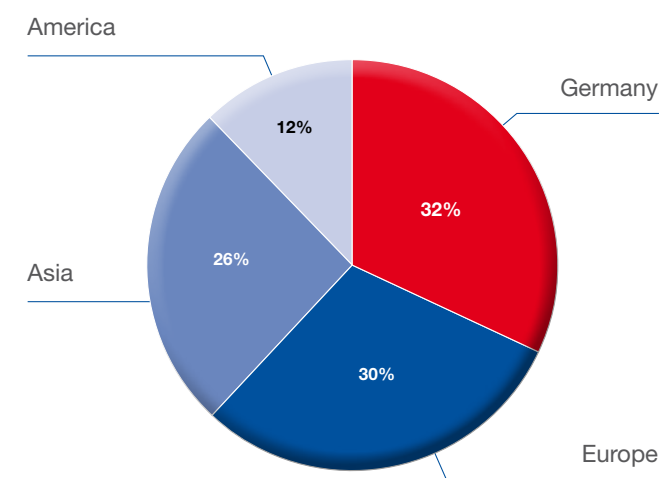


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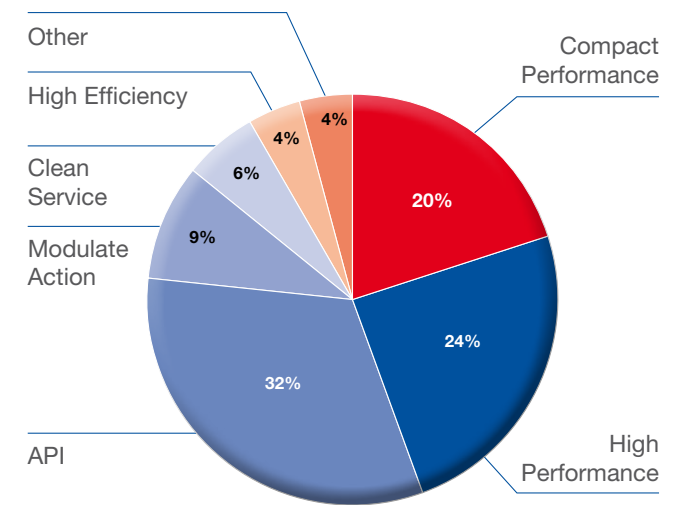
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Global Approvals	62

- Founded 1818
- Number of employees: more than 800
- Net sales: > 100 Mio EUR
- Production capacity: more than 150.000 SV / a
- Installed based: > 2.000.000 SV
- More than 5 Mio EUR investments in technology and processes every year
- Inventory in raw material and components: > 20 Mio EUR in the factory and subsidiaries

**Net sales per region**  
Strong presence in all regions



**Net sales per product group**  
PED and ASME-oriented product groups have equal weight



**Introduction**

With more than 800 employees, LESER is the largest manufacturer of safety valves in Europe and a leader in its market worldwide. LESER safety valves are used by leading companies in industries such as chemical, petro-chemical, industrial gases, oil and gas production, and machine building, as well as the food and pharmaceutical industry.



LESER offers spring-loaded and pilot-operated safety valves for all industrial applications according to PED and ASME VIII as well as application-based solutions for special requirements.

LESER safety valves are developed for the international market at our headquarters in Hamburg, Germany and manufactured at our modern factory in Hohenwestedt, Germany. In addition, LESER India produces safety valves for the local market.

**Timeline**

**1885**  
Complete range of steam fittings, incl. safety valves

**1957**  
First test lab for safety valves

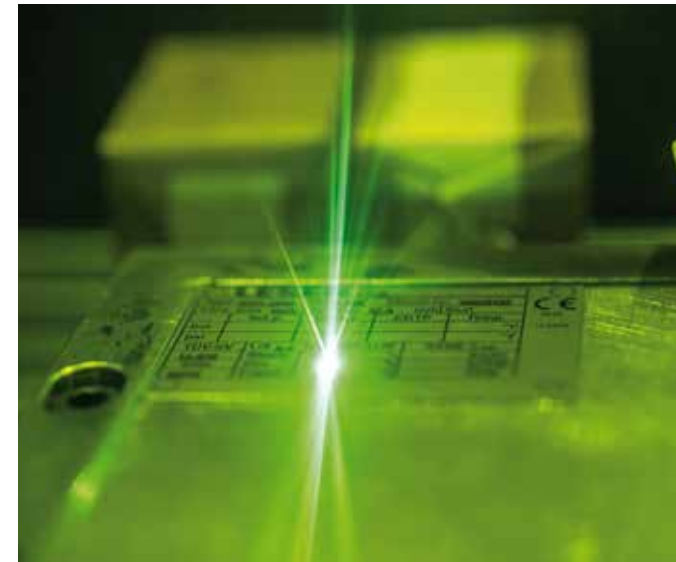
**1980s**  
Leading supplier for safety valves in Europe



**1818**  
Founded as a brass foundry in Hamburg, Germany

**1943**  
Destruction of the plant, relocation and founding of new factory in Hohenwestedt, Germany

**1970s**  
Specialization in safety valves



Eight subsidiaries in Europe, America, the Middle East, and Asia, as well as authorized and trained representatives in over 80 countries guarantee competent consulting and quick, reliable delivery. This 'References' book provides a selection of references worldwide from the various industries.

This information should provide you with an overview of LESER's capabilities, solutions for all industries, and penetration in the global safety relief valve market. If a specific reference is required which is not shown in this list, please do not hesitate to contact your local partner or [sales@leser.com](mailto:sales@leser.com).

**1994**  
Test lab receives ASME certification (first and only outside of the US)

**2003**  
Launch of the API Series

**2014**  
Founding of wholly-owned subsidiary in China

**2015**  
POSV Assembly at LESER US



**1990**  
First ASME approval

**1998**  
First subsidiary founded

**2010**  
Launch of the Pilot Operated Safety Valve

**2015**  
Manufacture of API and Compact Performance valves at LESER India

**Product Range**



Type 526

**API Series 526**

Flanged safety valves that meet all the requirements of API 526 such as standardized orifices and center-to-face dimensions. Their robust construction makes them especially suitable for high pressures and materials like Duplex, Monel or Hastelloy.

Applications	Product features
<ul style="list-style-type: none"> <li>• Refineries</li> <li>• Chemical industry</li> <li>• Petrochemical industry</li> <li>• Oil and gas – Onshore and Offshore</li> </ul>	<ul style="list-style-type: none"> <li>• Valve sizes 1" through 8", Orifice D through T</li> <li>• Materials: WCB, CF8M, WC6, LCB and in API Alloy Concept materials like Duplex, Super Duplex, Monel, Hastelloy and Inconel with short delivery times</li> <li>• Design according to API 526</li> <li>• Great variety of options and flanged connections available</li> <li>• Standard metal sealing, soft seat as option</li> <li>• Single trim for steam, gas and liquid</li> </ul>

**Compact Performance Series 437, 459**

Threaded and flanged safety valves with compact dimensions for economical protection of small and mid-sized capacities. Many orifice diameters, seals and connections offer a very wide area of application.

Applications	Product features
<ul style="list-style-type: none"> <li>• Thermal relief</li> <li>• Air /gas compressors and pumps</li> <li>• Technical gases and CO<sub>2</sub> plants</li> <li>• LPG/LNG terminals, carriers etc.</li> <li>• Chemical equipment and piping</li> <li>• Cryogenic systems and oxygen applications</li> </ul>	<ul style="list-style-type: none"> <li>• Great variety of threaded or flanged connections</li> <li>• Valve sizes from 3/8" through 1 1/2"</li> <li>• Broad set pressure range up to 850 bar / 12328 psig</li> <li>• Wide range of materials and options to fit any application</li> <li>• Stellite metal sealing for longer product life</li> <li>• Soft seat for superior tightness</li> <li>• Single trim for steam, gas and liquid</li> </ul>



Type 437

Type 459



Type 441

**High Performance Series 441, XXL, 444, 441 Full Nozzle, 458**

Flanged safety valves with especially high capacity for their size. With a large quantity of valve sizes, pressure ranges and product options, they have proven themselves as a universal safety valve for many applications.

Applications	Product features
<ul style="list-style-type: none"> <li>• Heat exchanger</li> <li>• Chemical equipment and piping</li> <li>• General steam installations</li> <li>• All industrial applications independent from the medium</li> <li>• Air/gas compressors and pumps</li> </ul>	<ul style="list-style-type: none"> <li>• Great variety of types, materials and options to fit any application</li> <li>• Valve sizes from DN 20 through DN 400, 1" through 16"</li> <li>• Flange connections according to DIN EN, ANSI/ASME and other</li> <li>• High capacity compared to the API requirements</li> <li>• Standard metal sealing</li> <li>• Single trim for steam, gas and liquid</li> </ul>

**Product Range**

**Clean Service Series 48x**

Safety valves for the food, beverage and pharmaceutical industries that meet all the relevant standards and regulations such as DIN 11866 or ASME BPE.



Type 485

Type 483

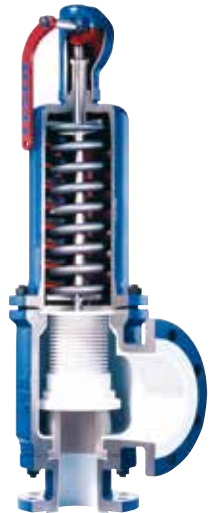
Type 484

Applications	Product features
<ul style="list-style-type: none"> <li>• Pharmaceutical industry</li> <li>• Breweries</li> <li>• Food and beverage industry</li> <li>• Cosmetic industry</li> </ul>	<ul style="list-style-type: none"> <li>• Valve sizes DN 25 through DN 100, 1" through 4"</li> <li>• Great variety of aseptic connections (e.g. clamps, flanges) and option to fit any application</li> <li>• Materials: Stainless steel 1.4404 / 316L, 1.4435 / 316L and special</li> <li>• Minimum dead space design and flush-mounting capability</li> <li>• Soft seat (FDA compliant elastomers) for superior tightness</li> <li>• Gap and crevice free design of internals</li> <li>• Elastomer bellows for protection of the hard to clean parts</li> <li>• Surface grades according to ASME BPE-2002 and DIN 11866</li> <li>• Single trim for steam, gas and liquid</li> </ul>

**Critical Service Series 447, PTFE-lined 546, 449**

PTFE-lined flanged safety valves for corrosive media such as chlorine, acids, and lyes. With their highly resistant lining they offer a safe solution for corrosive media.

Applications	Product features
<ul style="list-style-type: none"> <li>• Corrosive or aggressive chemicals</li> <li>• Chemical equipment and piping</li> <li>• Chlorine manufacture and processing</li> <li>• Reducing acids (e.g. hydrochloric acid, acetic acid)</li> <li>• Alkalis or caustic service</li> <li>• MDI systems</li> </ul>	<ul style="list-style-type: none"> <li>• Valve sizes DN 25 through DN 100, 1" through 4"</li> <li>• Flange connections according to DIN EN, ANSI/ASME and other</li> <li>• Body is resistant against most chemicals by special coating</li> <li>• PTFE lining or special metals</li> <li>• A PTFE or metal bellows protects the bonnet area against product influences</li> <li>• Smooth inside surface avoid adherence of corrosive matters</li> <li>• Single trim for gas and liquid</li> </ul>



Type 447



Type 429

**Modulate Action Series 429, 433**

Flanged safety valves with a standard or proportional opening characteristic. They minimize medium loss when opening and are used for thermal relief applications, liquid service and protection from pressure peaks.

Applications	Product features
<ul style="list-style-type: none"> <li>• Thermal expansion</li> <li>• Reciprocating compressors and plants with pulsating operating pressure</li> <li>• Heat transfer oil systems</li> <li>• Protection of liquids</li> <li>• Overflow operation</li> <li>• Mechanical engineering (OEM)</li> </ul>	<ul style="list-style-type: none"> <li>• Great variety of materials and options to fit any application</li> <li>• Valve sizes DN 15 through DN 150, 1/2" through 6"</li> <li>• Flange connections according to DIN EN, ANSI/ASME and other</li> <li>• Low overall height and low weight</li> <li>• One connection size for inlet and outlets</li> <li>• Single trim for gas and liquid</li> </ul>

**Product Range**

**Product Range**



Type 810

**High Efficiency**  
**Series 800 – Pilot Operated Safety Valve**

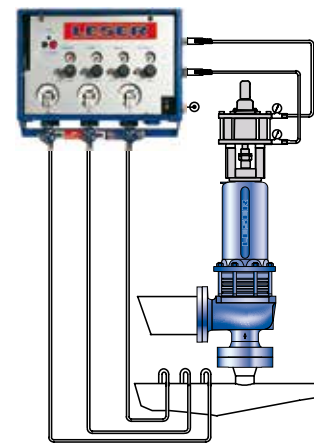
Pilot Operated Safety Valves are employed especially for conditions where the difference between set pressure and closing pressure is very small and in cases of high back pressure.

