

SULZER

Flow Equipment

Pumping and mixing solutions for mine water management





The Sulzer advantage

Managing water resources is one of the major challenges of the mining industry today. Sulzer develops the right pumping solutions in response to requirements by the mining companies. These are driven by the need to control the use of water resources, understand the environmental impact and consider the fact that water can be both scarce and expensive.

Designed to your needs

- Sulzer works closely with its customers to develop and design the optimum pumping solution for an individual application or the entire mine dewatering system
- Because the reliability of a pumping system is often dependent on its design, Sulzer's experienced team of engineers dedicates their know-how to each customer's success



Focused on efficiency

- Selecting the right pump is one key factor in boosting operational efficiency; Sulzer is the specialist to provide efficient pumping solutions
- Thanks to leading-edge products, Sulzer contributes to improving customers' equipment efficiency



Global presence

- Sulzer is truly a global corporation with production plants as well as sales and service locations all over the world





Reliable mine water expertise

Reliability is crucial in mining. Due to erosion, corrosion and lack of regular maintenance, pump efficiency and reliability are continuously challenged. We are well aware of the harsh conditions and develop state-of-the-art equipment, capable of meeting even the most demanding needs of the mining customers.

Proven expertise

By working with Sulzer, you benefit from:

- Proven application experience and know-how
- Custom-engineered solutions to meet specific application needs
- Well-placed sales, service and delivery network close to you

Value you can count on

- Extending mean time between maintenance (MTBM)
- Lowest cost of ownership due to high efficiencies and optimal selection
- High product reliability and quality
- Innovative technologies and material selection
- Specialist competence in corrosive and erosive applications, built on leading material technology and proven field experience
- Pump designs consider both materials of construction and hydraulic requirements to optimize performance in the field
- Continuous research and ongoing product development to meet evolving requirements
- Extensive product coverage

Extensive product coverage

Sulzer offers a comprehensive portfolio of innovative pumps and other process equipment for mine water management applications, from light-weight and robust submersible dewatering pumps to high-lift centrifugal end-suction and multistage pumps for the removal of clean and dirty water in abrasive and corrosive environments.

- Submersible drainage pumps with built-in intelligence
- End-suction single-stage pumps in wear-resistant materials
- Multistage pumps for medium to super high heads
- Vertical centrifugal and vertical turbine pumps
- Axially split case double suction pumps
- Mixers and agitators
- Containerized solutions
- Barges and pontoons
- Packaged solutions

With thousands of installations around the world, Sulzer products and services have stood the test of time.

Typical mine water applications

1 Open pit mine dewatering

Depending on the mine depth, single lift or staging systems with booster pumps may be utilized.

Pit-installed pumps on pontoons or barges commonly use submersible, vertical turbine or end suction self-priming pump technologies.

For booster stations submersible pumps connected in series, single-stage end-suction or multistage pumps can be used. These solutions can be provided in containerized units for ease of installation and transportation.

2 Underground mine dewatering

There are several applications in underground mines where pumps are utilized.

Face dewatering and stage pumping

Pumps are used to remove water from mine faces and stopes. Water is transported in stages to collection stations where larger pumps are located along the drift and ramp. Normally smaller drainage pumps are used at the mine faces, medium-sized pumps for pumping between stages, and larger pumps to move the water between different levels.

Shaft bottom drainage

Mine water from all parts of the mine is collected in the shaft bottom sump and then transported to the main drainage pump station. The high-performance submersible pumps fulfill the requirements, meeting the demands for both high head and high volume.

Main drainage pump station

Several pump types and technologies can be used in main drainage applications such as multistage pumps for pre-settled water for single high-lift applications, series-connected single-stage centrifugal pumps or staged pump systems with intermediate stations. For more abrasive liquids, wear-resistant end-suction pumps designed to handle both abrasive and corrosive liquids containing solids are used.

Pump as turbine

Utilizing the high static heads available, the HPH pump can also be adapted for the purpose of energy recovery.

3 Water intake and water supply

Water stations transport water into the mine from various sources, and the technology requirements will vary according to the site layout. The Sulzer vertical turbines and horizontal end-suction pumps or a combination of both technologies are the most commonly used solution depending on the design of the pump station.

4 Process water

Process water is required for different applications in the minerals processing industry. The most common pump types used in these applications are end-suction process pumps and vertical pumps. The materials of construction will depend on the water source, e.g. sea water, reclaimed water, etc.

5 Process dewatering

Process dewatering generally refers to the separation of solids and liquids within minerals processing. This may be from thickeners, separators or filters, all requiring pumps of some description. End-suction pumps are the most commonly used pumps in this application.

