

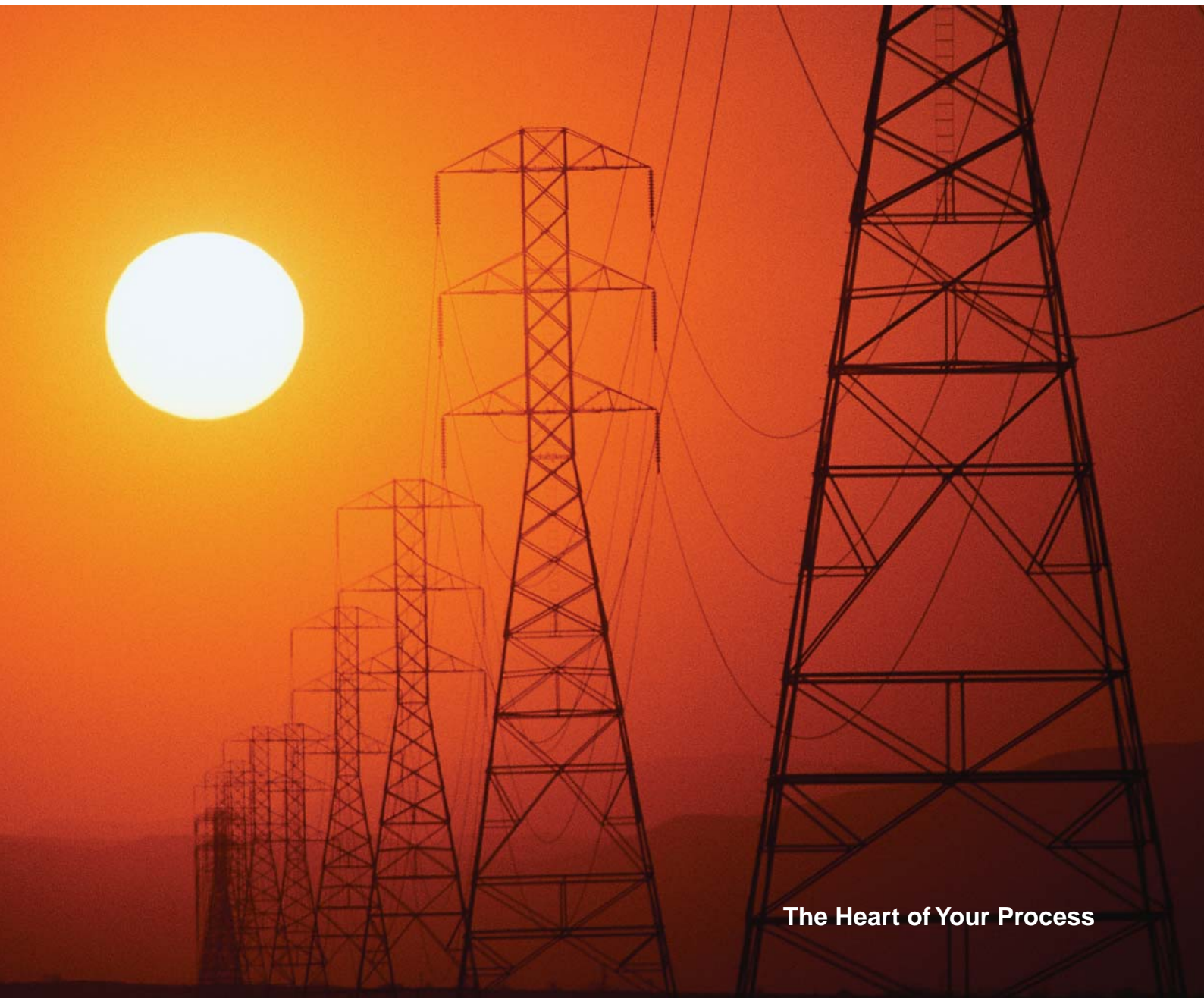
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SULZER

Sulzer Pumps

Pumping Solutions for the Power Generation Industry



The Heart of Your Process



Benefit from Sulzer Pumps' Experience in Pumping Solutions for Power Generation

Offering innovative and market leading solutions.

Sulzer Pumps' success is founded on expertise. Our know-how and competitiveness is based on many years of experience in the manufacturing of pumps. Sulzer Pumps offers products for all types of power plants—nuclear reactor, fossil fired, geothermal, combined cycle, large and small industrial power plants. We offer an extensive range of innovative products and services. Sulzer delivers boiler feed, condensate extraction, boiler circulator, cooling water and auxiliary pumps, as well as specialized safety related pumps for nuclear power plants. We are leading in boiler feed pumps for supercritical fossil-fuel fired power plants.

Reliability

We have a successful track record of improving our customers' profitability by setting new standards in efficiency and reliability. Millions of people around the world are benefiting from a more reliable power supply as a result.

Reliability of your pumping solution depends on the proper product design, the right selection, the manufacturing and delivery process, aftermarket service and all associated support. Sulzer pumps for the power generation are universally respected for their innovative and sturdy design.

Expertise

The latest manufacturing technology together with strict quality control procedures assure high levels of efficiency and performance over a full range of process conditions. Sulzer Pumps tests all pumps before delivery.

Research and development have always received top priority at Sulzer Pumps. Basic research focuses on hydraulics, cavitation, erosion, corrosion and mechanical design (particularly rotor-dynamics), which is then applied to advance product development. Our engineers work closely with customers all over the world on the practical implementation of innovative ideas. At any point, our customer can call upon the diverse expertise of the many research specialists working in our laboratories. Successful research and development activities require continuous investment. Beyond immediate job results, Sulzer Pumps' commitment to research and development benefits our customers by ensuring that they have a stable business partner at the leading edge of pump technology.