Applications	Product features
<ul style="list-style-type: none"> <li>Oil and gas production, onshore, offshore</li> <li>Refinery (Oil and gas processing)</li> <li>Gas distribution</li> </ul>	<ul style="list-style-type: none"> <li>Valve sizes DN 25 through DN 200, 1" through 8", Orifice D through T</li> <li>Materials: 1.0619, 1.4408, WCB, LCB, CF8M</li> <li>Full bore for higher capacity based on nominal size.</li> <li>Integrated tubing reduces danger of freezing, damage or leakage.</li> <li>Integrated backflow preventer improves versatility of standard model.</li> </ul>

**High Efficiency**  
**Series 700 – Supplementary Loading System**

Supplementary loading systems provide optimal tightness right up to set pressure and improved protection for high temperature media and high set pressures.

Applications	Product features
<ul style="list-style-type: none"> <li>Steam producers</li> <li>Paper mills</li> <li>Sugar refineries</li> </ul>	<ul style="list-style-type: none"> <li>Adjustable opening and reseating pressure difference for adjustment to plant situation.</li> <li>Decoupling of control system and safety valve; this means that safety valves with supplementary loading can also be used under extreme conditions such as e.g. temperatures above 500 °C or contaminated fluids.</li> <li>The triple redundancy of pressure tapping and regulation guarantees the maximum possible reliability.</li> <li>The Series 700 can also be fitted to competitor safety valves to ensure a stable system operation.</li> </ul>

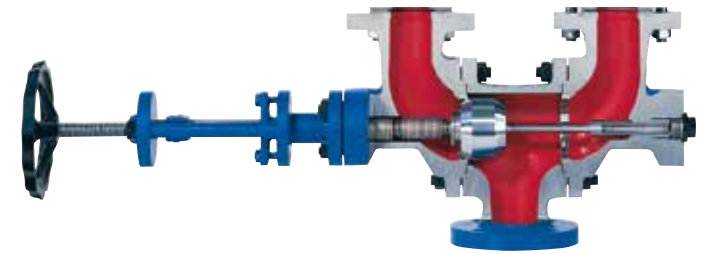


Series 700

**Best Availability**  
**Type 310 XXL – Change-over Valve**

Change-over valves allow uninterrupted plant availability which increases plant productivity.

Applications	Product features
<p>Change-over Valves are used in plants which cannot or should not be switched off such as:</p> <ul style="list-style-type: none"> <li>Storage tanks for industrial gas</li> <li>Bitumen plants</li> <li>Oil fields</li> <li>Ethylene plants</li> <li>Refineries</li> </ul>	<ul style="list-style-type: none"> <li>Uninterrupted operation</li> <li>Simple handling</li> <li>Heavy-duty design</li> </ul>



Type 310

**Best Availability**  
**Series 350 – Safety Valve – Bursting Disc Combination**

A bursting disc safety valve combination meets the highest tightness requirements and ensures controlled operation after a bursting disc bursts.

Applications	Product features
<p>The combination of safety valve and bursting disc is the solution for the following applications:</p> <ul style="list-style-type: none"> <li>Protection of the safety valve from corrosion or coatings.</li> <li>Protection from operating conditions which could impair the functionality of the safety valve.</li> <li>Safeguarding of the process with the highest possible tightness.</li> <li>Preventing a complete media loss after the bursting of the bursting disc.</li> <li>Avoidance of an uncontrolled shutdown of a plant after the bursting of the bursting disc.</li> <li>Achieving cost advantages for aggressive media.</li> </ul>	<ul style="list-style-type: none"> <li>Conformance to highest tightness requirements.</li> <li>Combination of advantages of safety valve and bursting disc (TUEV certified connection).</li> <li>Controlled operation after bursting of bursting disc.</li> </ul>



Series 350

**Key Customer Benefits**



**Longterm global references**

- Recognition in the market**  
More than 2,000,000 installed safety valves
- Qualified by customers**  
LESER is on the approved vendor list of more than 200 customers
- Global approvals**  
LESER safety valves are approved according to PED, ASME VIII and more than 10 more codes and standards



**Application-based solutions**

- Safety valves for all industrial applications**  
Complete range up to 850 bar and 16" x 20"
- Standardized industry solutions**  
90% back pressure, -196 °C medium temperature, zero dead space - LESER has the answer to application requirements



**Low lifecycle costs**

- Attractive pricing**  
For safety valves and spare parts
- Single Trim**  
Same trim parts for steam, gas and liquid service
- Spare parts availability**  
LESER Original Spare Parts Kits and LESER Authorized Repair Centers make maintenance quick and easy

**Key Customer Benefits**



**Services around the safety valve**

- Easy ordering**  
More than 100 sales engineers, EDI and webshop for easy quotations and ordering
- Best fit supply chains**  
7 supply chains for different customer needs
- Time saving documentation**  
35 standard tests and inspections with standardized documentation
- Webservices**  
Certificates, spare parts lists and order status available online



**Reliable valve function**

- Durable Design**  
Eight critical components strengthened for longer life
- Tight Finish**  
50% less medium loss
- Straight alignment**  
Two guiding points for less galling
- Definitive setting**  
First audible discharge setting for higher operating pressures



**Passion for technology**

- Quality in series**  
5 Mio. EUR investments in modern serial production every year
- Constant flow of innovation**  
More than 50 R&D engineers, CFD simulation and the most advanced test lab in the world of safety valves

**Industry Groups**

The references in this book are clustered by industry to show that LESER understands the different requirements of different industries.

The overview below should help you to find the relevant industry section for you.



**Industry Groups**

**Chemical**

Production of all kinds of chemicals (including crop science). Excluded: companies that produce refined petroleum-based products like gasoline, kerosene, etc. (belongs to petrochemical industry).

**Pharmaceutical** / Healthcare, Cosmetics

Production of products related to pharmaceutical industry.

**Petrochemical** / Downstream: Refining

The Petrochemical industry is the processing of raw material from the upstream portion of the industry including the refining and processing of petroleum and hydrocarbon based materials.

**Oil & Gas** / Upstream: Exploration, Transportation

The Oil & Gas industry covers the processes associated with exploration, extraction and the transportation (pipelines) of a variety of products including petroleum and natural gas.

**Food & Beverage**

Production of beverage and other food-related products, like milk industry, breweries, etc.

**Technical Gases** / Air Separation

All applications that are related to the production, distribution (transmission) and handling of technical gases (nitrogen, oxygen, etc.).

**Power** / Power Stations, New Energy

Generation of energy, either by conventional power stations driven by coal, gas and petroleum, or new technologies like wind, water, sun and nuclear. Excluded in this industry is energy distribution, which is included in HVAC.

**Marine** / Shipbuilding, Shipyards

The industry that covers the marine related business, such as shipyards and shipbuilding.

**LNG / LPG**

All applications that are related to the production, distribution (transmission) and handling of liquified natural gas (LNG) and liquid petroleum gas (LPG).

**Mining**

All segments related to the mining, processing and transportation of mined product.

Establishing longterm relationships with our global customer base is a priority at LESER as safety valves are a matter of trust. With more than 2,000,000 installed safety relief valves worldwide and approximately 10,000 active customers, LESER is the largest safety relief valve manufacturer in Europe and the third largest globally. This chapter will focus on the following:



Photo: The Linde Group



**Industries & Customers:**

a selection of global references defined by industry classification (i.e. Chemical, Oil & Gas, Petrochemical, Food & Beverage, Pharmaceutical, etc.). The Spotlights at the beginning of the chapter highlight the LESER solutions for different customer requirements.

**Projects:**

a selection of projects equipped with LESER safety relief valves identifying specific customer requirements.

**Original Equipment Manufacturers (OEMs):**

a selection of OEMs from the global market who rely on LESER safety relief valves to be installed on their compressors, heat exchangers, CO<sub>2</sub> tanks, blowers, and pumps to provide overpressure protection for personnel and equipment. If you require additional information or a specific reference not listed in this selection, please contact [sales@leser.com](mailto:sales@leser.com).

**Industries & Customers**

**Spotlight: Anadarko Petroleum Corp. / USA**

Industry / Application: Oil & Gas / Upstream & Gas Transmission  
 LESER Product / Solution: High Efficiency, POSV  
 Customer since: 2013  
 Quantity of Valves Supplied: 45

Founded in 1959, Anadarko Petroleum Corporation is an American oil and gas exploration company employing nearly 6,000 people worldwide. Partnered with Spitzer Industries (OEM) and Audubon Engineering (EPC), Anadarko Petroleum Corp. used these Pilot Operated Safety Valves on well pad skids used for drilling / fracking in the Delaware Basin of West Texas.

- LESER supplied (45) 4" x 6" Pilot Operated Safety Valves.
- Split shipments were utilized to ship valves in a timely manner.
- All 45 valves shipped within 8 weeks.



**Spotlight: Sunoco Inc. / USA**

Industry / Application: Oil & Gas / Hydrocarbon separation  
 LESER Product / Solution: API, Compact Performance, High Efficiency  
 Customer since: 2010  
 Quantity of Valves Supplied: 102

Founded in 1886, Sunoco is one of the world's largest oil, gas, and petrochemical companies, primarily distributing gasoline to the American market. Sunoco's Marcus Hook Facility partnered with CB&I to provide 102 LESER safety relief valves via three different projects to support the SXL Mariner East Project in Pennsylvania. CB&I is one of the largest engineering, procurement, and construction companies in the world specializing in projects related to the oil and gas industry.

- Three projects involving LESER safety relief valves - two from CB&I in Chicago, IL and one from CB&I in Tyler, TX.
- Split shipments and quick delivery were needed to meet installation schedules.
- Valves are used in the De-Ethanizer and auxiliary (pre-heater, storage, etc) units.



**Spotlight: NETZSCH / Brazil**

Industry / Application: Oil & Gas and Petrochemical / Pumps  
 LESER Product / Solution: Compact Performance / High Performance  
 Customer since: 2006  
 Quantity of Valves Supplied: 1,536

The NETZSCH company in Brazil belongs to the Erich Netzsch Holding family business and is its largest subsidiary outside of Germany. Their range of pumps is aimed toward the oil & gas, food & beverage, and drug and milk derivatives industries, and includes centrifugal, sanitary, lobe, high-viscosity, vertical and dosifier pumps, and also Progressing Cavity Pumps.

- NETZSCH of Brazil manufactures and sells Progressing Cavity Pumps throughout the entire market of the Americas.
- NETZSCH choose LESER as the primary and preferred supplier of safety relief valves due the product quality, flexibility in pre-sales support required, short delivery times, and the competitive pricing offered.
- The 1,500-plus safety relief valves supplied to date were acquired through 500 different orders placed consistently over the term of the business relationship.



**Spotlight: ARAUTERM / Brazil**

Industry / Application: Food & Beverage / Boilers  
 LESER Product / Solution: Compact Performance / High Performance  
 Customer since: 2002  
 Quantity of Valves Supplied: Approx: 580

ARAUTERM, established in south Brazil in 1988, is focused on the manufacture of small to medium boilers for different industrial processes, within laundries, hotels and the food and beverage industries.

- ARAUTERM continually selects LESER as the preferred supplier of safety relief valves due the competitive pricing, short delivery times, and flexibility in pre-sales support and technical consulting.
- Excellent, long-term working relationships helped to secure past orders and will continue to win orders in the future.
- The nearly 600 safety relief valves supplied to date were acquired through 200 different orders placed consistently over the term of the business relationship.





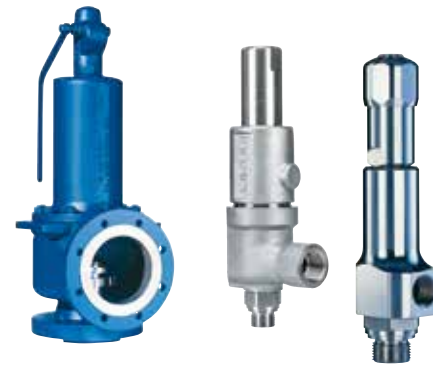
**Industries & Customers**

**Spotlight: Frames Petrobras / Netherlands / Brazil**

Industry / Application: Oil & Gas / FPSO  
 LESER Product / Solution: API, Compact Performance, Alloy Concept  
 Customer since: 2011  
 Quantity of Valves Supplied: 250

Founded in Brazil in 1953, Petrobras is an international oil & gas corporation with a production of approximately 2 million barrels of oil per day. Partnered with Petrobras, Frames (based in the Netherlands) offers engineered products and solutions for FPSO. The specific application for the LESER project was an offshore oil application for FPSO.

- Short delivery timeframe, pricing, and customer service secured these orders.
- LESER products installed on skids for certain parts of topsides modules.
- Four projects included chemical injection skids with API and Compact Performance valves; two other projects included gas dehydration units.
- Econosto, the local partner/representative, has an excellent, long-term relationship with Frames resulting in repeat orders.