6 Tailing ponds and water reclamation

The scarcity and cost of water means that wastewater treatment and recycling for reuse are important processes within mines. Water is reclaimed from tailings ponds, lagoons and the downstream of minerals processing by vertical, horizontal and submersible pumps. In some instances, water treatment may be required prior to use.



7 Water treatment

Minerals processing requires process water feed at various stages. The quality of the water is highly important and therefore some level of treatment is needed before it enters the process. A combination of submersible pumps, horizontal process pumps and vertical pumps are commonly used in the feed to the process.

8 Mine sites

Other common applications for pumps at mine sites are tire washing plants, washdown of plant and machinery, and dust suppression. End-suction pumps are most commonly used, and these may be fed by submersible or vertical pumps.

Applications

Segment		Product portfolio						
Process and applications	Submersible dewatering	Submersible wastewater	End-suction process	Multistage	Vertical/vertical turbine	Axially split case double suction	Mixers and agitators	Packaged solutions
Open pit	Drainage	●	●	●	●	●	●	●
	Booster pumping	●		●	●	●		●
	Active dewatering	●				●		
Underground	Face dewatering / stage pumping	●						
	Shaft bottom drainage	●	●			●		
	Main drainage	●		●	●	●		●
	Stope pumping	●						
	Pump as a turbine				●			
	Booster pumping	●		●	●	●		●
	Settling ponds and sumps	●	●				●	
Processing plant	Water intake / water supply	●	●	●	●	●	●	●
	Process water	●	●	●	●	●	●	●
	Process dewatering			●				
	Settling ponds and sumps	●	●			●	●	
	Wash down sumps	●	●			●	●	
Tailings area	Water reclamation	●	●	●	●	●	●	
	Returned water		●	●		●		
	Booster pumping	●		●		●		●
	Tailings sumps	●	●			●	●	
WWTP	Primary / secondary treatment	●	●	●	●	●	●	
	Tertiary / ZLD (Zero Liquid Discharge) treatment	●	●	●	●	●	●	
Mine site	Dust suppression	●	●	●				
	Tire wash	●	●	●	●	●	●	

Product range

Product type	Name	Capacities	Heads	Pressures	Temperatures
Submersible	J and XJ	up to 1'190 m ³ /h up to 5'440 USgpm	up to 200 m up to 754 ft.	up to 13 bar up to 190 psi	up to 40°C up to 104°F
	JC and XJC	up to 190 m ³ /h up to 865 USgpm	up to 76 m up to 308 ft.	up to 13 bar up to 190 psi	up to 40°C up to 104°F
	JS and XJS	up to 112 m ³ /h up to 475 USgpm	up to 36 m up to 131 ft.	up to 5.2 bar up to 75 psi	up to 40°C up to 104°F
	XFP	up to 9'720 m ³ /h (50 Hz) 10'800 m ³ /h / 47'560 USgpm (60 Hz)	up to 80 m (50 Hz) up to 95 m/310 ft. (60 Hz)	up to 15 bar up to 220 psi	up to 40°C up to 104°F
End-suction	AHLSTAR A/APT	up to 11'000 m ³ /h up to 48'400 USgpm	up to 160 m up to 526 ft.	up to 16/25 bar up to 230/360 psi	up to 180°C up to 356°F
	AHLSTAR WPP/T	up to 7'000 m ³ /h up to 31'000 USgpm	up to 110 m up to 360 ft.	up to 16/25 bar up to 230/360 psi	up to 180°C up to 356°F
	SNS	up to 1'400 m ³ /h up to 6'000 USgpm	up to 160 m up to 525 ft.	up to 16 bar up to 230 psi	up to 120°C up to 250°F
	CPE	up to 1'650 m ³ /h up to 7'000 USgpm	up to 275 m up to 900 ft.	up to 27.5 bar up to 400 psi	up to 260°C up to 500°F
Multistage	MBN	up to 700 m ³ /h up to 3'080 USgpm	up to 900 m up to 2'950 ft.	up to 100 bar up to 1'450 psi	up to 180°C up to 355°F
	HPH/HPL	up to 1'000 m ³ /h up to 5'000 USgpm	up to 1'800 m up to 5'000 ft.	up to 180 bar up to 2'610 psi	up to 105°C up to 220°F
Axially split	SMD	up to 24'000 m ³ /h up to 106'000 USgpm	up to 260 m up to 850 ft.	up to 34 bar up to 490 psi	up to 140°C up to 280°F
	ZPP	up to 25'000 m ³ /h up to 110'000 USgpm	up to 160 m up to 525 ft.	up to 20 bar up to 290 psi	up to 120°C up to 250°F
Vertical	SJT	up to 62'000 m ³ /h up to 270'000 USgpm	up to 600 m up to 1'970 ft.	up to 64 bar up to 930 psi	up to 50°C up to 122°F
	VE/VN	up to 5'000 m ³ /h up to 22'000 USgpm	up to 750 m up to 2'460 ft.	up to 100 bar up to 1'450 psi	-150 a 400°C -238 a 752°F
	VA	up to 1'500 m ³ /h up to 6'600 USgpm	up to 100 m up to 328 ft.	up to 20 bar up to 290 psi	up to 120°C up to 248°F
Product type	Name	Impeller diameter	Shaft length	Power	
Agitators	SALOMIX™ and Scaba	up to 6 m up to 236 in.	up to 30 m up to 100 ft.	up to 450 kW up to 600 hp	