Build on our knowledge to enhance your future.

Research

Research and development have always received top priority at Sulzer Pumps. Basic research focuses on hydraulics, cavitation, erosion, corrosion and mechanical design (particularly rotor-dynamics), which is then applied to advance product development. Our engineers work closely with customers all over the world on the practical implementation of innovative ideas. At any point, our customer can call upon the diverse expertise of the many research specialists working in our laboratories. Successful research and development activities require continuous investment. Beyond immediate job results, Sulzer Pumps' commitment to research and development benefits our customers by ensuring that they have a stable business partner at the leading edge of pump technology.

Our technology for high efficiency and reliability.

It starts with the right people and ends with the right solution.



Innovation

Sulzer Pumps' innovative technological solutions and equipment support the sophisticated processes applied in power generation. Sulzer Pumps has always been at the forefront of pre-engineered and engineered pump designs, using the widest range of materials to produce reliable equipment to handle a full range of pressures and temperatures.

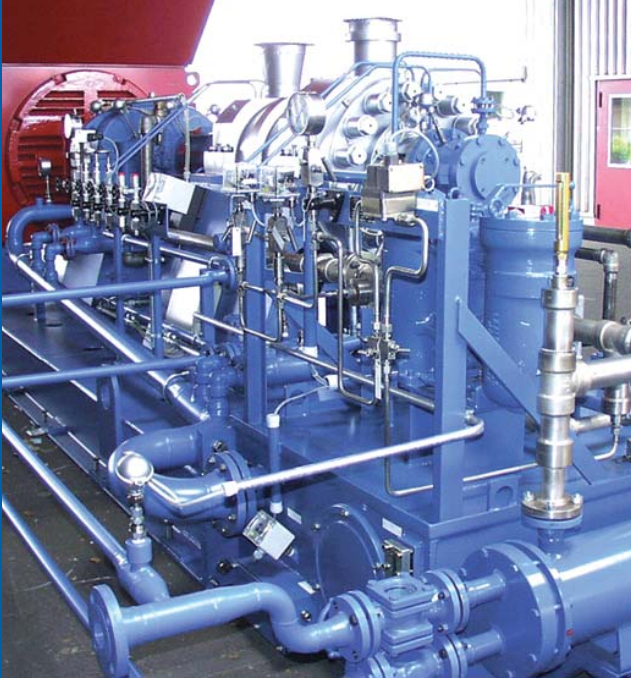
**Staying ahead
with innovative
pumping
solutions.**

Presence

With 14 manufacturing facilities strategically located around the globe Sulzer Pumps combines the advantages of being a global company with the ability to be your local partner. We take care of our customer relationships through our focused sales and service people with a high-level knowledge. Their work – and yours – is complemented by our global knowledge support and good sales documentation. Local tendering and order handling ensures quick response to all your pumping needs. In addition to our dedicated personnel and competencies, Sulzer Pumps benefits from the ability to transfer manufacturing of either parts or complete

pumps between plants which guarantees the most efficient utilization of our worldwide facilities.

**World class
products –
world class
service.**



Serving Diverse Power Markets

Fossil Fuel

Sulzer Pumps is a leading developer and manufacturer for boiler feed pumps in subcritical and supercritical plants, cooling water pumps, condensate extraction pumps and auxiliary services.

Combined Cycle

Providing technical expertise in a broad spectrum of pumping applications benefits our customers. These applications involve boiler feed, auxiliary, condensate and cooling water.

Nuclear Power

Sulzer Pumps—Innovator and major pump supplier worldwide for primary, secondary, safety systems and mechanical seals to ensure effective and reliable pumping solutions.

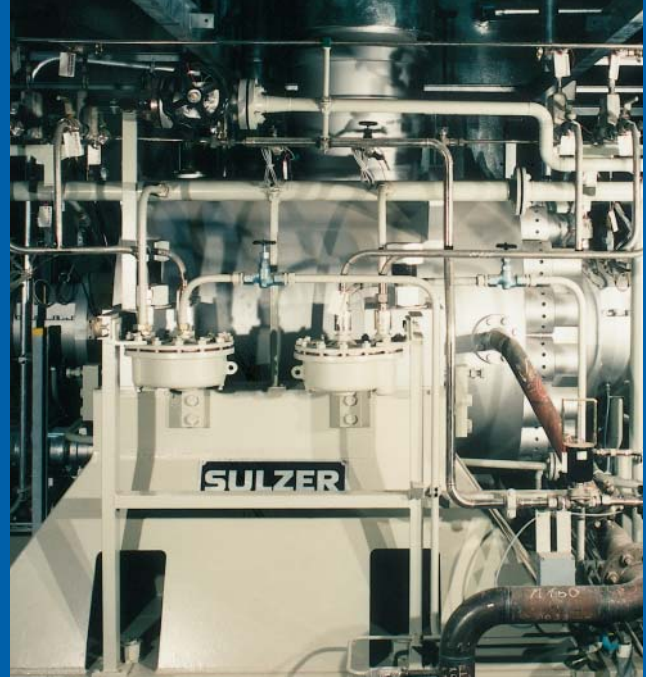
Industrial Power

Engineering and implementing reliable, cost effective pumping solutions to meet the demands of a continually evolving power generation industry is our focus.

Flue Gas Desulphurization

Sulzer Pumps offers a wide range of products for flue gas desulphurization plants which are economical in operation and of high technical standing.