**Spotlight: Air Liquide Iter / France**

Industry / Application: Power / Fusion reactor  
 LESER Product / Solution: API, Compact Performance, High Performance  
 Customer since: 2004  
 Quantity of Valves Supplied: 210

Located in France, Iter is the center of a large scientific experiment focused on fusion technology using magnetic fields. The goal of the project is to determine the possibility of creating fusion energy and power for practical uses as opposed to using nuclear reactors, which produce more waste (energy, resources, environmental, etc). The cryogenic plants are cooled with liquid helium lines provided by Air Liquide which are supplied with LESER safety relief valves for protection.

- Iter offers a future-oriented solution to support the world's energy needs.
- The first package provided to Iter consisted of approximately 210 valves; an additional two projects of equal size are expected.
- LESER is a major supplier for Air Liquide and offered competent consulting to select the correct safety relief valves for the application per the specifications of the customer.



**Spotlight: Petroleum Development Oman (PDO) / Oman**

Industry / Application: Petrochemical / Sludge Pipeline  
 LESER Product / Solution: API in Duplex  
 Customer since: 2010  
 Quantity of Valves Supplied: >10

Petroleum Development Oman (PDO) is Oman's largest producer of oil & gas focusing primarily on the exploration, development and transportation of hydrocarbons. PDO ordered the extension of a disposal facility for sludge and decided to build a 6" pipeline from the sludge pit to the tanks. Protecting this pipeline from overpressure, LESER was able to offer safety valve type API 526, Orifice F made from Duplex.

- The valves were manufactured according to NACE MR0175/ISO 15156 with ASME certificate, following Shell SPE 77/302 specification.
- LESER performed and delivered the following tests: ferrichloric-test, microstructure analysis, radiography of the body, test -50 °C, heat treatment, and MTC according to EN 10204 for body, bonnet, disc and nozzle.
- All valves were delivered with certification and analysis testing documentation with very short lead times.
- The API Alloy Concept with standardized high alloy and duplex materials enabled the fast and efficient execution of the order.



**Spotlight: Bornemann Pumps / Germany**

Industry / Application: Oil & Gas / Multiphase Pumps  
 LESER Product / Solution: High Efficiency  
 Customer since: 25+ years  
 Quantity of Valves Supplied: 8

Founded in 1850, Bornemann Pumps has been a long-standing customer of LESER safety relief valves, using our products in support of their pumps and systems for the oil and gas, petrochemical, chemical, marine, and pharmaceutical industries, among others. For this specific application, this OEM built multiphase pumps for export to a country in Latin America. Requirements included the ability to support high temperatures (approximately 100 °C) and a high backpressure in relation to set pressure. The LESER product solution was our High Efficiency Pilot Operated Safety Valve as it works independently of backpressures.

- Specific solution: LESER POSV type 821 with flange class 900 x 300.
- Additional accessories based on customer requirements included 3-layer coating in special color for optimized corrosion protection and 3.2 inspection certificate for set pressure.
- Selection of product, short delivery time, and advanced technical consulting secured this order.



**Industries & Customers**

The following list shows a selection of some references of LESER. If you are interested in additional or more specific references, please contact [sales@leser.com](mailto:sales@leser.com).



**Chemical Industry**

Company	Country	Application	LESER Product	Customer Since
DOW Chemical	Argentina	Petrochemical	API, Compact Performance	2009
Solvay	Argentina	Polymers	API, Compact Performance, High Performance	2010
Bayer	Brazil	Polymers	Compact Performance, Clean Service	2000
Evonik Degussa Brasil Ltda	Brazil	Special Polymers	Compact Performance	2008
Granel Quimica Ltda	Brazil	Storage Terminals	API	2014
Momentive Quimica Do Brasil	Brazil	Elastomers	Compact Performance	2014
Rhodia Poliamida do Brasil Ltda	Brazil	Special Plastics	Compact Performance	2007
Solvay Indupa do Brasil Ltda	Brazil	Polymers	Compact Performance	2012
Wacker Quimica do Brasil Ltda	Brazil	Emulsions, Resins	High Performance	2014
Agrium	Canada	Fertilizer	API, Compact Performance	2011
Nova Chemicals	Canada	Ethylene and polyethylene production	API, Compact Performance	-
Molybet	Chile	Molybdenum processing	Critical Service	-
3M	USA	Monomers, adhesives, resins	Compact Performance	2014
Alco Chemical	USA	Biopolymers, emulsion polymers	API, Compact Performance	2010
Axiall	USA	Chlorine manufacture, vinyl chloride monomer	Critical Service	2013
BASF	USA	Solvents, amines, resins, glues	API, Compact Performance	2008
Bechtel National	USA	Weapons disposal	API, Compact Performance	2012
Celanese	USA	Acetate facility	API, Compact Performance, High Performance	2012
CF Industries	USA	UREA, ammonium, nitrate	UREA Synthesis, Compact Performance, High Performance	2012
Dow Chemical	USA	Miscellaneous chemicals	API, Compact Performance	2007
Eastman Chemical	USA	Polymers, resins, plasticizers	API, Compact Performance	2006
Fermilab	USA	Research Lab / particle physics	API, Compact Performance	2008
FMC Alkali Chemicals	USA	Alkali chemicals	API	-
GE Plastics	USA	Plastics, polycarbonates	API	-
Great Lakes Chemical Corporation	USA	Chlorine manufacture	API	2008
Invista	USA	Resins, polymers	Compact Performance	2009
Koch Modular	USA	Modular equipment	API, Compact Performance	2007
NASA Glenn	USA	Research facility	-	-
Wacker Chemical	USA	Polysilicon	High Performance, Compact Performance, API, Critical Service	2011



**Pharmaceutical Industry**

Company	Country	Application	LESER Product	Customer Since
Bayer S/A	Brazil	Medical products	Clean Service	2001
Golden Omega	Chile	Production of concentrated Omega 3	Clean Service	-
Amgen	USA	Medicine, remedies, biopharmaceuticals	Clean Service	2009
Baxter Pharmaceuticals	USA	Medicine, remedies	API, Compact Performance, Clean Service, High Performance	2009
Bayer	USA	Medicine, remedies	Clean Service	2010
Eli Lilly	USA	Medicine, remedies	Clean Service, Compact Performance, API	2011
Genentech	USA	Biotechnology	Clean Service	2009
Gilead Sciences	USA	Medicine, remedies	API, High Performance, Clean Service	2012
L'Oréal	USA	Cosmetics	Clean Service	2014
Proctor & Gamble	USA	Medicine, remedies	Clean Service	2012
Roche Carolina	USA	Pharmaceuticals	-	-
Wyeth Pharmaceuticals	USA	Pharmaceuticals	Clean Service	2011



**Petrochemical Industry**

Company	Country	Application	LESER Product	Customer Since
YPF	Argentina	Refinery	API, Compact Performance	2008
Braskem S/A	Brazil	Ethylene, Polipropilene	Compact, High Performance, API	2002
Innova S/A	Brazil	Poliestirene	API	2008
Lanxess Elast. do Brasil Ltda	Brazil	Special Rubbers	High Performance	2003
Vale Fertilizantes S/A	Brazil	Fertilizer plant	API	2014
Ecopetrol	Colombia	Refinery	API, Compact Performance, POSV	2008
PEMEX	Mexico	Refinery, line of petrochemicals	API, Compact Performance, POSV, Best Availability	2003
Chevron	USA	Refinery	Compact Performance	2009
ExxonMobil	USA	Refinery	API, Compact Performance	2010
HollyFrontier	USA	Refinery	API, Compact Performance, POSV, High Performance XXL	2014
Placid Refining	USA	Refinery	API	2012
Shell Lubricants	USA	Refinery	-	-
Tesoro	USA	Refinery	Compact Performance	-
Petroleos de Venezuela S.A. (PDVSA)	Venezuela	Refinery, petroleum products	API	2003

**Industries & Customers**

**Oil & Gas Industry**



Company	Country	Application	LESER Product	Customer Since
PAE	Argentina	–	API	2008
BP Energy Brasil Ltda	Brazil	Wellstream cooler	API	2012
Petrobras Distribuidora S/A	Brazil	Pipelines	API	2002
Petrobras Transporte S/A	Brazil	Pipelines	API	2002
Petroleo Brasileiro S/A	Brazil	Crackers	API	2000
Statoil Brasil Oleo e Gás S/A	Brazil	E&P water injection	API	2012
Cenovus	Canada	Midstream gas	API	–
Husky Energy	Canada	Heavy and conventional oil	API, Compact Performance	–
Keyera	Canada	Midstream gas	API	2014
Suncor	Canada	Oil sands	API	2013
Ecopetrol	Colombia	Upstream gas	API, Compact Performance, POSV	2008
Petroamazonas	Ecuador	Upstream gas	API, Compact Performance	2010
PEMEX	Mexico	Upstream gas	API, Compact Performance, POSV, Best Availability	2003
Petroperú	Peru	Upstream gas	API, Compact Performance	2004
Anadarko Petroleum	USA	Gas transmission	POSV	2014
Anadarko Petroleum Corporation	USA	Upstream gas	API, Compact Performance	2013
DCP Midstream	USA	Midstream gas	API	2011
Mark West	USA	Upstream gas	API, Compact Performance, High Performance	2009
Occidental Petroleum	USA	Gas transmission	POSV	2013
Sunoco	USA	Hydrocarbon separation	API, Compact Performance, POSV	2010
PDVSA	Venezuela	Upstream gas	API	2003

**Food & Beverage Industry**



Company	Country	Application	LESER Product	Customer Since
Ajinomoto do Brasil Ltda	Brazil	Storage	High Performance, Clean Service	2011
AGP Processing	USA	Food processing of grains, refined products	–	–
Anheuser Busch InBev	USA	Brewery	Clean Service	–
Cargill	USA	Food processing	Compact Performance, Critical Service	2007
Coors	USA	Brewery	–	2008
Dannon	USA	Food processing	Clean Service	–
Hillphoenix	USA	Refrigeration technology	Compact Performance	2012
JM Smucker Company	USA	Food processing	Clean Service	2013
MillerCoors	USA	Brewery	Clean Service	2013
Nestle	USA	Food processing	Clean Service, API	2013
New Belgium	USA	Brewery	Clean Service, High Performance	2013
Samuel Adams	USA	Brewery	API, Clean Service	2008

**Technical Gases Industry**



Company	Country	Application	LESER Product	Customer Since
Air Liquide Brasil Ltda	Brazil	Air Separation	Compact Performance	2007
Linde Gases Industrial Ltda	Brazil	Technical Gases	Compact Performance	2007
White Martins Gases Indl Ltda	Brazil	Air Separation	Compact Performance	2011
Cryoinfra	Mexico	Industrial Gases	–	–
Airgas	USA	Industrial Gases	API, Compact Performance, POSV	2012
Air Liquide	USA	Liquid industrial gases	API, Compact Performance	2008
AMCS	USA	Industrial Gases	API, Compact Performance, High Performance XXL	2009
Air Products	USA	Industrial Gases	API, Compact Performance	2012
Praxair	USA	Industrial Gases	–	2012
Linde	USA	Industrial Gases	API, Compact Performance, Best Availability	2013

**Industries & Customers**

**Power Industry**



Company	Country	Application	LESER Product	Customer Since
ATCO Power	Canada	Power plant / generation	API	-
Manitoba Hydro	Canada	Power plant / generation	High Performance	2009
Blackhills Power	USA	Power plant	API, Compact Performance	2009
California Light & Power	USA	Power plant	API, Compact Performance	-
Genesis Solar	USA	Solar	API, Compact Performance	2012
GE Water	USA	Desalination plants	Critical Service	2009
Los Angeles Department of Water & Power	USA	Power plant	API	-
Northern California Power Agency	USA	Power plant	High Performance, Compact Performance	2012
NuVision Engineering	USA	Power plant engineering	Compact Performance	2010
SPX Heat Transfer	USA	Power boilers	API, Compact Performance	2012

**Marine Industry**



Company	Country	Application	LESER Product	Customer Since
Detroit Brasil Ltda	Brazil	Platform supply vessels	API	2014
BC Ferries	Canada	Ship operator	Compact Performance	2014
Carnival Cruise Lines	USA	Cruise line	High Performance	-
Halliburton	USA	Ship operator	Critical Service	2010

**LNG / LPG Industry**



Company	Country	Application	LESER Product	Customer Since
Chemtex	USA	Cryogenics	API, Compact Performance	2010

**Mining Industry**



Company	Country	Application	LESER Product	Customer Since
Detroit Brasil Ltda	Brazil	Platform supply vessels	API	2014
PotashCorp	Canada	Mining for potash	API	2013
Teck	Canada	Mining applications	API, Compact Performance	-
Vale Inco	Canada	Nickel mining	API, Compact Performance, Critical Service	2011
Minera Yanacocha	Peru	Gold mining	API, High Performance, Compact Performance	-
Barrick	USA	Gold mining	API	2014
Newmont	USA	Gold mining	API	2013

