

SULZER

Sulzer Pumps

The World Leader in Pumps for the Oil and Gas Industry



The Heart of Your Process



World Leader in Oil and Gas Pump Applications

Expertise

Sulzer Pumps' success in Oil and Gas is based on our unique ability to push back technical barriers and provide reliable high quality equipment. This is achieved by the fundamental principles nurtured by the company to develop the world's finest engineers in their respective fields. This experience is seen throughout the Oil and Gas disciplines within Sulzer Pumps: From the concept phase through to design, manufacture, testing, installation and dependable operational support.

Reliability

Sulzer Pumps' reliability in Oil and Gas applications is renowned across the world. Should this be production, pipeline, LNG or any other upstream process, Sulzer Pumps products have earned a reputation for first time start-ups, availability, reliability and ease-of-maintenance and receive frequent compliments from our customers.

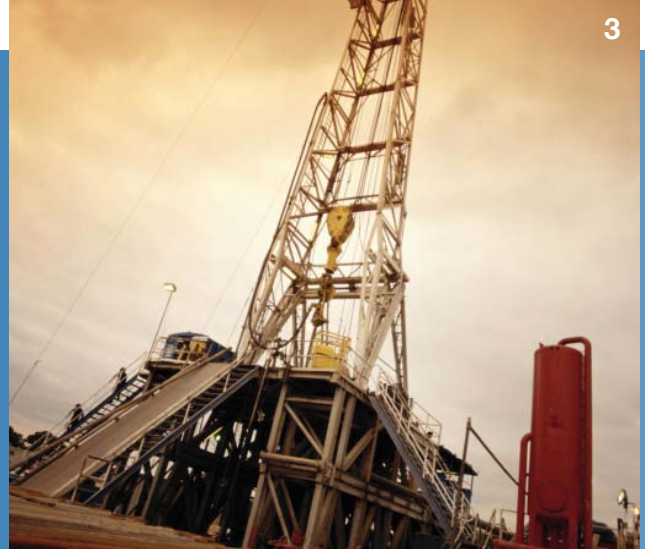
Our ground-breaking technology led to the world's first 40,000 hour life guarantee on a high energy injection pump in operation. With over 1,000 MW installed power and more than 1,000,000 operating hours, Sulzer HPcp pumps deliver 99% availability for their operators.

Research & Innovation

Sulzer Pumps continues to create world records in the Oil and Gas business and our list of firsts is un-equalled. Having produced the world's most powerful centrifugal barrel pumps in the 1980's, we later broke our own record by 50% with injection pumps rated at 27MW. We also delivered the world's highest pressure centrifugal injection pumps at 605 bar discharge pressure with designs now available for over 800 bar. Add to this the world's highest pressure, axially split injection pump, the world's largest multiphase pumps and LNG send-out pumps, and development work on the world's highest power subsea pump and it is clear Sulzer Pumps is the technical leader in its field.

Presence

With 13 Sulzer Pumps manufacturing plants located around the globe, over 60 service centers and numerous regional locations, we are positioned to support our customers from the first exploration and FEED stage through to operations, retrofits and upgrades. Our global presence and culture help us achieve our ultimate goal: making our customers more competitive.



Future

New oil deposits are being found in ever more aggressive or remote environments. The ongoing need for increased pressures and flow rates in injection and multiphase boosting applications, coupled with the challenges of underdeveloped production locations, makes pump reliability critical. Emerging subsea applications for these duties are demanding a further step forward in technology. Intercontinental pipelines transport crude oil to shipping ports or refining centers. Remote, unmanned pumping stations must operate reliably if excessive maintenance costs and capacity restrictions are to be avoided. At Sulzer Pumps we are committed to continuously developing products to meet these challenges while maintaining the legendary reliability of our equipment.