Pumps for the Most Critical Applications and Demanding Conditions

Product technology	Product type	Boiler feed	Condensate extraction	Cooling water	Flue gas desulph.	Nuclear services	Auxiliaries
Barrel Pumps	HPT	●				●	
	GSG	●				●	
	CP	●				●	
Axially Split Pumps	SMN/SMNV			●			●
	ZPP			●			●
	HSA/HSB			●			●
	MSD	●				●	●
Ring Section Pumps	MBN/MC/MD/ME	●	●				●
Vertical Pumps	SJD (CEP)		●				
	SJT/SJM/SJP			●		●	●
	RV/RVQ					●	
Two Stage Pumps	BBT/BBT-D	●					●
Single Stage Pumps	HPTd					●	
	BBS	●					●
	HZB	●				●	●
	CD	●				●	●
	OHH/ZE/ZF	●				●	●
	ZU	●					
	A/CPT						●
	ZAP/AHLSTAR ^{UP} W				●		
	CVDS					●	
CVIC/CV					●		



Boiler Feedwater Pumps

Boiler feedwater service is one of the most demanding pump services within a power plant. Sulzer Pumps supplied thousands of pumps in services ranging from small industrial boilers to the largest coal fired power plants around the globe.

Sulzer Pumps is a full-line supplier of boiler feedwater pumps and offers segmental ring section pumps or horizontal split case pumps for small industrial boiler applications up to today's largest combined cycle power plants.

For higher pressure requirements of fossil fuel power plants, Sulzer Pumps has a full line of double case barrel type pumps. For nuclear power applications we have a complete range of boiler feed and safety related pumps used for high-pressure water services.

Boiler feedwater pump reliability and availability in today's power plant is dependent upon proper application, features and equipment, shop testing, correct field installation, pump operation training, and conducting routine



maintenance and service work. Working with a full-service pump supplier such as Sulzer Pumps is essential to reliable pump installations—indispensable for supplying on-demand power to the customers.

New modular, standardized plant designs no longer use redundant equipment. To meet the high demands on dependability, factory pump tests are performed on all critical service pumps prior to shipping. Performance, vibration and hot water suction transient rest (when required) are performed to discover any potential problems before they occur in the field.





Barrel Casing Pumps

HPT Multistage Barrel Casing Pumps

The pumps are specifically designed for boiler feed applications in thermal power stations. These pumps are optimized to provide high efficiency operation over an extended period of time, reducing operation and maintenance costs. High availability and robust construction makes them all suitable for cyclic operation.

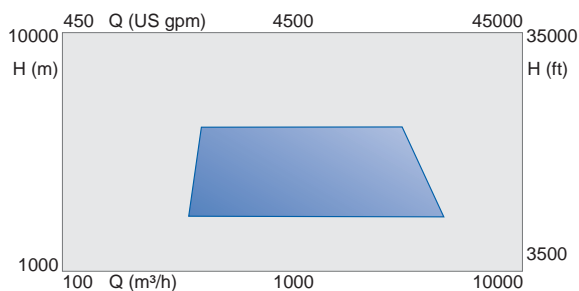


GSG Radially Split Barrel Casing Pumps

GSG radially split barrel casing pumps are used in boiler feed applications. Their design is optimized for synchronous speed direct drive applications thus avoiding unnecessary and expensive construction features. The GSG utilizes a full cartridge pull-out design on sizes 100 and larger. A back-to-back option is also available.

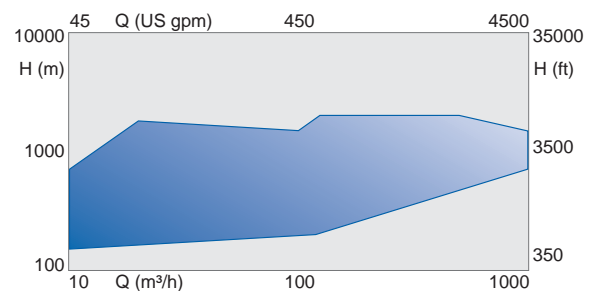


Performance range



Pressure 450 bar / 6525 psi
 Temperature 250° C / 480° F

Performance range



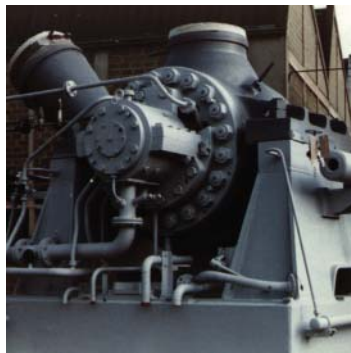
Pressure 250 bar / 3625 psi
 Temperature 425° C / 800° F



Single Stage Pumps

HPTd Radially Split Barrel Casing Pumps

The pumps are specifically designed for boiler feed applications in nuclear power stations. These pumps are optimized to provide high efficiency operation over an extended period of time, reducing operation and maintenance costs. High availability and robust construction makes them all suitable for cyclic operation.

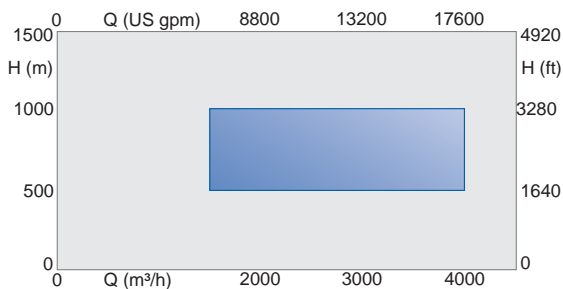


HZB Radially Split Booster Pumps

HZB pumps are designed as hot water boosters for high energy boiler feed pumps in power plants. Their design is optimized for pumping hot water with relatively low NPSH available. The rugged design ensures the long term reliable operation that is critical in this application.