**Other Industries**



Company	Industry	Country	Application	LESER Product	Customer Since
Fibria Celulose S/A	Pulp & Paper	Brazil	Steam	API	2014
Honda Automoveis do Brasil Ltda	Automobile	Brazil	NG, Air Comp.	API	2015
Logum Logistica S/A	Ethanol	Brazil	Pipelines	API	2015
Suzano Papel e Celulose S/A	Pulp & Paper	Brazil	Steam	API	2015
Michelin Tire	Rubber	USA	Tire manufacture	API, Compact Performance	-
Catalyst Paper	Pulp & Paper	Canada	Paper production and kraft pulp	API	-
Tolko	Pulp & Paper	Canada	Steam generator	High Performance	2014

**Industries & Customers**

**Region: Europe / Africa**

**Chemical Industry**



Company	Country	Application	LESER Product	Customer Since
BHDT	Austria	Fertilizer	API (Urea synthesis design)	2011
Borealis AMI Agro-Linz-Melamine	Austria	Synthetics	High Performance, Compact Performance, Modulate Action	1990's
Chevron Phillips	Belgium	Chemicals	API, Compact Performance	2000's
Desmet Ballestra	Belgium	Chemical plants and equipment	High Performance, Compact Performance	2000's
Nippon Shokubai	Belgium	Chemicals	API, High Performance	2000's
Solvay	Belgium	Miscellaneous chemicals	API, High Performance, Critical Service	1990's
YARA	Belgium	Fertilizer	API, High Performance, Modulate Action	2000's
BorsodChem	Czech Republic	Miscellaneous chemicals	Various	10+ years
Solvay	France	Chemical products	API, Compact Performance, Critical Service	2006
Demaco	Netherlands	Cryogenic equipment	High Performance	2011
Yara	Norway	Fertilizer	Compact Performance	15+ years
Grupa Azoty PKCH	Poland	CO <sub>2</sub> Liquefaction Plant	High Performance, Compact Performance	2004
Synthos	Poland	Building of Tanks with loading and unloading systems	API, Best Availability (Change-over valves)	2006
Dottikon	Switzerland	Cracker products, plastics	-	-
INÉOS	Switzerland	Chemicals	-	-
Lonza AG	Switzerland	Miscellaneous chemicals	-	-

**Pharmaceutical Industry**



Company	Country	Application	LESER Product	Customer Since
Sandoz	Austria	Pharmaceutical factory	Clean Service	2000's
Zeta Bio Pharma	Austria	Pharmaceutical equipment manufacturer	Clean Service	15+ years
Glaxo Smith Klein (GSK)	Austria, Belgium	Pharmaceutical products	High Performance, Compact Performance, Clean Service	1990's
Janssen Pharma	Belgium	Pharmaceutical factory	API, High Performance, Critical Service	1990's
Richter Gedeon Nyrt.	Hungary	Pharmaceutical products	Various	10+ years
Olainfarm	Latvia	Pharmaceutical factory	High Performance, Compact Performance	2004
Alcon Cusi	Spain	Eye care, treatment	Modulate Action, Clean Service	10+ years

**Pharmaceutical Industry**



Company	Country	Application	LESER Product	Customer Since
BASF Orgamol Pharma	Switzerland	General pharmaceutical solutions	-	-
Baxter AG	Switzerland	Biosciences	-	-
Christ Pharma AG	Switzerland	Water	-	-
Novartis	Switzerland	Pharmaceutical production	-	-
Roche AG	Switzerland	Miscellaneous chemicals	-	-
Astra Zeneca (formally ICI)	United Kingdom	R&D, remedies	API, High Performance, High Efficiency (POSV)	1980's

**Petrochemical Industry**



Company	Country	Application	LESER Product	Customer Since
OMV AG	Austria	Refinery	API	1990's
JSC Mozyr Oil Refinery	Belarus	Oil Refinery	API, High Performance, High Efficiency (POSV)	10+ years
UOP LLC	Belgium	-	API, Compact Performance	2010
Neste Oyj	Finland	Refinery	API, Compact Performance	2014
Naphtachimie	France	Petrochemical products	API, Compact Performance, High Efficiency (POSV)	2005
Total	France	Petrochemical products	API, Compact Performance, High Efficiency (POSV)	2005
Hellenic Fuels	Greece	Petroleum Industry	Various	10+ years
Hellenic Petroleum	Greece	Petroleum Industry	Various	10+ years
Motor Oil Hellas (MOH)	Greece	Petroleum Industry	Various	10+ years
Colfax Group	Netherlands / UK	Refining Equipment	API, Compact Performance, High Performance	5+ years
Rompetrol Group N.V.	Romania	Refinery	Various	5+ years
PJSC Sibur Holding	Russia	Refinery	API, Compact Performance	2011
Lukoil	Russia / Netherlands	Refinery	API, Compact Performance, High Efficiency	2013
Natref	South Africa	Refinery	API, High Performance	10+ years
Petrosa	South Africa	Refinery	API, High Performance	10+ years
Cepsa	Spain	All types refined crude	-	-
Preem Refinery	Sweden	Refinery	API, High Performance	10+ years

**Industries & Customers**

**Region: Europe / Africa**

**Oil & Gas Industry**



Company	Country	Application	LESER Product	Customer Since
Schoeller Bleckmann	Austria	Oilfield equipment	High Performance	1990's
OMV AG	Austria	Oil production	Various	15+ years
Foster Wheeler	France	Oil & Gas - Petrochemical products	API, Compact Performance, High Efficiency (POSV)	2012
Technip	France	Oil & Gas - Petrochemical products	API, Compact Performance, High Efficiency (POSV)	2012
Kavala Oil	Greece	Hydrocarbon production	API, High Performance, Compact Performance	2005
MOL plc	Hungary	Oil and petrochemical operations	Various	5+ years
Kros Ltd.	Latvia	Oil terminal	Various	2004
Ventbunkers	Latvia	Oil terminal	Modulate Action	2004
Ventspils nafta terminals	Latvia	Oil terminal	Compact Performance	2004
ORLEN	Lithuania	Oil Refinery	API	2004
Frames	Netherlands	Oil and Gas Solutions	API, Compact Performance	2013
Vopak	Netherlands	Storage of Oilm LNG / LPG and chemicals	Various	10+ years
Air Products AS	Norway	Gas processing systems	API, Compact Performance	10+ years
Statoil ASA	Norway	Various oil & gas operations	API, Compact Performance	15+ years
Grupa Lotos	Poland	LPG Storage	API, Compact Performance	2006
Orlen Projekt	Poland	Modernization Fuel Storages	Modulate Action	2008
Lukoil	Russia	Oil production	API, Compact Performance	5+ years

**Food & Beverage Industry**



Company	Country	Application	LESER Product	Customer Since
Sandoz	Austria	Sterile process equipment	Clean Service, Compact Performance	2000's
Athenian Brewery	Greece	Brewery	Compact Performance	1994
South African Breweries	South Africa	Brewery	High Performance, Compact Performance	20+ years
Tongaat Sugar	South Africa	Sugar refinery	High Performance	20+ years
TSB	South Africa	Sugar refinery	High Performance	20+ years
TetraPak	Sweden	Filling stations	Clean Service, Compact Performance, High Performance	2005
Zeta Bio Pharma	Switzerland	Sterile process equipment	Clean Service, Compact Performance	15+ years

**Technical Gases Industry**



Company	Country	Application	LESER Product	Customer Since
Air Liquide Advanced Technologies	France	Skids for Oxygen, Helium and Nitrogen	Compact Performance	2005
Air Liquide Global E&C	France	Air Separation Unit - Gas Purification and Liquefaction Plant	API, Compact Performance	2011
Cryostar	France	Oil skids	API, Compact Performance	2004
Linde Hellas	Greece	GAS	High Performance, Compact Performance, Modulate Action	10+ years
AGA SIA	Latvia	Liquified gas	Compact Performance	2006
Rino TK Ltd.	Latvia	Industrial gases	Various	2004
Messer Slovenija	Slovenia	Industrial gases	Various	10+ years
Calor	United Kingdom	Propane and Butane	Modulate Action	2005

**Industries & Customers**

**Power Industry**



Company	Country	Application	LESER Product	Customer Since
DEI	Greece	PPC	API, High Performance, Modulate Action	10+ years
Elpedison	Greece	Power plant	API, High Performance, Modulate Action	10+ years
Heron	Greece	Power plant	API, High Performance, Modulate Action	10+ years
METKA	Greece	Power plant	Various	10+ years
Terna	Greece	Power plant	Various	10+ years
AS Latvenergo	Latvia	CHPP	API	2014
Bosch Rexroth AG	Netherlands	-	Compact Performance	2014
SNC Lavalin	Poland	Combined cycle power plant in Wloclawek	High Performance, Modulate Action	2012
Zarmen	Poland	EC Ostroleka	High Performance	2012
Kotes Sibir Jsc	Russia	Thermal power plant	API, Compact Performance	5+ years
Istroenergo Group	Slovakia	Power plants	Various	10+ years
Eskom	South Africa	Power generation	High Performance, Modulate Action	20+ years
Abengoa Bioethanol	Spain	Bioethanol	High Performance, Compact Performance	2006
Abengoa Solar	Spain	Concentrated solar power	API, High Performance, Compact Performance	2005
Central Nuclear Trillo	Spain	Nuclear power plant	API, High Performance, Compact Performance	10+ years
BG Group / Scottish & Southern Seabank	United Kingdom	Electricity	API, Compact Performance, High Efficiency (POSV)	2010
BP Kingsbury	United Kingdom	Electricity	Compact Performance, Modulate Action	1999
British Energy / EDF	United Kingdom	Electricity	High Performance, Compact Performance, Modulate Action	1980's

**Marine Industry**



Company	Country	Application	LESER Product	Customer Since
Fincantieri	Italy	Cruise Shipbuilding	High Performance, Compact Performance	2005
Allweiler AS	Norway	Supply ships	High Performance	15+ years
Wärtsilä	Norway	Power solutions for the marine	API, High Performance, Compact Performance	2005
Baltic Shipyards	Russia	Polar ships	API, Modulate Action	2013
Bryansk Engineering Works	Russia	Supplier of marine industry	API, Compact Performance	5+ years

**LNG / LPG Industry**



Company	Country	Application	LESER Product	Customer Since
Fluxxys	Belgium	LNG distribution	API	2011
Gas and Heat	Italy	LNG/LPG tanker	API, Compact Performance	2015
Chemgas	Netherlands	LNG Tankers	High Performance	2012
Wärtsilä	Norway	LNG tanker topsides	API, Compact Performance	2009
Enagas	Spain	LNG Terminals	API, Compact Performance	2001
Burckhardt Compression	Switzerland	Compressors	API, Compact Performance	5+ years

**Mining Industry**



Company	Country	Application	LESER Product	Customer Since
WEIR Minerals	Netherlands	Mining skids	API	2008
Anglo Gold	South Africa	Gold mining / refining	High Performance, Modulate Action, Critical Service	20+ years
Anglo American Platinum	South Africa	Platinum mining / refining	High Performance, Compact Performance, Change Over Valves	20+ years
Sibanye Gold	South Africa	Gold mining / refining	High Performance, Modulate Action, Critical Service	20+ years

**Other Industries**



Company	Industry	Country	Application	LESER Product	Customer Since
Zellstoff Pöls AG	Pulp & Paper	Austria	Bleached kraft paper	Various	15+ years
Aluminium of Greece	Other	Greece	Aluminium Industry	API, High Performance, Compact Performance	10+ years
CEMEX	Other	Latvia	Cement production	Compact Performance	2012
Mostostal Zabrze	Other	Poland	Plant for BASF	Compact Performance, Modulate Action	2006
APPM JSC	Pulp & Paper	Russia	Paper mill	API, Compact Performance	5+ years
ArcelorMittal	-	South Africa	Steel manufacturer	High Performance	20+ years
Mondi	Pulp & Paper	South Africa	Paper mill	High Performance	20+ years
Sappi	Pulp & Paper	South Africa	Paper mill	High Performance, Compact Performance	20+ years
British Gypsum	-	United Kingdom	Plasterboard	Modulate Action	2003

**Industries & Customers**

**Chemical Industry**



Company	Country	Application	LESER Product	Customer Since
BASF	Germany	Oil and Gas, Chemicals, Synthetics and Refining Products, Pest Management and Pure Chemicals	High Performance, Compact Performance, API, High Efficiency (SLS and POSV) and others	1975
Bayer CropScience	Germany	Pest Management	High Performance, Critical Service, Compact Performance	1995
Bayer Material Science	Germany	High Performance Plastics and High Quality Synthetics, mainly for Automobile Industry, Varnish, Colours	High Performance, Compact Performance, Modulate Action, API, Best Availability	1980
DOW Olefinverbund GmbH	Germany	Synthetics	High Performance, Modulate Action, Compact Performance	1992
Evonik	Germany	Special chemistry	-	2007
Fresenius Medical Care	Germany	Sterile Solutions	High Performance	2004
Ineos	Germany	Olefins & Polymers	Compact Performance	2005
LANXESS	Germany	Chemical Products	High Performance, Compact Performance, Modulate Action, Critical Service	2004
SKW Piesteritz	Germany	Urea	API, High Efficiency, SLS	1995
ThyssenKrupp Industrial Solutions (Uhde)	Germany	Urea	API, Compact Performance, High Performance	2011
Viverso GmbH (Bayer)	Germany	Varnish, Colours	High Performance, Modulate Action, Compact Performance	1995
Wacker Chemie	Germany	Building Materials, Solar, Semiconductor	High Performance, Modulate Action	1976