Sulzer Firsts

- 1975** World's first duplex injection pumps.
Sonatrach – Algeria – 13 units
- 1977** World's largest injection pumps.
Saudi Aramco – 15.7 MW – 2 units
- 1981** World's largest injection pumps.
Sohio – Alaska – 18.8 MW – 2 units
- 1984** World's largest offshore injection pump.
Zadco – Abu Dhabi – 14.2 MW – 1 unit
- 1992** World's largest vertical injection pumps.
Statoil – Norway – 6.7 MW – 2 units
- 1994** World's largest LNG send out pumps.
Botas – Turkey – 2,121 m – 5 units
- 1999** World's largest offshore multiphase pumps.
Total – UK North Sea – 4.5 MW – 2 units
- 2000** World's largest multiphase pumps.
Yukos Oil – Siberia – 6.0 MW – 2 units
- 2001** World's highest pressure injection pumps.
BP – Gulf of Mexico – 605 Bar – 4 units
- 2002** World's largest injection pumps.
AIOC – Caspian Sea – 27 MW – 4 units
- 2007** World's largest LNG send out pumps.
Zeebrugge – Netherlands – 1.43 MW - 3 units
- 2008** World's largest East to West oil pipeline.
ESPO – Russia – 14.5 MW – 24 units
- 2012** World's highest power subsea multiphase pump
Full size prototype – UK – 3.2MW - 1 unit



The Answer to Your Process Needs

Oil Production

Oil production depends on efficient, reliable pumps for injection, main oil line, seawater lift, fire fighting and associated auxiliary applications. Sulzer Pumps is at the forefront for delivering ground breaking designs that keep the state-of-the-art ahead of the demands of new oil production developments. Latest developments include subsea injection and multiphase designs for sea floor operation.

Floating Production, Storage and Offloading (FPSO)

Deepwater and remote offshore locations in undeveloped areas have led to the growth in use of FPSO production vessels. FPSO applications bring their own set of demands including compact installation space, open deck environment and ship movement to contend with. Sulzer Pumps' range of products for FPSO addresses these needs with innovative design solutions to provide reliable, compact FPSO pump systems.

Pipelines

Transporting crude oil or refined products in pipelines across continents from production centers to market is a key part of the modern world's energy distribution infrastructure. Sulzer pipeline pumps are highly efficient to minimize energy consumption whilst being extremely reliable. Sulzer pumps are installed all over the world, chosen by operators who know they can depend on them to reliably and economically maintain their pipelines at full flow.





Gas

Gas production, and in particular Liquefied Natural Gas (LNG), is expanding at a rapid rate. With a range of cryogenic pumps suitable for pumping LNG, Sulzer specializes in building ultra large high pressure send out pumps for the latest generation of LNG terminals.

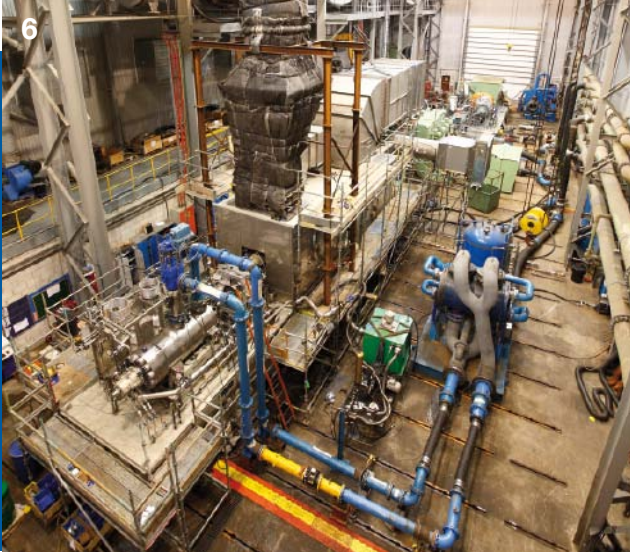
Multiphase

Multiphase pumping is increasingly used to boost well production. Sulzer helico-axial MPP pumps are used at the heart of such developments and currently represent the largest onshore and offshore multiphase installations in the world. Latest developments include a subsea version of the pump for direct boosting at the well head.

CO₂

Capture, transportation and storage of CO₂ is a developing market with CO₂ being used as an injection medium or stored in depleted wells. Sulzer Pumps is active in this field supplying CO₂ pipeline transportation and high pressure injection pumps.