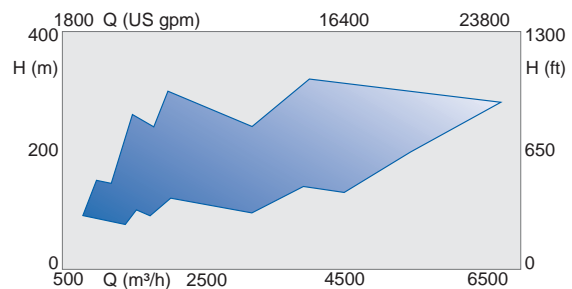


Performance range



Pressure 350 bar / 5075 psi
 Temperature 210° C / 410° F

Performance range



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



Ring Section Pumps

MBN Multistage Ring Section Pumps

Covering the performance range below the MC, the MBN ring section multistage pump is the ideal choice for medium pressure pumping applications. The pump is offered in a wide range of materials including duplex stainless steel grades. The pump utilizes integrated diffusers and a product lubricated NDE bearing to simplify construction, minimize dimensions and reduce cost.

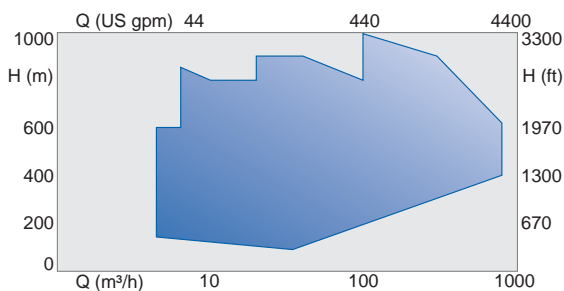


MC High Pressure Stage Casing Pumps

MC pumps are horizontal, radially split ring section pumps of modular design. MC pumps are suitable for pumping clean or slightly polluted, hot or cold, chemically neutral or aggressive liquids. These pumps are part of the M-series of pumps including the MBN, MD and ME and are primarily designed for power applications, i.e. boiler feed and condensate services in power stations, industrial plants, desalination and combined-cycle power plants.

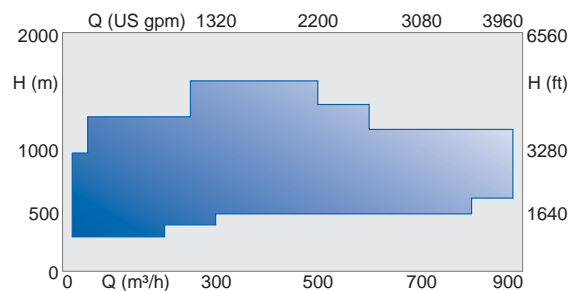


Performance range



Pressure 100 bar / 1450 psi
Temperature 180° C / 355° F

Performance range



Pressure 180 bar / 2600 psi
Temperature 180° C / 355° F



MD High Pressure Stage Casing Pumps

The MD pump is primarily designed for power applications, i.e. boiler feed in power stations, industrial plants and combined cycle power plants. Sulzer MD pumps are horizontal, radially split, centerline mounted, multistage ring section pumps. MD pumps are suitable for pumping clean or slightly polluted, hot or cold water.

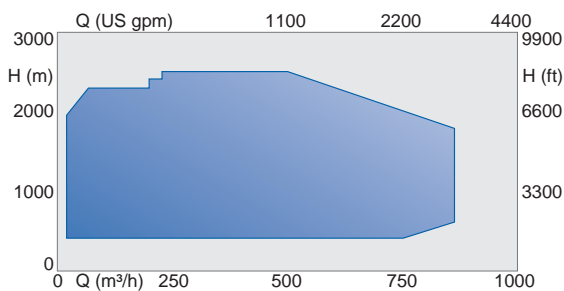


ME Ring Section Pumps

ME pumps are designed for boiler feed applications in both industrial and utility thermal power plants. Suitable for high speed operation, the modular construction allows the pump to be easily optimized for individual applications. The generously dimensioned shaft is supported by plain bearings with axial thrust being compensated by a balance piston. Shaft sealing is by mechanical seals.