**Pharmaceutical Industry**



Company	Country	Application	LESER Product	Customer Since
Bayer Healthcare	Germany	Drug manufacturing	High Performance, Critical Service, Clean Service	1990
Pharmatec GmbH	Germany	Sterile Steam System	Clean Service, Compact Performance, High Performance	1998

**Petrochemical Industry**



Company	Country	Application	LESER Product	Customer Since
AEL Apparatebau GmbH	Germany	Oil Treatment System	API, High Performance, Modulate Action, Compact Performance	1997
Aura GmbH	Germany	Thermal oil system	Modulate Action	2000
MIRO	Germany	Refinery	Modulate Action, Compact Performance, Best Availability	2005
Oeltechnik Waghäusel	Germany	Oil Feed System	API, High Performance, Modulate Action	2004
Ruhr Oel (Rosneft / BP)	Germany	Refinery	-	2005
Shell Deutschland Oil GmbH	Germany	Oil and petrol	API, Modulate Action, Best Availability	2004
Shell Rheinland	Germany	-	-	-
PCK Raffinerie GmbH	Germany	Petroleum Products	High Performance, Modulate Action, Compact Performance, Best Availability	1992

**Oil & Gas Industry**



Company	Country	Application	LESER Product	Customer Since
Exxon Mobil Production	Germany	Oil and gas production	API, High Performance, Compact Performance	2006
Lewa GmbH	Germany	Pumps for O&G	API, High Performance, Compact Performance, High Efficiency	2000
Netzsch	Germany	Pumps for O&G	API, High Performance, Compact Performance	2005
Wintershall	Germany	Oil and gas production	High Performance	2008

**Food & Beverage Industry**



Company	Country	Application	LESER Product	Customer Since
Arla Foods Deutschland GmbH	Germany	Dairy	Compact Performance, High Performance, Clean Service	10+ years
GEA Tuchenhausen	Germany	Drink Bottler	Clean Service	1990
KHS AG	Germany	Filling and packaging systems	Clean Service	1990
Krones	Germany	Carbonizer, Mixer, Filler	Clean Service	2000



**Industries & Customers**

**Technical Gases Industry**



Company	Country	Application	LESER Product	Customer Since
Air Liquide Deutschland	Germany	Technical gases	Compact Performance, High Performance, Modulate Action, Best Availability COV	2004
Air Products GmbH	Germany	Technical gases	Compact Performance, High Performance, High Efficiency POSV	> 5 years
Linde Engineering	Germany	Air separation plants	High Performance, Compact Performance, API	1990
Linde Gas	Germany	Technical gases	High Performance, Compact Performance, API	1990
STF-System Technologie GmbH	Germany	Equipment for technical gases	-	2005

**Power Industry**



Company	Country	Application	LESER Product	Customer Since
Adoratec	Germany	Electricity Generation (bio)	High Performance, Modulate Action	2006
EnBW	Germany	Power generation	High Performance, Modulate Action	> 10 years
MVV Mannheim	Germany	Waste combustion	High Performance	2000
Saacke GmbH	Germany	Boilers	-	2014
Siemens AG	Germany	Turbines	API, High Performance, Compact Performance, Modulate Action	> 10 years

**Marine Industry**



Company	Country	Application	LESER Product	Customer Since
Aida Cruises	Germany	Cruise ships	High Performance	> 10 years
MAN Diesel & Turbo	Germany	Ship engines	-	> 10 years
mas marine assembly systems GmbH	Germany	Fuel Treatment Module for Ships	Compact Performance	2005
Meyer Werft	Germany	Shipyard	Modulate Action	> 10 years
Neuenhauser Kompressorenbau	Germany	Ship compressors	Compact Performance	> 10 years
Sauer & Sohn	Germany	Ship compressors	Compact Performance	> 10 years

**LNG / LPG Industry**



Company	Country	Application	LESER Product	Customer Since
PIA Pitow	Germany	LNG & LPG carriers	Modulate Action, High Performance	> 10 years
TGE Marine Gas Engineering	Germany	LNG & LPG carriers	Modulate Action, High Performance	1978

**Other Industries**



Company	Industry	Country	Application	LESER Product	Customer Since
AEL Apparatebau GmbH	-	Germany	Oil Treatment System	API, High Performance, Modulate Action, Compact Performance	1997
Aura GmbH	-	Germany	Thermal oil system	Modulate Action	2000
Oeltechnik Waghäusel	-	Germany	Oil Feed System	API, High Performance, Modulate Action	> 10 years
Schwelm Anlagen-technik GmbH	Renewable Energy Sources	Germany	Natural Gas Station	Compact Performance	> 10 years

**Industries & Customers**

**Region: Asia**

**Chemical Industry**



Company	Country	Application	LESER Product	Customer Since
GPIC	Bahrain	Urea	API, Compact Performance	2012
BASF CHEMICALS COMPANY LIMITED	China	Chemical	Compact Performance	2007
BASF Nursing Chemical (Shanghai) Co., LTD	China	Chemical	High Performance, Compact Performance, Modulate Action	2010
BASF POLYURETHANES (CHONGQING) COMPANY LTD	China	MDI	API, Spare parts	2012
Bayer Material Science (China) Co. Ltd.	China	TMDI	High Performance, Modulate Action, Critical Service	2008
Dalian Hengli	China	PTA	API, Compact Performance	2011
Fujian Yongrong Control Group Co., Ltd	China	PP	High Performance, API, Modulate Action	2014
LUCITE INTERNATIONAL China	China	-	API, Compact Performance	-
Shandong Shengda Chemical Co.,Ltd	China	PP	API, Compact Performance	-
Solvay Specialty Polymers (ChangShu) Co.,Ltd	China	Polymer	API, Compact Performance, Clean Service, Critical Service	2014
AARTI INDUSTRIES LTD.	India	Dyes, Pigments, Agrochemicals, Pharmaceuticals, and rubber chemicals	High Performance, Compact Performance	2015
AKZO NOBEL INDIA LTD.	India	Paint	High Performance	2013
APCOTEX INDUSTRIES LTD.	India	Paint	High Performance	2014
ASIAN PAINTS LTD.	India	Paint	High Performance	2013
DECCAN FINE CHEMICALS	India	-	High Performance	2015
DEEPAK FERTILISERS & PETRO	India	Urea	High Performance	2014
GHARDA CHEMICALS LTD.	India	-	High Performance	-
GRASIM INDUSTRIES LTD.	India	-	High Performance, Compact Performance	-

**Chemical Industry**



Company	Country	Application	LESER Product	Customer Since
GUJARAT NARMADAVALLY FERT.CO.LTD.	India	Urea	High Performance, Compact Performance	2012
GUJARAT STATE FERTILISERS	India	Urea	High Performance	2013
IFFCO LTD.	India	Urea	High Performance	2014
KANPUR FERTILISERS	India	Urea	High Performance	2013
NATIONAL PEROXIDE LTD.	India	-	High Performance	2013
Petrochemical Industries Company (PIC)	Kuwait	Urea	API	2013
QAPCO	Qatar	Ethylene, PE	API	-
Qatar Chemical Company (QChem)	Qatar	LDPE Production	API	-
Qatar Fertilizer Company (QAFCO)	Qatar	Urea	API	2013
Qatar Vinyl Company	Qatar	QVC Plant	API	-
Cristal Global	Saudi Arabia	Titanium	API, Compact Performance, High Performance	2009
Sadara Chemical Company	Saudi Arabia	Various chemicals	High Performance, Compact Performance, API, Critical Service	2012
Celanese Singapore Pte Ltd.	Singapore	Basic and fine chemicals	API, Compact Performance	2011
Coim Asia Pacific Pte Ltd.	Singapore	-	API	-
Evonik Methionine SEA Pte Ltd	Singapore	Methionine	API	2013
LANXESS	Singapore	Rubber	API, Compact Performance, High Performance, High Efficiency, Pilot Operated Safety Valve, Critical Service	2011
Solvay Specialty Chemicals Asia	Singapore	Coatings	API, Compact Performance	-
Stepan Asia Pte Ltd.	Singapore	-	API, Compact Performance	2011
Sumitomo Chemical Singapore Pte Ltd	Singapore	-	API, Compact Performance	2013

**Industries & Customers**

**Region: Asia**

**Pharmaceutical Industry**



Company	Country	Application	LESER Product	Customer Since
AUROBINDO PHARMA LTD.	India	Drug manufacturing	High Performance, Compact Performance	2013
DIVIS LABORATORIES LTD.	India	Drug manufacturing	High Performance, Compact Performance	2014
HETERO LABS LTD.	India	Drug manufacturing	High Performance, Compact Performance	2013
LAURUS LABS LTD.	India	Drug manufacturing	High Performance, Compact Performance	2014
MAYLAN LABORATORIES LTD.	India	Drug manufacturing	High Performance, Compact Performance	-
Samsung Biologics	Korea	Drug manufacturing	Clean Service, API	2013
CAD Middle East	Saudi Arabia	Drug Manufacturing	Compact Performance	2011

**Petrochemical Industry**



Company	Country	Application	LESER Product	Customer Since
The Bahrain Petroleum Company (BAPCO)	Bahrain	Refining	-	2012
Brunei Shell Petroleum	Brunei	Refinery	API, Compact Performance, High Efficiency	2011
Chinacoal Mengda Chemical industry Co., Ltd	China	Coal chemical	API, Compact Performance, Modulate Action	2014
Fujian Refining and Petro-chemical Company Limited	China	PP/PE	High Performance, API, Compact Performance, Best Availability	-
PetroChina	China	Chemicals, Ethylene	API, High Performance, Compact Performance	2007
Sinopec	China	Chemicals, Ethylene	API, High Performance, Compact Performance	2008
Tianjin Asicdat International Trade Co.,Ltd	China	-	API, Compact Performance	-
Petronash FZE	Dubai	Skids & Equipment	API, Compact Performance	2010
ANDHRA PETROCHEMICALS	India	-	High Performance	2012
BHARAT PETROLEUM CORPN.LTD.	India	Refining	High Performance, Compact Performance	2014
HINDUSTAN PETROLEUM CORP.LTD.	India	Refining	High Performance, Compact Performance	2013
INDIAN OIL CORPORATION LTD.	India	Refining	High Performance	2014
RELIANCE INDUSTRIES LTD.	India	Refining	Compact Performance	2015
Shell Iraq	Iraq	Refining	-	
GS E&C	Korea	EPC	API, Compact Performance, High Efficiency	2012
Octal	Oman	PET & APET	High Performance	2011
Oman Methanol Company	Oman	Methanol	API, Compact Performance	2010
Salala Methanol Company	Oman	Methanol	-	-
KEMYA Al-Jubail Petrochemical Company	Saudi Arabia	Ethylene, polyethylene	API, Compact Performance	2012
Saudi Basic Industries (SABIC)	Saudi Arabia	Petrochemical industries	API, Compact Performance	2005
Tasnee Petrochemicals	Saudi Arabia	Petrochemical industries	API, High Performance, Compact Performance	2007
Chevron Oronite Pte Ltd.	Singapore	Refining	Critical Service	-

**Industries & Customers**

**Region: Asia**

**Oil & Gas Industry**



Company	Country	Application	LESER Product	Customer Since
Abu Dhabi Gas Industries Ltd. (GASCO)	Abu Dhabi	Gas production	API, Compact Performance	< 5 years
Abu Dhabi Polymers Company Ltd. (Borouge)	Abu Dhabi	Polyolefin plastics	API	2012
Takreer	Abu Dhabi	Refining	API, Compact Performance	2012
Bahrain Natural Gas Company (BANGAS)	Bahrain	Gas production	-	-
Tatweer	Bahrain	Oil and gas production	-	2011
Shell Brunei	Brunei	Oil Production	API, Compact Performance, High Efficiency	2011
Consolidated Contractors Co. WLL	Dubai	Pipelines	API, Compact Performance	2013
Exterran	Dubai	Skids	API, Compact Performance	2011
IOT INFRASTRUCTURE & ENERGY LTD.	India	Oil tanking	Compact Performance	-
PT. BASF Indonesia	Indonesia	Chemicals	Modulate Action, Critical Service	2006
PT. Chevron Pacific Indonesia	Indonesia	-	API, Compact Performance	-
South Gas Company Iraq	Iraq	Gas production	-	-
South Pars Gas Company	Iraq	Gas production	-	-
Kuwait National Petroleum Company (KNPC)	Kuwait	Petrochemical	API, Compact Performance	2000
Kuwait Oil Company (KOC)	Kuwait	Oil Production	-	2008
Occidental of Oman	Oman	-	API, Compact Performance	2011
PDO	Oman	Oil production	API, Compact Performance	2010
Maersk Oil	Qatar	Offshore	-	-
Qatar Gas	Qatar	Gas production	-	-
Qatar Petroleum	Qatar	Pipeline MOL / Cooling seawater system	API, Compact Performance	-
Qatar Shell	Qatar	GTL Plant	-	-
Ras Gas Company Ltd.	Qatar	-	-	-
Al-Khafij Joint Operations (KJO)	Saudi Arabia	Oil Production	API, Compact Performance	2003
Saudi Aramco	Saudi Arabia	Oil and gas production	API, Compact Performance	2004
Saipem Sharjah	Sharjah	-	-	-
MODEC	Singapore	FPSO	-	2010
Ras al Khaimah Gas LLC (RAKGAS)	UAE	Gas production	-	-
Total E&P Yemen	Yemen	Oil Production	-	-

