	Chile	2001
Minera Alumbreira	Argentina	1997
Murrin Murrin	Australia	1998
Ormet	USA	2001
Philex	Philippines	1998
Pingguo Aluminium Plant	China	1998-2001
Porgera	Papua New Guinea	1997
Rhone Poulenc	USA	1993
RWZI Oost	The Netherlands	2001
RWZI Spijkenisse	The Netherlands	2001
RWZI Veenendaal	The Netherlands	1994
Sachtleben	Germany	1993-1998
Shanxi Aluminium Plant	China	1993-1998
Slufter	The Netherlands	1998
Teck-Corona Mine	Canada	1998
Tennessee Eastman	USA	1993
Twin Creeks	USA	1996-2001