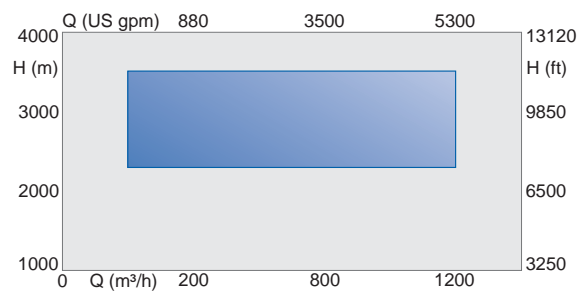


Performance range

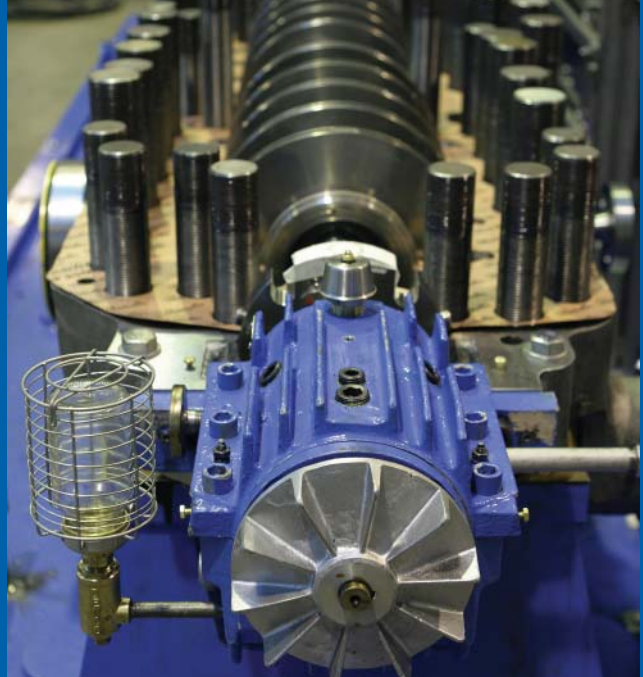


Pressure 270 bar / 3900 psi
Temperature 210° C / 410° F

Performance range



Pressure 350 bar / 5075 psi
Temperature 210° C / 410° F



Axially Split Pumps

MSD/MSE Multistage Pumps

MSD/MSE pumps are horizontal split case volute style multistage pumps used for boiler feed applications in combined cycle and IPG as well as in nuclear services. Designed in accordance to ISO 13709 (API 610) requirements. Axial thrust is compensated by back-to-back impeller configuration.

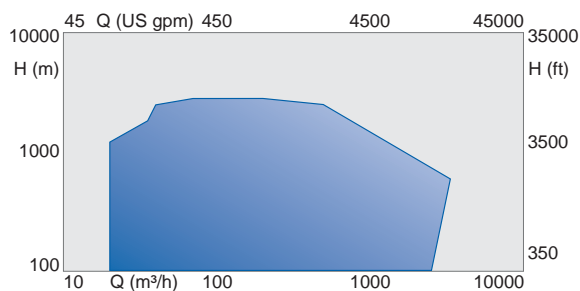


SMN/SMNV Single Stage Pumps

The SMN/SMNV pumps are single stage, double entry pumps and are used across a broad range of industries. In power generation, they are used as auxiliary cooling water pumps. Pre-engineered versions include the SMN standard industrial pump with vertical configuration options.

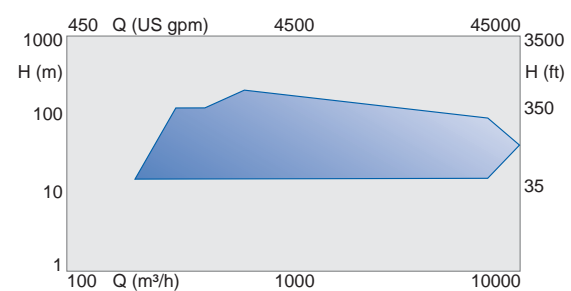


Performance range



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

Performance range



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



Vertical Pumps

SJD (CEP) for Condensate Extraction



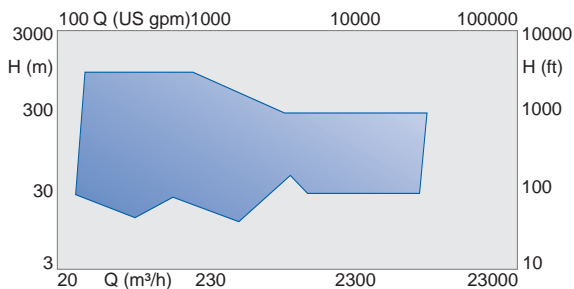
The SJD (CEP) range of vertical pumps is ideal for applications where NPSHA is limited. The pumps are used in a wide range of applications ranging from simple industrial booster pumps to high pressure condensate return and heater drain pumps in power plants.

SJM Vertical Mixed Flow Pumps



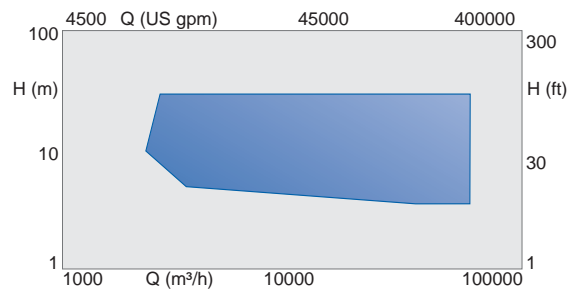
SJM mixed flow pumps are ruggedly designed for years of trouble free operation in a wide variety of applications. The basic components of discharge head, column pipe and bowl assembly are combined and customized to match individual duty needs. In addition, the broad range of material options ensures the materials of construction can be matched to individual needs.

Performance range



Pressure 150 bar / 2200 psi
Temperature 100° C / 210° F

Performance range



Pressure 17 bar / 250 psi
Temperature 50° C / 120° F



SJP Vertical Axial Flow Pumps



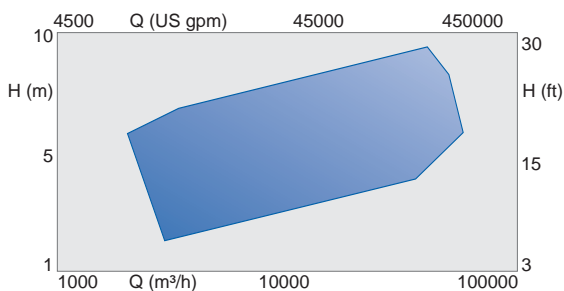
The SJP range of axial flow (propeller) pumps is specifically designed for high flow low head duties. Widely used in condenser circulation applications, SJP pumps are designed for continuous service for extended periods of time. The pumps are available in a range of metallurgies to match individual application needs.