**Food & Beverage Industry**



Company	Country	Application	LESER Product	Customer Since
PT. Tetra Pak	Indonesia	Filling and packaging systems	Clean Service	-
Lotte	Korea	Beverage	Clean Service	2013
Golden Jomalina Food Industries	Malaysia	Palm Oil	API, Compact Performance	-
Intercontinental Specialty Fats Berhad	Malaysia	Palm Oil	API, Compact Performance	-
Dutch Lady	Vietnam	Milk	API, Compact Performance	2003
Pepsi	Vietnam	Beverages	API, Compact Performance	2013

**Technical Gases Industry**



Company	Country	Application	LESER Product	Customer Since
INOX AIR PRODUCTS	India	Air Separation	High Performance	2013
LINDE INDIA LTD.	India	Air Separation	High Performance	2014
Alfa Laval (Malaysia) Sdn Bhd	Malaysia	-	API, Compact Performance	-
Linde Sigas	Saudi Arabia	Technical gas applications	API, Compact Performance, Best Availability	2006
Air Products & Chemicals (S) Pte Ltd	Singapore	Air Separation	API, Compact Performance	2011
Linde Gas Singapore	Singapore	Technical Gases	API, Compact Performance	2005
Sergas	China	Technical Gases	API, Compact Performance	2014

**Industries & Customers**

**Region: Asia**

**Power Industry**



Company	Country	Application	LESER Product	Customer Since
Novall (Tianjin) Energy Equipment Co.,Ltd.	China	Compressor	Compact Performance	2014
Shanghai Electric Power Generation Equipment Co.,Ltd	China	Turbin	High Performance, API	2008
CORE ENERGY SYSTEMS	India	-	High Performance	2014
GEA ENERGY SYSTEMS	India	-	High Performance	2013
L & T MHI LTD.	India	-	High Performance	2014
NUCLEAR POWER CORPN.	India	-	High Performance, Compact Performance	2012
POWER MACHINES INDIA LTD.	India	-	High Performance	2012
KEPCO	Korea	Utility	API	-
SembCorp Industries Ltd - PPU Division	Singapore	Power plant	API, High Performance	2008

**Marine Industry**



Company	Country	Application	LESER Product	Customer Since
PT. Lampung Andalas Shipbuilding & Engineering	Malaysia	Ship Building	High Performance	-
Qatar Shipping Company	Qatar	-	-	-
Bumi Armada Singapore Pte	Singapore	FPSO	API, Compact Performance	2012
Keppel Shipyard	Singapore	FPSO	API	2012
76 Shipyard	Vietnam	Ship Building	API, Compact Performance	2007

**LNG / LPG Industry**



Company	Country	Application	LESER Product	Customer Since
CNPC	China	LNG terminal	API	2013

**Mining Industry**



Company	Country	Application	LESER Product	Customer Since
Maaden	Saudi Arabia	Aluminum	High Performance, Compact Performance	2011

**Other Industries**



Company	Industry	Country	Application	LESER Product	Customer Since
Gu'an Shengdongbang Automobile Part Co., Ltd	-	China	Mechanical	API, High Performance, XXL	2012
Shanxi	Aluminum	China	Aluminum	High Performance, Compact Performance	2014
Xingxian Aluminum	Aluminum	China	Aluminum	API, High Performance, XXL	-
JSW STEEL LTD.	Steel	India	Steel	High Performance, Compact Performance	2013
SMS INDIA LTD.	Steel	India	Steel	High Performance	2014
STEEL AUTHORITY OF INDIA LTD.	Steel	India	Steel	High Performance, Compact Performance	2013
TATA STEEL LTD.	Steel	India	Steel	-	-
VISAKHAPATNAM STEEL PLANT	Steel	India	Steel	-	-
Ashghal	Public Works	Qatar	Waste Water	-	-

## Projects

The following list shows only a selection of projects equipped with LESER safety valves.



### Chemical Industry

End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Atanor	Argentina	-	Ampliacion Ingenio Concepcion	High Performance	16" x 20" - 150#	5
BASF	China	-	MDI plant	API, Compact Performance, Critical Service	-	265
Chinacoal Mengda Chemical industry Co	China	-	Mengda Coat-Chemical project	API, High Performance XXL, High Efficiency	Coal Conversion Unit	125
Fujian Meide Petrochemical Co.,Ltd.	China	-	LCN20258-261	API	Tank farm	105
Hengli Dalian Company	China	-	Dalian Hengli PTA	API	High alloy materials in large quantities (CF3M and Hastelloy body)	417
Inner Mongolia Bodashidi Co., Ltd.	China	Stamicarbon	Urea plant	API	Protection of urea synthesis section with corrosive and crystallizing medium	-
LANXESS (Changzhou) Co., Ltd.	China	-	LANXESS coating project	API, Compact Performance, High Efficiency	Pilot-operated safety valves	244
Oates Technologies Co. Limited	China	-	Ningbo Yisheng PTA	API	High alloy materials in short delivery time	148
Shaaxi	China	-	Shaanxi Alu	API	Large sizes	74
Xiang Lu Petrochemicals (ZhangZhou)	China	-	Xianglu PTA	API, High Performance XXL	High alloy materials for very large safety valves	397
BASF	Germany	M+W process Technologies	-	High Performance, Compact Performance, Modulate Action	Extensive testing e.g. Huey, corrosion tests	25
BASF	Germany	Lurgi	Expansion H <sub>2</sub> plant	High Performance, High Efficiency SLS	Long distance for SLS	45
CFI USA	Germany	ThyssenKrupp Uhde	Donaldsonville plant	API, High Performance, Compact Performance	Safety valves for urea plant	150
Evonik Belgium	Germany	Evonik Germany	Zephir project	High Performance, Modulate Action	New chemical plant in Belgium	30
SKW Piesteritz	Germany	Räcklebe & Totz	Urea plant	API, High Efficiency (SLS)	Corrosive media, increase in plant operating pressure	20
Vinnolit	Germany	-	PVC plant	High Performance, Best Availability (Bursting Disc)	-	17
Petrochemical Industries Company (PIC)	Kuwait	-	Revamp Project	API	Urea Synthesis Section	9
Various	Netherlands	Stamicarbon	Urea plants	Urea	Urea synthesis valves made from Safurex	> 100
Qatar Solar Technologies	Qatar	Punj Lloyd	QSTec Polysilicon Project	-	-	-
Tomskneftchim	Russia	Tecnimont	Tomsk	Compact Performance, API	-	100
LANXESS	Singapore	-	Butyl rubber	API, Compact Performance, High Performance, High Efficiency, Pilot Operated Safety Valve, Critical Service	-	100
Wacker	USA	Jacobs Engineering	unnamed	API, High Performance, Compact Performance, POSVs, Rupture Discs	Integral inlet and outlet for Compact Performance, free of oil and grease cleaning	2,000

### Chemical Industry



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Bechtel National	USA	Bechtel Parsons	unnamed	API, Compact Performance	Special alloys, short lead times	150
BASF Freeport	USA	Zachry Industrial	BASF Freeport	API, Compact Performance, High Performance	Short lead times	30
Celanese	USA	Black & Veatch	Acetate Expansion	API, Compact Performance, High Performance	Short lead times	20
Holston Army Depot	USA	BAE Systems	Holston Plant	API, Compact Performance	Short lead times	80



### Petrochemical Industry

End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
J.F. Secco	Argentina	-	Campo Duran	API, High Efficiency	4" x 6" - 600#	15
YPF	Argentina	-	Proyecto Recambio de Valvulas de Seguridad	API, Compact Performance	-	98
Heide Refinery	Germany	-	New steam supply	High Efficiency (SLS)	Increase plant efficiency with supplementary loading system (SLS)	15
OMV Romania	Germany	PSE Engineering	Refinery	API	-	-
OMV	Germany	CAC Chemieanlagenbau Chemnitz	Butamax	API	-	80
PCK Refinery	Germany	-	Refinery expansion	-	Refinery expansion with SV/COV combinations acc. to MiRO standards	> 50
Pertamina	Indonesia	GS Engineering & Construction	Cilacap Refinery RFCC	API, Compact Performance	Migas Inspection	200
KOC	Kuwait	GS Engineering & Construction	KOC Wara - Pressure Maintenance Project	API, Compact Performance, POSV	Full Duplex POSV	100
Petrochemical Industries Company (PIC)	Kuwait	PIC	-	Urea valves	Replacement of urea valves	-
-	Russia	Toyo Korea	EB	API, COV, Compact Performance	Change Over Valve Combinations	200
Petro Rabigh (Saudi Aramco and Sumitomo Chemicals)	Saudi Arabia	Saipem Snamprogetti	Rabigh II	API	API safety valves with Balanced Piston Design	100
IRPC	Thailand	GS Engineering & Construction	UHV	API, Compact Performance, POSV	Cryogenic Test	350
PTT	Thailand	POSCO E&C	Phenol Train 2	API, Compact Performance	-	180
HollyFrontier	USA	Lauren Engineering	Woods Cross	API, Compact Performance, POSV, High Performance XXL	Documentation	94
Motiva Shell	USA	N/A	N/A	API	Special alloy	6

**Projects**

**Marine Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Ecovix Construções Oceanicas	Brazil	Ecovix	Replicantes FPSO Hulls	API	Special Materials	192
Halliburton	USA	W&O Supply	N/A	Critical Service	PTFE lining	6

**Oil & Gas Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Petrobras	Brazil	–	Replicantes FPSO	API	Special Alloy Materials	570
Petrobras	Brazil	SPS	TECAB	API	Special Alloy Materials	280
Petrobras	Brazil	TUC	COMPERJ Utilities	API	Special Alloy Materials	40
Petrobras	Brazil	Potencial	Revap	API	Short Delivery Times	78
Petrobras	Brazil	CNCC	RENEST	API	Special Alloy Materials	580
Petrobras	Brazil	Emerson	COMPERJ MAC	API	Special Alloy Materials	970
Petrobras	Brazil	Fores Engineering	–	Compact Performance	–	70
SOBEGI (Total Group)	France	Technip France	Gas treatment	API, Compact Performance	Testing requirements	94
NRW North West Redwater Canada	Germany	Air Liquide Global E&C	Oil sands	API	Special Alloy Materials	570
Saudi Aramco	Italy	Peroni	Pumps	Compact Performance	Local content requirements in Saudi Arabia	28
Saudi Aramco	Italy / Saudi Arabia	Techint	Onshore crude oil facility	API	Balanced piston safety valves	37
Kuwait Oil Company (KOC)	Kuwait	HEISCO	–	–	LP Separator & Production Manifold Skid	–
Petronas	Malaysia	UOP Malaysia	Amine Pilot Plant	API	–	–
Petronas Carigali	Malaysia	Petrofac E&C	WEST Desaru MOPU	API, High Efficiency	–	–
Petronas Carigali	Malaysia	Petrofac E&C	BEKOK-C Restoration	API, Compact Performance, High Efficiency	–	–
SBM Atlanta	Malaysia	Prosep AP	SHELL Stone Disconnectable FPSO	API, Compact Performance, POSV	Cryogenic Test	350
Shell Sabah	Malaysia	Prosep AP	Malikai	API	Shell specification	–