The World's Best Production and Testing Facilities

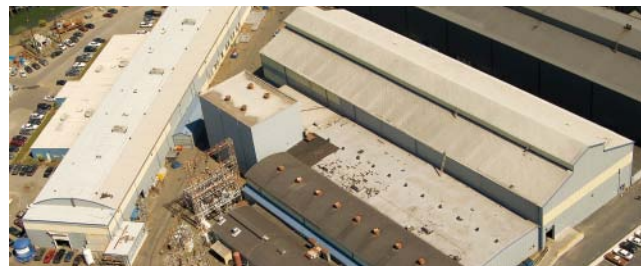
To be close to our customers, Sulzer Pumps has production facilities on almost every continent. Our production sites in the UK, United States and Brazil are focused to offering a complete range of products for Oil and Gas applications. All Sulzer Pumps manufacturing locations have certified Quality Management Systems in place conforming to the requirements ISO 9001:2000 standard, as well as ISO 14001 and OHSAS 18001.

Testing Capabilities

Sulzer Pumps manufacturing plants all have excellent testing facilities, capable of demonstrating pump performance and proving the ancillary equipment to ensure smooth commissioning and start-up. One example is our unique in-house gas turbine string testing capabilities. Having supplied hundreds of gas turbine driven pumps, Sulzer is aware of the need to prove the full train prior to dispatch and has the capability to undertake string testing with gas turbine drivers up to 30MW within our own manufacturing environment. Our existing capability to string test electric motor, VFD, diesel and gas engine trains provides a high level of comfort to our clients. Our latest investment in a subsea testbed supports development of the next generation of subsea pumps.



Sulzer Pumps UK



Sulzer Pumps USA



Sulzer Pumps Brazil



Meeting Your Needs

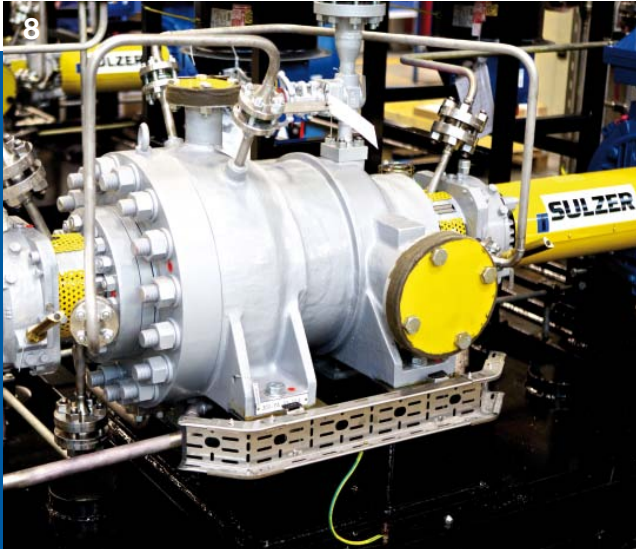
Safety, Health and Environment

Health and safety is a top priority for Sulzer Pumps, in our own operations and our work with you. We document and evaluate safety performance indicators, including accident frequency and severity, at all sites on a monthly basis. Any accident is one too many. Across the company our long-term goal is to reduce the number of occupational accidents and illnesses to zero.

Our concern for health and safety extends to the environment as well. Sulzer Pumps considers the total life cycle of its products to limit environmental impact and help lower costs. Sulzer Pumps' total life cycle analysis includes the design, manufacturing, marketing, packaging, transportation, operation, recycling, and disposal of the products. We apply the same rigorous evaluation to the way we provide services. We focus on identifying relevant influences on product life cycle efficiency, including energy consumption during production, material usage and costs, and continually take action to make improvements.

Customer Support Services

The continuous availability and high operating performance of pumps is the key target for Sulzer Pumps Customer Support Services organization. Through our highly experienced personnel and application knowledge, we provide you with a full range of service solutions to keep your pumps running. With services ranging in scope from supplying a spare part to operating the pump under contract, we are uniquely placed to make your process run smoother. Our service specialists based at either our manufacturing facilities or one of over 60 service centers around the world are dedicated to maintaining the performance of your pumps and associated equipment.