SJT Vertical Turbine Pumps



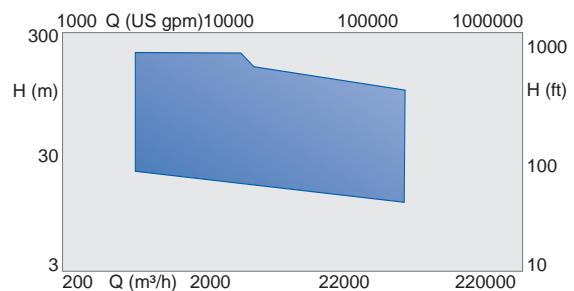
The SJT vertical turbine range offers incredible flexibility due to an extensive range of standard features. These include oil, grease, product or flushed bearing lubrication, sealing plans for all liquids, above or below ground discharge and a wide range of materials of construction.

Performance range



Pressure 2 bar / 30 psi
Temperature 50° C / 120° F

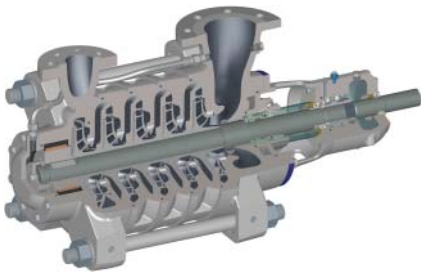
Performance range



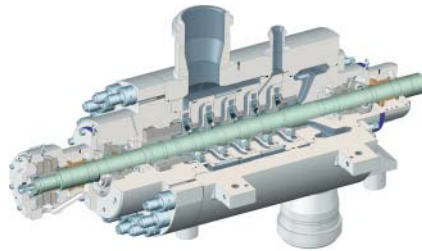
Pressure 40 bar / 600 psi
Temperature 230° C / 450° F