**Oil & Gas Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Unnamed	Multiple	Leobersdorfer Maschinenfabrik (LMF)	API compressors	API	12 API valves with 3.2 certificates and 1.4547 interior parts	several orders
Petrobras	Netherlands	Frames	FPSOs	API	FPSO modules	–
Oil Tanking ODF JELL Terminal & Company	Oman	L&T, Electromec LLC	–	API, Compact Performance	Pigging line and associated Facility	5
Petroleum Development Oman (PDO)	Oman	Galfar Engg	Burhaan & Harmal HPG Wells, & ODC Projects	API	High alloy configurations for crude oil	several orders
Petroleum Development Oman (PDO)	Oman	STS-Oman	Ghaba North Oman EMC Project	API	High alloy configuration	16
Dolphin Energy Qatar	Qatar	L&T	Export Gas Compression Facilities Upgrade Project	API, Compact Performance, High Efficiency	–	–
Rosneft	Russia	Walter Tosto	Samara	API, Best Availability	–	30
Saudi Aramco	Saudi Arabia	Aramco	Ras Tanura	API, Compact Performance	Balancing Piston valves	14
Saudi Aramco	Saudi Arabia	Saipem / Peroni Pompe	Hasbah & Arabiyah	Compact Performance	Special materials and connections	30
Saudi Aramco + SUMITOMO	Saudi Arabia	SAIPEM, ITALY	RABIGH PHASE II	API Balanced Piston	–	289
GASCO	UAE	Samsung Engineering & Construction	Shah Gas	API, Compact Performance, POSV	Special Materials	250
Takreer	UAE	GS Engineering & Construction	Takreer - Inter Refinery Project	API, Compact Performance	–	250
UOP	USA	UOP	Star Bed PSV	API, POSV	Documentation in Turkish	33
Sunoco	USA	CB&I	Marcus Hook - Deethanizer	API, Compact Performance, POSV	Documentation	50
Anadarko Petroleum	USA	Anadarko	N/A	POSV	Short lead times	45
Harrison Hub	USA	S&B Engineers	Harrison Hub	API, Compact Performance	Multiple shipments	100
Occidental Petroleum	USA	CB&I	Oxy Plant	POSV	Short lead times	4
Petrobras	USA	UOP	P-74/P-75/ P-76/P-77 FPSO Platforms	API, Compact Performance, POSV, High Performance XXL	Offshore Painting	48

**Projects**

**Pharmaceutical Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Promaiz	Argentina	-	Planta Alejandro Roca	API, Compact Performance	1/2" x 1" - orifices F-G-J-N-T	51
Fresenius Medical Care	Germany	-	Plant expansion	High Performance	-	22
Hetero Labs	India	-	-	High Performance, Compact Performance	Delivery of high number of valves in only 10 weeks	> 1000
Total	Netherlands	-	Zeeland refinery	API, Compact Performance, High Efficiency	Total specification and prequalification	17
Rosneft Novokuibyshevsk	Russia	direct purchase	Novokuibyshevsk refinery	POSVs, Modulate Action, Compact Performance, API, Best Availability	Pilot Operated Safety Valves in Monel	121
Proctor & Gamble	USA	Sonic Corp.	P&G	Clean Service	Welded clean service	20
Baxter Pharmaceutical	USA	Fluor	Baxter	API, High Performance	N/A	100

**Technical Gases Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Hangzhou SERGAS Engineering Co., Ltd	China	Hangzhou SERGAS Engineering Co., Ltd	SERGASLE-SER1311281	API	Air separation	26
Gassco AS	Germany	Linde	Emden Gas Terminal	API	-	27
PDVSA Venezuela	Germany	Linde	Puerto La Cruz	API, High Efficiency (POSV)	Special sourcing and documentation	26
Petronas	Malaysia	Taiyo Nissan	Petronas LNG Train-9	API, Compact Performance	Air separation units	20
Elixir	UAE	Linde	Ruwais / Elixir	-	-	-
Airgas	USA	Airgas	Great Lakes	API, Compact, POSVs	Free of oil & grease cleaning	26
AMCS	USA	AMCS	j-1365	API, Compact Performance, High Performance XXL	Free of oil & grease cleaning	27
Linde	USA	HydroChem	Linde Expansion	API, Best Availability	Changeover valves in combination	20
Linde	USA	Linde	Cold Box	Compact Performance	Low temperature application	20

**Food & Beverage Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Cargil Agricola S/A	Brazil	Cargil	Castro Biorefinery	API, Compact Performance	Very short lead times	20
Lotte Korea	Germany	Krones	Lotte Brewery	Clean Service	Very short lead times	20
Samuel Adams	USA	Dennis Group	Sam Adams	API	Overpressure protection	4

**Power Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Petrobras	Brazil	Skanska	UTE Sul Fluminense	API	Short Delivery Times	90
Shanghai Electric Power Generation Equipment Co., Ltd	China	-	LCN20205	High Performance XXL	441 XXL valves	-
DLR Deutsches Zentrum für Luft- und Raumfahrt	Germany	Alstom Power	DLR test center	API, Compact Performance	-	-
ADNOC Abu Dhabi	Germany	Siemens	Sha Gas	API	Protecting steam turbines with 526 8T10 in 4 lines, demanding acceptance inspection, special paint	-
SWCC Saudi Arabia	Germany	ThyssenKrupp	Ras Al Khair	API, Compact Performance	Corrosion resistance	> 100
Ministry of Electricity & Water (MEW)	Kuwait	Alghanim International General Trading & Contracting Co., WLL	-	-	Az-Zour South 500 MW Open Cycle Gas Turbine Expansion Project	-
Saudi Electric Company	Saudi Arabia	Daelim	Shoibah CCPP	API	-	8
Göteborg Energi	Sweden	Direct purchase	Biogas plant	API	Test plant with potential for series production	96
SPX Heat Transfer	USA	SPX	N/A	API, Compact Performance	Socket welds, IBR Inspections	192
NextEra Energy	USA	Fluor	Genesis Solar	API	Welded valves, high backpressures	40
California Light & Power	USA	Kiewit	Scattergood Project	API, Compact Performance	Marine / high temperature painting	100
GE Vietnam	USA	GE	GE Wind Energy	Compact Performance	Low temperature / low set pressures	725
TEPCO	Vietnam	Daelim	O-Mon	API	-	-



**Projects**

**Mining Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
Vale Inco	Canada	Fluor	OJ-0019	API, Compact Performance, Critical Service	PTFE-lined valves, PMI, documentation	108

**LNG / LPG Industry**



End-User	Country	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
CNPC	China	China Huanqiu Contracting & Engineering Corporation	Tangshan LNG Terminal	API	Valves for cryogenic service	120
Several	Germany	TGE Marine Gas Engineering	LNG & LPG carriers	High Performance, Modulate Action, Best Availability	Valves for LNG service	300+
Polskie LNG	Italy / Poland	Saipem / Techint	LNG terminal	API, High Performance	Cryogenic testing	86
Shell / Technip	South Korea	Atlas Copco Energas	Prelude	API, Modulate Action, Compact Performance	Special certifications	39
Various	UK	LGE Process	LPG carriers	API, Compact Performance	Applications for LNG tankers	> 500
Chemtex	USA	Chemtex	CT0038.0021	API, Compact Performance	Low temperature valves for cryogenic applications	15
Shell	Various	Atlas Copco Energas, AEL, Neumann & Esser, Siemens	Prelude FLNG	API, Compact Performance, Modulate Action	Pioneer in FLNG technology, classification societies, offshore use	39

**Other Industries**



End-User	Country	Industry	EPC / OEM	Name of Project	LESER Product	Customer Requirement	Qty of Valves
CMPC Celulose Riograndense Ltda	Brazil	Pulp & Paper	Poyry	Guaiba 2	High Performance	High Capacity	41
Klabin S/A	Brazil	Pulp & Paper	KSH Consult. Eng. Ltda	Puma	High Performance, API	High Capacity	23
Rio Claro Agroindustrial	Brazil	Ethanol	Rio Claro	Usina Rio Claro	API, Compact Performance	Short lead times	32
Usina Conquista do Pontal	Brazil	Ethanol	Conquista do Pontal	Conquista do Pontal	API, Compact Performance	Short lead times	27
Shaanxi Alu	China	Aluminium	-	-	API	Large API valves	50
Saline Water Conversion Corporation (SWCC)	China	Water	Sinopec international Petroleum Service Co.	LCN20312	API	Sea water desalination	103
DESY Deutsches Elektronen-Synchrotron	Germany	Research institute	-	Extension	High Performance	Cryogenic service	41
SWCC	Saudi Arabia	Water	Hanwha	Yanbu 2	Yanbu 2	API	-

## OEM

The following list shows only a selection of OEMs who rely on LESER safety valves to protect their processes and equipment.

Company	Country	Application / Main Products
Schoeller-Bleckmann Nitec	Austria	Oilfield equipment, Pumps
ZETA Bio Pharma	Austria	Pharmaceutical equipment
Desmet Ballestra	Belgium	Chemical equipment
Mayekawa	Belgium	Refrigeration technology
UOP LLC	Belgium	Catalyst solutions
Arauterm Equipamentos Ltda	Brazil	Boilers
Asvotec Thermoindustrial Ltda	Brazil	Waste Heat Recovery Units
Fabricadora de Bombas Ind e Com.	Brazil	Pumps
Fluid Brasil Sistemas e Tec. Ltda	Brazil	Filter Systems
Gascat Ind e Comercio Ltda	Brazil	Filters, Boilers
HBR Equipamentos Ltda	Brazil	Compressors Systems
MKG Equipamentos Ltda	Brazil	Filters
Neogás do Brasil Gás Natural Ltda	Brazil	Natural Gas Vessels
NG Metalúrgica Ltda.	Brazil	Vessels, Destilators to Ethanol Industry
Omel Bombas e Compressores Ltda	Brazil	Pumps, Compressors
Turbimaq Turbinas e Maquinas Ltda	Brazil	Turbines
Vibropac Ind. E Comercio Ltda.	Brazil	Pumps
Alco Gas & Oil Production Equipment	Canada	Oil & Gas processing equipment
Enerflex	Canada	Gas Compression & Treatment
Propak Systems	Canada	Oil & Gas production packages and modularized processing plants
ThermoDesign Engineering	Canada	Oil & Gas processing facilities
ATLAS Copco	China	Compressors
Dongfang Boiler	China	Boilers
Dongfang Turbine	China	Turbines
Shanghai Turbine	China	Turbines
Shandong Kerui	China	Compressors
Yantai Jereh	China	Compressors
HOWDEN B.C.	France	Compressors
Milton Roy	France	Dosing pumps
Oeltechnik-France	France	Lube oil consoles
Aerzener Maschinenbau	Germany	Compressors, Blower
ATLAS Copco	Germany	Compressors
Bauer Kompressoren / Unicomp	Germany	Compressed Air Systems
Baumgarte Boiler Systems	Germany	Incineration plants
Bosch Industriekessel (LOOS)	Germany	Boilers
Cofely	Germany	Refrigeration systems
Feluwa Pumpen GmbH	Germany	Hose Pump
Gea Lyophil GmbH	Germany	Vacuum-Freeze, Dryer-Sterilizer

Company	Country	Application / Main Products
Hennecke GmbH	Germany	Polyurethane System
Joh. Heinr. Bornemann GmbH	Germany	Twin screw pumps, eccentric screw pumps
Johnson Controls (YORK)	Germany	Refrigeration systems
Krones	Germany	Machinery for the food and beverage industry
Krytem GmbH	Germany	Pumps for Liquid, Cryogenic Gases
Leistritz GmbH	Germany	Offshore Systems, Oil Production
Lewa	Germany	Pumps
Linde AG, Engineering	Germany	H <sub>2</sub> Systems, Air Separation
MCE-Industrietechnik	Germany	Biotech plants
Messer Group	Germany	Air separation, Systems for Industrial Gases
Neumann & Esser Deutschland GmbH	Germany	Piston Compressor
Pall Corporation	Germany	Process equipment for filtration, separation & purification solutions.
Prominent Dosiertechnik	Germany	Dosing Pump
Ruland Engineering & consulting	Germany	Process Technology
Seepex GmbH	Germany	Pumps
SPX Cooling GmbH	Germany	Steam-Cooling-System
Tectrion GmbH	Germany	Maintenance Service
Uraca	Germany	Pumps
Voith	Germany	Turbines
BURCKHARDT COMPRESSION	India	Compressors
KIRLOSKAR PNEUMATIC CO.LTD.	India	Compressors
SS ENGINEERS	India	Boilers
THERMAX LIMITED	India	Boilers
TRIVENI TURBINES LTD.	India	Turbines
CFT	Italy	F&B machines
Sanco	Italy	Fire Protection and Safety Systems
Siad Macchine Impianti	Italy	Technical Gases skids
Tecnox	Italy	Pharma skids
Exterran	Middle East	Oil Production Equipment
Frames	Netherlands	Skids
Howden Thomassen	Netherlands	Compressors
Hoerbiger	Norway	Air compressors
Al Hassan	Oman	Oil & gas skids
Arabian Industries	Oman	Chemical Injection, tanks
Orbital Projects & Services	Oman	Chemical Injection, fabrication
Special Technical Services	Oman	Chemical Injection, Water injection, Manifolds
Tasnee	Oman	Feed separators
CONFIND S.R.L.	Romania	Pumps, vessels

**OEM**

**Customers Approvals / Prequalifications**

Company	Country	Application / Main Products
Lewa	Singapore	Pumps
LITOSTROJ POWER D.O.O.	Slovenia	Water turbines
Airgas Compressors	South Africa	Compressors
Atlas Copco	South Africa	Compressors
Alderley	UAE	LNG metering, gas metering, liquid metering
Global Process Systems	UAE	Acid gas treatment, Fuel gas treatment, oil & gas / water separation
Lewa Pumps	UAE	Metering pumps, process pumps, centrifugal pumps
Milton Roy	UAE	Metering pumps, mixers, controllers
Petronash	UAE	Chemical Injection, Effluent treatment, Modular package, Well head control panels
Process Group	UAE	Gas processing, Oil treatment, Water treatment
Proserv	UAE	Chemical Injection, hydraulic power units, well head, sub sea sampling
Specialist Services	UAE	Skid packages, offshore refurbishment
TPC	UAE	Fuel gas conditioning, chemical injection, well head control panels, bio side injection
Honeywell Normalair-Garrett	United Kingdom	Aircraft components
Agilyx	USA	Plastic to oil recycling systems
Cryoquip	USA	Natural gas fuel systems for ships
Enerflex	USA	Gas Compression & Treatment
Exterran	USA	Gas Compression & Treatment, Oil Production Equipment
Gaumer Process	USA	Heater Systems, Heat Exchangers
KHS	USA	Beverage filling and packaging systems
Kobelco Compressors America	USA	Compressor systems
Lube Power	USA	Lube oil systems
Membrane Technology and Research (MTR)	USA	Natural gas processing skids
Pall Corporation	USA	Process equipment for filtration, separation & purification solutions.
Paul Mueller Company	USA	Stainless steel tanks and processing systems
Siemens	USA	Oxidation systems
Tersus Solutions by CO <sub>2</sub> Nexus	USA	CO <sub>2</sub> dry cleaning machines
Tetra Pak Processing Equipment	USA	Food & Beverage packaging systems
Thermal Engineering International	USA	Heat exchanger systems
UOP	USA	Modular systems
Veolia Water Solutions & Technologies	USA	Evaporation and crystallization systems
Wahlco	USA	Environmental systems for pollution control

Prequalification is a customer approval procedure manufacturers must pass in order to be listed on the end user's Approved Vendor List (AVL) or Approved Manufacturers List (AML). LESER is listed on the AVL / AML of most major end users and Engineering, Procurement, and Construction (EPC) companies worldwide and have often passed a customer audit to reach this status.