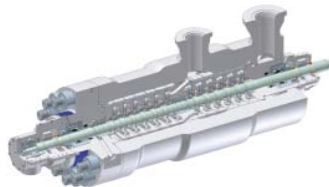
Barrel Casing Pumps

HPcp

HPcp ISO 13709 (API 610) BB5 radially split barrel pumps are used for injection and main oil line services. Using the Twistlock system of barrel closure to minimize weight, these pumps represent the state-of-the-art for upstream high-energy pumps. The world's largest onshore, offshore, highest pressure and vertical injection pumps are all HPcp designs.

Pressure 600+ bar / 8700+ psi

Temperature 90 °C / 195 °F



GSG

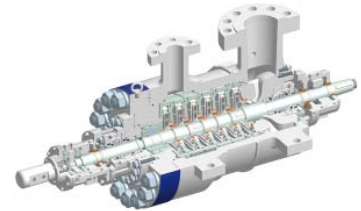
GSG ISO 13709 (API 610)

BB5 radially split barrel casing pumps are used in oil production for injection and MOL applications.

Their design is optimized for synchronous speed direct drive applications thus avoiding unnecessary and expensive construction features. Their full cartridge design makes the most of the compact Sulzer Twistlock system of barrel closure. A back-to-back low flow high pressure option is also available.

Pressure 250 bar / 3625 psi

Temperature 425 °C / 800 °F



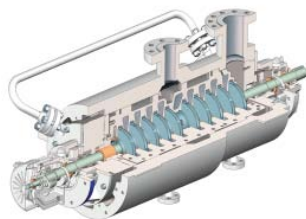
CP

CP ISO 13709 (API 610)

BB5 axially split barrel casing pumps are used in oil production for injection and MOL applications. The axially split inner case makes removal of the complete rotor for maintenance a simple procedure. They are particularly suited to low specific gravity applications where the back-to-back design and center bush provide natural axial balance and additional shaft support. These pumps also utilize the Sulzer Twistlock design for the casing cover.

Pressure 410 bar / 6000 psi

Temperature 425 °C / 800 °F



MPP

MPP helico-axial multiphase pumps are spearheading a revolution in oil and gas production. The pumps are able to operate with high gas fractions thus removing the need for separation systems. The world's largest onshore and offshore multiphase installations are Sulzer MPP designs with a subsea version in development.

Pressure 150 bar / 2175 psi

Temperature 175 °C / 350 °F



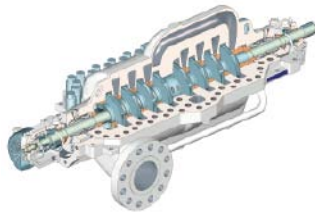


Axially Split Pumps

MSD

MSD ISO 13709 (API 610) BB3 multistage pumps are widely used in pipelines and water injection applications. The broad range of standard hydraulics and mechanical design options ensure an optimum fit to customers' duty requirements, using proven pre-engineered solutions.

Pressure 310 bar / 4500 psi
Temperature 200 °C / 400 °F



HSB

HSB ISO 13709 (API 610) BB1 double suction axially split pumps are designed for use in pipeline and general heavy duty auxiliary applications. Their robust design is suitable for both synchronous and high-speed operation.

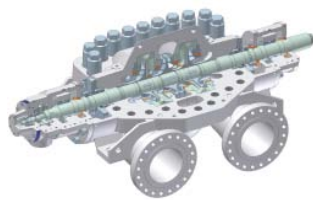
Pressure 30 bar / 435 psi
Temperature 160 °C / 320 °F



HPDM

HPDM multistage axially split pumps are designed for high volume, high pressure transport applications. HPDM pumps are individually designed to provide class-leading efficiency and are used to supply water for arid area inland injection applications as well as main pipeline pumps.