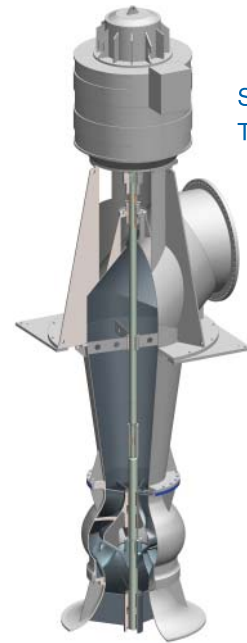
Pumps for Power Generation



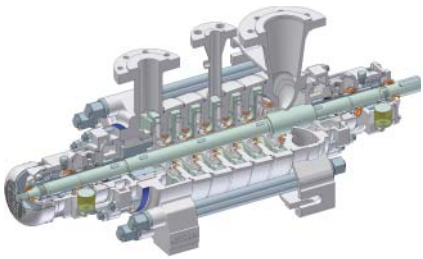
MBN Multistage Ring Section Pump



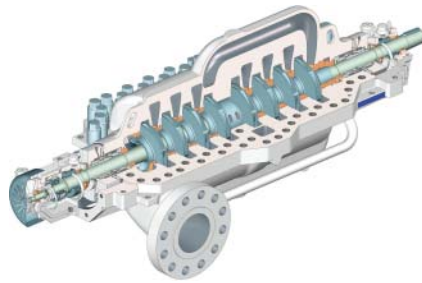
HPT Multistage Barrel Casing Pump



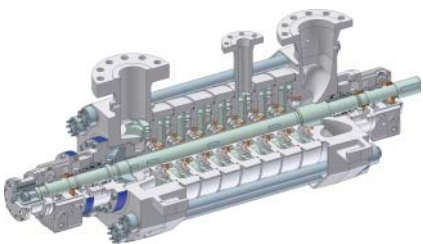
SJT Vertical Turbine Pump



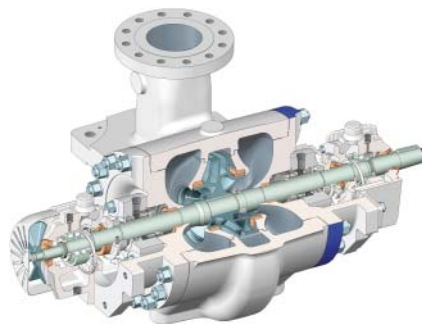
MC High Pressure Stage Casing Pump



MSD Axially Split Multistage Pump



MD High Pressure Stage Casing Pump



CD Double Suction Between Bearings Radially Split Single Stage Pump

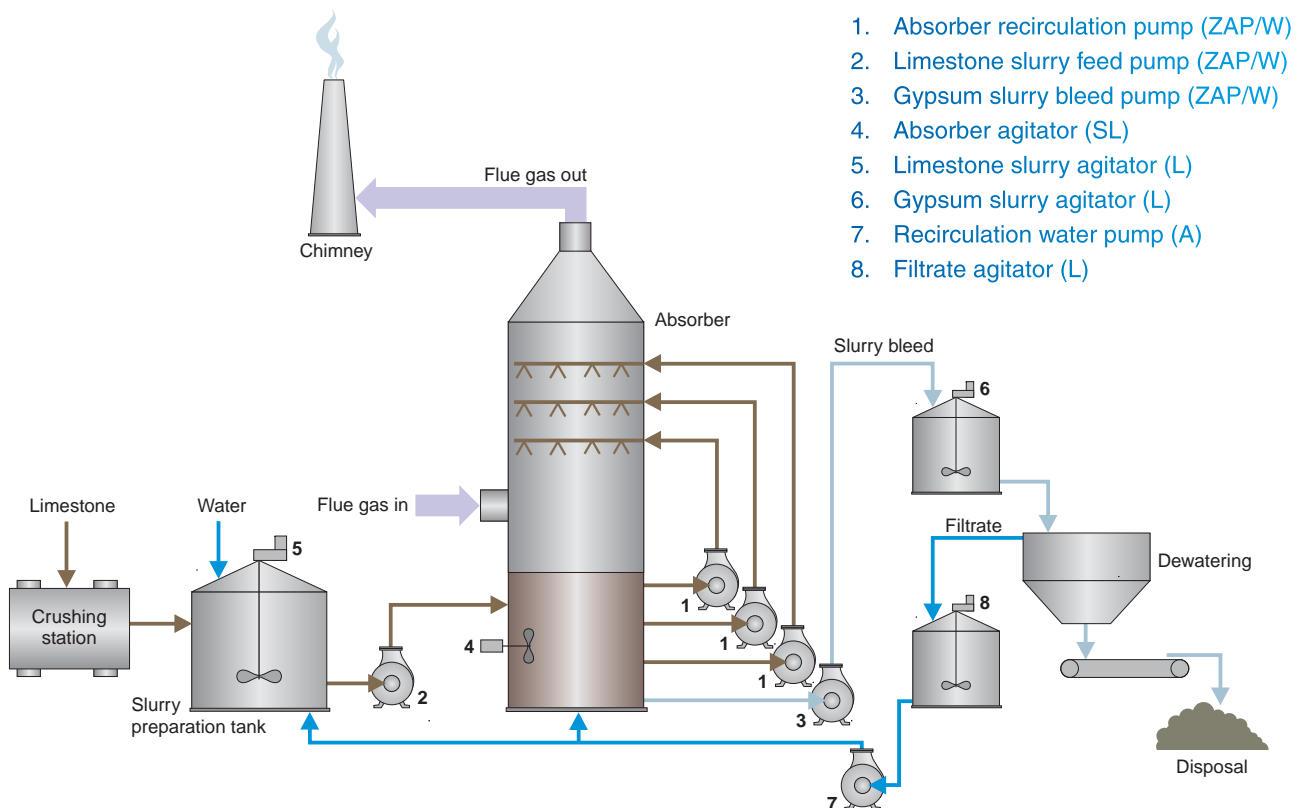


SJD Vertical Multistage Can Pump



Pumps in Flue Gas Desulphurization

All over the world statutory legislation limits SO₂ emissions from large furnace plants. Since it is not always possible to reduce the harmful emission levels during the primary process, flue gas desulphurization plants are provided to achieve the required levels. In order to make such non-productive plants as economic as possible, it is necessary to optimize the desulphurization procedure and to obtain an economic and useful by-product such as gypsum. Almost as important to the overall plant economy are the reliability and low maintenance costs of the pumps installed.





Single Stage Pumps

ZAP Single Stage Radially Split Pumps

These pumps are single stage, horizontal, radially split volute casing, back pull-out design. ZAP pumps comply with extreme requirements on corrosion and wear resistance in FGD processes. They fulfill high requirements as far as availability and service are concerned.

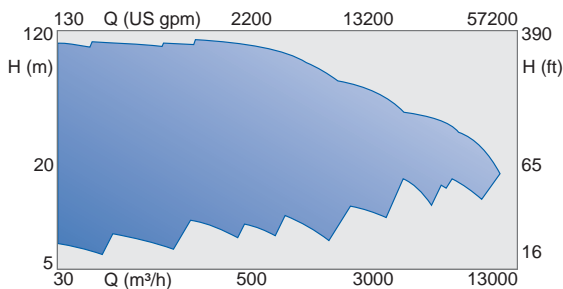


AHLSTAR^{UP} W for Extreme Requirements

AHLSTAR^{UP} W series pumps feature specially designed wear resistant hydraulics with materials that can withstand the most abrasive and erosive pumping applications. These include pumping of gypsum and limestone slurries.