The approval process is generally quite demanding, requiring extensive amounts of documentation to be supplied to verify LESER's ability to continually provide high-quality safety relief valves and service standards to support customer requirements. Once qualification is completed, LESER safety relief valves can be supplied to major end users worldwide without further documentation needed.

This chapter shows a selection of end users from the global market who have authorized the use of the LESER products in their plants.

If you require additional information or an approval not listed, please contact: [sales@leser.com](mailto:sales@leser.com).



**Prequalifications**

**Oil & Gas Industry**



Company	Approval Date	Registration / Reference
Achilles	May 2005	HRA 824 24
Achilles JQS	May 2014	Customer letter
Aker Solutions	August 2012	LID 1400.02
Al Nahr Company Limited	July 2010	LID 1400.02
Anadarko Petroleum Corporation	June 2013	LID 1400.02
ARAMCO Overseas Company B.V.	November 2011	LID_DE 1400.01
Aramco Services Company	October 2010	LID 1400.02
Asprofos Engineering S.A.	March 2000	LID 1400.02
Banagas BAHRAIN NATIONAL GAS CO. (B.S.C.)	May 2011	Customer letter
Bechtel	July 2011	LID_DE 1400.01
Ecopetrol	February 2010	Customer letter
Exxon Mobil Corporation	November 2013	LID_DE 1400.02
ExxonMobil Production Deutschland GmbH	June 2006	Customer letter
Hamworthy Combustion	October 2012	LID 1400.02
Kuwait National Petroleum Company - KNPC	January 2013	Customer letter
Kuwait Oil Comp. (K.O.C.)	November 2009	Customer letter VEC-9514/IN/RV RQF/8019/2009
MODEC Offshore Production Systems (Singapore) Pte Ltd	October 2013	LID_DE 1400.01
MRC Transmark France SAS	November 2010	LID 1400.02
MRC Transmark B.V.	July 2011	LID 1400.02
OIL & GAS SOLUTIONS PTE. LTD.	December 2013	LID_DE 1400.01

**Oil & Gas Industry**



Company	Approval Date	Registration / Reference
Pertamina Refinery Unit	January 2015	LID_DE 1400.01
Petrodar Operating Company	February 2011	LID 1400.02
Petrofac	July 2009	LID 1400.02
Petroleo Brasileiro S/A - PETROBRAS	2002	CRCC
Petronas	September 2014	195647-H
PT. Perusahaan Gas Negara (Persero) Tbk.	January 2015	Customer letter
Qatar Petroleum	March 2013	Customer letter 303584
REPSOL YPF S.A.	October 2003	LID 1400.02
SAIPEM S.p.A.	January 2007	LID 1400.02
Shell Global Solutions	July 2003	LID 1400.02
Shell Nigeria	November 2010	LID 1400.02
Sicon Oil & Gas S.r.l.	April 2007	LID 1400.02
Siirtec Nigi	March 2006	LID 1400.02
SNAMPROGETTI	April 2006	LID 1400.02
Takreer Abu Dhabi Oil Refining Company	January 2010	Customer letter TKR/5/S/077/FES/2010
TOTAL	September 2008	LID 1400.02
Total E&P	December 2014	MRP/SRM/2014-104
Vopak	November 2011	LID 1400.02

**Prequalifications**

**Chemical Industry**



Company	Approval Date	Registration / Reference
Air Products and Chemicals Inc.	February 2011	SIP 1400.01
BASF Corporation	February 2011	LID 1400.02
Bayer	October 2010	LID 1400.02
Bechtel	July 2011	795114326
BIS Biffinger	June 2010	LID 1400.02
Chemtura Corporation	October 2010	LID 1400.02
Chemtura Manufacturing Netherlands B.V.	February 2006	LID 1400.02
Dow Chemical Corporation	2010	LID 1400.02
Haldor Topsoe A/S	–	LID 1400.02
KBR Energy & Chemicals	May 2013	LID_DE 1400.01
LANXESS Deutschland GmbH	August 2012	Customer letter
LEWA Inc.	October 2010	LID 1400.02
PT PUSRI PALEMBANG	August 2013	Customer letter
Rhodia	May 2010	LID 1400.02
SABIC Saudi Basic Industries Corporation	July 2014	Customer letter GPPQ/L/385
SADARA CHEMICAL COMPANY	March 2015	LID_DE 1400.01
SASOL	–	LID 1400.02
Tecnimont	May 2006	LID 1400.02
Sasol Technology (Pty) Limited	March 2003	Customer letter

**Petrochemical Industry**



Company	Approval Date	Registration / Reference
Anadarko Petroleum Corporation	June 2013	–
ARAMCO Overseas Company	June 2004	LID 1400.02
Aramco Services Company	2010	LID 1400.02
Ecopetrol	November 2009	LID 1400.02
Engineers India Ltd. (EIL)	May 2015	4994/PDD/F/RE/L569
Foster Wheeler	September 1997	LID 1400.02
Foster Wheeler Italiana S.r.l.	July 2006	LID 1400.02
Maire Tecnimont SpA	January 2014	LID_DE 1400.02
OMV AG	July 2000	LID 1400.02
Petrobras	November 2011	Customer letter 25819
Petronas	September 2014	195647-H
Reliance Industries	2008	203190
Reliance Industries Limited	February 2008	Customer letter 203190
SapuraKencana Petroleum	September 2013	LID_DE 1400.01
Shell Brunei	April 2012	Customer letter
Sicon Oil & Gas S.r.l	January 2013	LID 1400.02
SONATRACH	August 2009	LID 1400.02
Total Technology Group	December 2012	Customer letter

**Prequalifications**

**Pharmaceutical and Food & Beverage Industries**



Company	Approval Date	Registration / Reference
Centocor Biotech, Inc.	August 2004	LID 1400.02
GEA Tuchenhagen Pharma Systems	–	LID 1400.02
Novartis Pharma	1999	Customer letter
Novartis Pharmaceuticals	April 2008	LID 1400.02
Pfizer Ltd. UK	February 2012	LID 1400.02
TetraPak	2005	Frame agreement
TetraPak	September 2008	LID 1400.02

**Technical Gases Industry**



Company	Approval Date	Registration / Reference
Air Liquide Global E&C Solutions	April 2014	LID_DE 1400.02
Air Liquide S.A.	–	LID 1400.02
Air Products and Chemicals Inc.	February 2011	LID 1400.02
Linde	2012	SV-Leser-09052012
TGE	2014	Customer letter

**Marine Industry**



Company	Country	Registration / Reference
Bluewater	November 1999	LID 1400.02
Gusto B.V. SBM Offshore	May 2010	LID 1400.02

**Power Industry**



Company	Approval Date	Registration / Reference
Abener Energia, S.A.	December 2009	Customer letter AB-1277/2009 JPL-mdm
Alstom Power	October 2008	LID 1400.02
Alstom Power Sp. Z.o.	August 2006	LID 1400.02
Centrales Nucleares ALMARAZ-TRILLO	January 2012	Customer letter AT-VS-002460
FORTUM Finland	December 2011	LID 1400.02
Framatome	June 2004	LID 1400.02
Gama Power Systems Engineering & Contracting Inc.	April 2010	LID 1400.02
MVM Paks Nuclear Power Plant Ltd.	February 2015	Customer letter KM 75/2014
Public Power Corporation S.A.	September 2010	LID 1400.02
Saudi Electricity Company	December 2014	Customer letter 12015001

**LNG / LPG Industry**



Company	Approval Date	Registration / Reference
BG Energy Holdings Limited	January 2013	LID 1400.02
BG Group plc	December 2013	Customer letter
INA - Industrija Nafta d.d.	September 2014	LID_DE 1400.02
Technigaz	January 2002	LID 1400.02

**Other Industries**



Company	Approval Date	Registration / Reference
ABB S.p.a	March 2013	LID_DE 1400.01
Cameron Flow Control Technology (UK) Limited	September 2014	LID_DE 1400.01
Fluor B.V.	August 2012	LID_DE 1400.01
KBR	2013	LID_DE 1400.02
MODEC	2014	LID_DE 1400.02
SAIPEM SpA	January 2007	Registration number: 44990
Saudi Arabian Mining Company (Ma'aden)	July 2014	LID_DE 1400.01
STSI d.o.o.	September 2014	LID_DE 1400.02
Tecnimont	2014	LID_DE 1400.02

**Global Approvals**

LESER safety relief valves are type-tested according to all major codes (PED, ASME, EAC (old GOST), TS, etc.) and classification societies. Coverage of all codes ensures compliance to all regulatory requirements and worldwide usability.

This chapter shows a selection of global approvals for LESER products and services. If you require an approval not listed, please contact: **SALES@FLOCONX.COM**  
**VENTAS@FLOCONX.COM**



**Company approvals**

Authority	Country	Type of approval	Applied standard	Approved since
Selo	China	Manufacture License of Special Equipment	AQSIQ	1998
TUEV Cert	Germany	Management system	EN ISO 9001 : 2000	1992
TUEV Cert	Germany	Environmental management system	EN 14001 : 2005	2001
TUEV Nord	Germany	QS-System, manufacturing of pressure equipment	PED 97/23/EC, Modul D/D1	2000
TUEV Nord	Germany	LESER test lab for steam and water	VDTUEV SV 100, AD 2000-Merkblatt A2	1985
TUEV Nord	Germany	Manufacturer of safety valves	AD 2000-Merkblatt HP 0	1991
TUEV Nord	Germany	Welding workshop	EN 3834	1997
ASME	USA	UV Stamp, Manufacture of pressure relief valves	ASME Sec VIII Div. 1	1991
ASME	USA	LESER test lab for air and water authorized observer	PTC 25, ASME Sec VIII Div. 1	1994
National Board	USA	Management system application of the "NB" mark	ASME Sec VIII Div. 1	1991

**Type test approvals**

Country	Code	High Performance	Compact Performance	API	Clean Service	Critical Service	Modulate Action	High Efficiency
Canada	CRN	✓	✓	✓	✓	✓	✓	✓
China	AQSIQ	✓	✓	✓	✓	✓	✓	✓
Eurasian Custom Union	EAC	✓	✓	✓	✓	✓	✓	✓
Europe	PED 97/23/EC	✓	✓	✓	✓	✓	✓	✓
Germany	VDTUEV SV 100, AD 2000-Merkblatt A2	✓	✓	✓	✓	✓	✓	✓
USA	ASME Sec. VIII Div. 1	✓	✓	✓	✓	✓	-	✓

**Classification societies**

Society	High Performance	Compact Performance	API	Clean Service	Critical Service	Modulate Action	High Efficiency
BV Bureau Veritas	✓	✓	✓	-	-	✓	-
DNV Det Norske Veritas	✓	✓	✓	-	-	✓	✓
GL Germanischer Lloyd	✓	✓	✓	-	-	✓	-
LREMEA Lloyd's Register EMEA	✓	✓	✓	-	-	✓	-
RINA Registro Italiano Navale	✓	✓	-	-	-	✓	✓
US Coast Guard	✓	-	✓	-	-	-	-
NK Nippon	✓	-	-	-	-	✓	-

**Order related approvals**

Authority	Country	Type of approval	Approved since
ABS American Bureau of Shipping	USA	ABS Standard	2002
IBR	India	IBR 1950	2008
KHK	Japan	HPGC / HPVC	2008
KOSHA	South Korea	KOSHA	1999

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