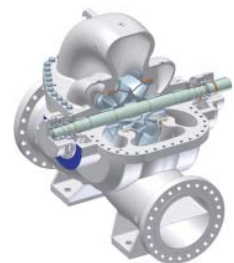
Pressure 150 bar / 2200 psi
Temperature 90 °C / 195 °F



SMH

The SMH ISO 13709 (API 610) BB1 compliant design is used for boosting, transfer, firefighting and low pressure auxiliary applications. The pre-engineered range provides robust design options specifically intended for upstream applications.

Pressure 30 bar / 435 psi
Temperature 160 °C / 320 °F





Single and Two Stage Pumps

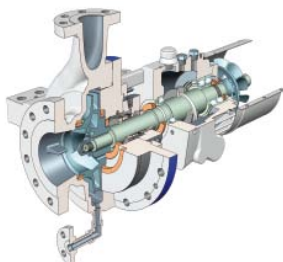
OHH

OHH ISO 13709 (API 610)

OH2 pumps are designed for process and boosting applications. The pump already meets the requirements of the latest generation of API and ISO standards. Key to the design is the widest hydraulic performance coverage on the market coupled with the smallest size steps. This means better quality selections no matter what the duty.

Pressure 50 bar / 725 psi

Temperature 425 °C / 800 °F



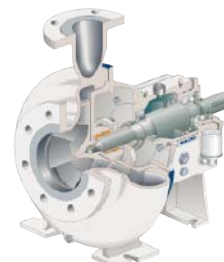
CPT

CPT ANSI B73.1 process pumps

offer rugged construction in a compact and economic package. Designed specifically for arduous process and auxiliary duties, the CPT allows considerable savings to be made vs ISO13799 designs without sacrificing quality or durability. A wide range of standard materials of construction including duplex stainless steels provide extended operating life and high levels of reliability.

Pressure 16 bar (25 bar) / 230 psi (360 psi)

Temperature 260 °C / 500 °F



BBS

BBS ISO 13709 (API 610) BB2

pumps are primarily used in auxiliary process and booster applications. The broad pressure and temperature capabilities of this design allow it to be used in the most arduous situations while still providing long and trouble free service. The double entry impeller is particularly suited to low NPSHa duties.

Pressure 100 bar / 1450 psi

Temperature 425 °C / 800 °F



BBT/BBT-D

These ISO 13709 (API 610) BB2

back-to-back two stage pumps are designed for process applications where higher heads are required. The design features large seal chambers able to accommodate API 682 seals. Standard options include a double entry suction option for low NPSHa duties in the BBT-D.

Pressure 100 bar / 1450 psi

Temperature 450 °C / 840 °F



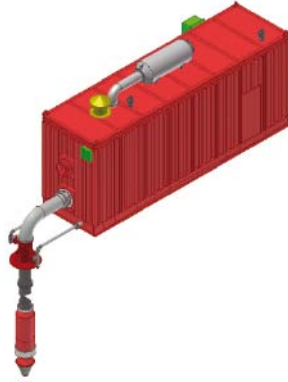


Vertical Pumps

Hydraulic Drive Fire Pumps

The Sulzer Pumps hydraulic drive fire fighting system consists of a submersible lift pump driven by a hydraulic motor. A self contained, containerized module supports a diesel drive, booster pump, hydraulic power unit, fuel and all other systems required to operate the unit. The absence of external 90° gearboxes for lineshaft pumps or the HV electric cables associated with electro-submersible solutions makes them extremely robust in an emergency situation.

Pressure 30 bar / 435 psi
Temperature 60 °C / 140 °F



SJD (API)

The SJD ISO 13709 (API 610) VS6 range of vertical can pumps is ideal for applications where NPSHa is restricted. The pumps are used in a wide range of applications and services including booster pumps in pipeline pumping stations. Low temperature variants are available for cryogenic applications. Their robust construction and wide hydraulic range make them ideally suited to process critical applications.

Pressure 150 bar / 2150 psi
Temperature 205 °C / 400 °F



www.sulzerpumps.com



E00607 en (4) 04.2011 (1,000), Copyright © Sulzer Pumps

This brochure is a general product presentation. It does not provide a warranty or guarantee of any kind. Please, contact us for a description of the warranties and guarantees offered with our products. Directions for use and safety will be given separately. All information herein is subject to change without notice.