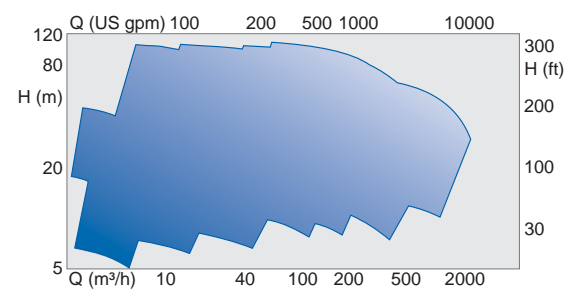


Performance range

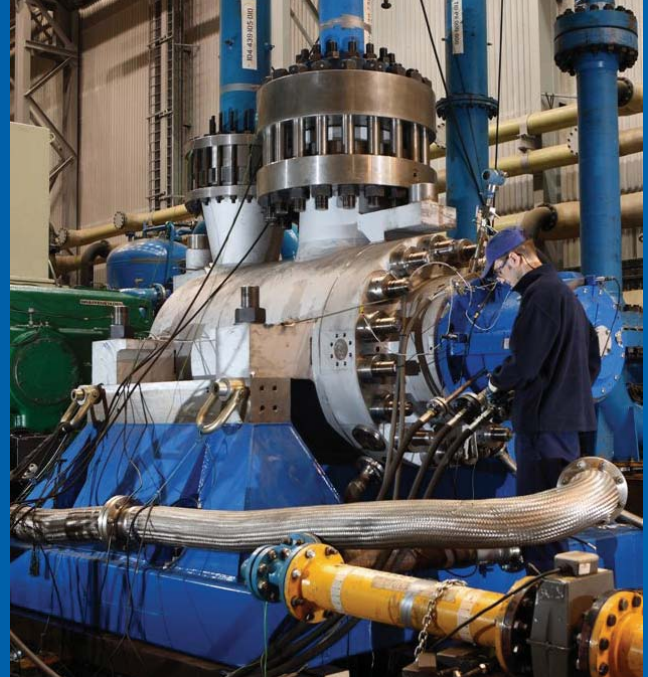


Pressure 350 bar / 5075 psi
 Temperature 210° C / 410° F

Performance range



Pressure 16 bar / 230 psi
 Temperature 180° C / 355° F



The World's Best Production and Testing Facilities

Sulzer Pumps United States

The Sulzer Pumps USA facility in Portland is a producer of engineered pumps focusing on the power, hydrocarbon processing and oil and gas production markets. Their quality control systems are independently audited to ISO 9001 standard.

Sulzer Pumps Houston is designed expressly to produce and test vertical pumps and features the latest computerized machining equipment, a large fabrication shop and a 180,000 gallon test laboratory.

Sulzer Pumps Germany

Sulzer Pumpen (Deutschland) GmbH located in Bruchsal is an internationally recognized and experienced manufacturer and service partner for pre-engineered as well as engineered pumps. The company offers a complete product range for the HPI industry to serve the requirements of customers worldwide. The management system follows the corporate-wide total quality management process and fully complies with the requirements of ISO 9001-2000, assessed and proved by Lloyds Register of Quality Assurance, and ISO 14001 assessed and proved by DEKRA.



Sulzer Pumps UK

Since the 1930's, Sulzer Pumps (UK) Ltd. located in Leeds has grown from a small engineering company to an international supplier of engineered pumps with a focus on the power generation industry, the oil and gas and HPI markets. Some of the world's largest and most powerful pumps have been designed, manufactured, packaged and tested in Leeds for customers on all continents. Extensive facilities ensure the highest quality production from design and machining through to assembly and testing.



Quality, Environment, Safety and Occupational Health

Product Life Cycle

Sulzer considers the total life cycle of its products to reduce cost as well as environmental impact. This includes the design, manufacturing, marketing, packaging, transportation, operation, recycling and disposal of the products. Similar considerations apply to the provision of services. To identify relevant influences on product life cycle efficiency, Sulzer has implemented a screening tool that focuses on energy, material usage and costs over simplified product life cycle. The tool generates “footprints”, showing costs, energy, material consumption and environmental impact. It thereby

helps to identify room for improvement, e. g. through a reduction in material used or the energy consumed. The tool has been successfully tested for selected products and will be used continuously to assess relevant Sulzer products.

Protection of the environment is our strategy.

Sulzer Pumps

Reliability and availability of pumping applications and equipment depends on the quality of its design, technical competency and manufacture. To achieve these goals, a Quality Management System covering all operations is essential. This covers not only our internal operations but also our relationship with the customers. Our innovative products and services create high life cycle value for our customers. We monitor our customer satisfaction

in accordance with a planned procedure, and we utilize the feedback to improve our processes. In manufacturing operations Quality Assurance (QA) begins with contract review and continues throughout the process in a planned and controlled way.

Our globally recognized Quality Management System complies with national and international standards using ISO 9001:2000 as its basis. All our manufacturing locations are certified in accordance with this international standard.

Example

At Sulzer Brazil S.A., the safety department and the internal accidents prevention committee, composed of employer and employee representatives, promote special safety campaigns. The Brazilian plant, where pumps are assembled, packaged and tested, has approximately 260 employees. Accidents rarely occur. A record was achieved in 2001-02, when 394 day passed without a single accident that involved a loss of working days. In 2003-04, another high mark of 364 accident-free days was achieved. To supplement the governmental health plan, Sulzer Brazil maintains a private health care plan for all employees and their families. The employees acknowledge the positive internal climate with good relationships as well as high environmental, health and safety standards.

Continuous improvement is essential to our philosophy.



Sulzer Pumps Customer Support Services Performance Through People

If pumps and rotating equipment are critical to your operations, you seek specific qualities when selecting external service support:

- A service partner you can trust
- Reliability
- Responsiveness
- Rapid turn around
- Innovative Solutions

Our service professionals deliver these qualities and more to customers from all industry sectors around the globe. With services ranging from spare parts to trouble shooting, we can maintain your rotating equipment and improve your processes.

Service Partner

Our goal is to be your business partner who delivers customized service solutions that improve your operations. Our measure of success is the loyalty of our customers year after year, decade after decade.

Reliability

Reliability depends on the longevity of replacement parts and the quality of repair of damaged or worn equipment. You can count on our expertise to deliver and on our commitment to do the job right first time every time.

Our teams are known in the industry for their extreme dedication. You can rely on us to stand by you if unexpected problems occur.

Responsiveness

You have specific needs, expectations and priorities—we are responsive to them and define with you the best possible solutions for your business. You need us urgently? We are present 24/7, 365 days per year.

Rapid Turn around

You expect to receive quotations quickly and have your equipment repaired rapidly to minimize disruption and costs. We aim to exceed your expectations through our continuous investment in more effective shopfloor and administrative processes.

Innovative Solutions

Sulzer Pumps is renowned in the industry for its innovative technology and application know-how. We are able to make the best evaluation of your installation and optimize its performance. We can achieve increased throughput, lift efficiency and improve reliability in most pumps by replacing existing hydraulics with state-of-the-art Sulzer Pumps designs.

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