Product overview

Submersible dewatering pumps

Submersible drainage pump J and XJ

Features and benefits

- Easy and fail-safe starting with optional AquaTronic
- Impeller in white cast iron and diffusers coated with oil-resistant nitrile rubber provide high abrasion resistance
- Double outer casing and good heat convection enable the pump to operate continuously at low levels – or even run dry without damaging the motor
- External inspection ports for the oil and motor chambers enable quick and easy evaluation of the shaft seal during service
- Conversion between high-volume and high-head hydraulics is managed with only a few parts, ensuring the right performance for the application

Key characteristics

Capacities	up to 1'190 m ³ /h / 5'440 USgpm
Heads	up to 200 m / 754 ft.
Motor power	up to 90 kW / 145 hp

Applications

- Water and dirty water mixed with light abrasives



Submersible drainage center line pump JC and XJC

Features and benefits

- Easy and fail-safe starting with optional AquaTronic
- An impeller and wear ring in white cast iron as well as diffusers coated with oil-resistant nitrile rubber provide high abrasion resistance
- Double outer casing and good heat convection enable the pump to operate continuously at low levels – or even run dry without damaging the motor
- Due to the modular design, the same parts can be used for different pumps, which lowers the overall service costs
- High-efficiency motor and new hydraulics combined with low-friction bearings to reduce power losses
- Conversion between high-volume and high-head hydraulics is managed with only a few parts, ensuring the right performance for the application
- A slim design allows the pumps to fit in boreholes or other applications with limited installation space

Key characteristics

Capacities	up to 190 m ³ /h / 865 USgpm
Heads	up to 76 m / 308 ft.
Motor power	up to 11.8 kW / 18 hp

Applications

- Water and dirty water mixed with light abrasives



Submersible sludge pump JS and XJS

Features and benefits

- Easy and fail-safe starting with optional AquaTronic
- A free-flow vortex impeller and pump volute make the pump ideal for pumping water mixed with solids of up to 48x60 mm
- Both the impeller and volute are made from heavy-duty ductile iron for maximum durability
- The top cover and motor housing are made of light-weight aluminum, which creates a pump that is very easy to handle and install
- High-efficiency motor and hydraulics combined with low-friction bearings to reduce power losses
- Non-overloading performance with two different impellers for each pump model. The small impeller allows the pump to run in low-level applications

Key characteristics

Capacities	up to 112 m ³ /h / 475 USgpm
Heads	up to 36 m / 131 ft.
Motor power	up to 11.8 kW / 18 hp

Applications

- Dirty water and water mixed with solids



Submersible sewage pumps type ABS XFP

Features and benefits

- Premium-Efficiency IE3 motor in accordance with IEC 60034-30
- Excellent rag handling
- Specially designed impellers for reliable delivery of wastewater containing solids and fibrous material
- Hazardous locations: Approval for ATEX ATEX (Ex II 2G Ex h db IIB T4 Gb), FM and CSA available
- Quick and easy installation, safe operation, easy maintenance and service

Key characteristics

Capacities	up to 2'700 l/s (50 Hz) / 3'000 l/s / 47'560 USgpm (60 Hz)
Heads	up to 80 m (50 Hz) / 95 m / 310 ft. (60 Hz)
Temperatures	up to 40°C / 104°F
Motor power	up to 550 kW (50 Hz) / up to 620 kW / 830 hp (60 Hz)

Applications

- Industrial raw water and process water
- Hazardous locations



Single-stage, end-suction/overhung pumps

AHLSTAR pumps

Features and benefits

- AHLSTAR pumps save energy, sealing water and the environment
- Designed to meet the EN ISO 5199 standard, these pumps also comply with the EN 22858 (ISO 2858) standard
- The modular interchangeability of parts and components enables low spare parts inventory
- The pump range offers the lowest total cost shaft seal concept, with dynamic seal, mechanical seals and packing
- Every AHLSTAR is designed for fast and easy installation, maintenance and service

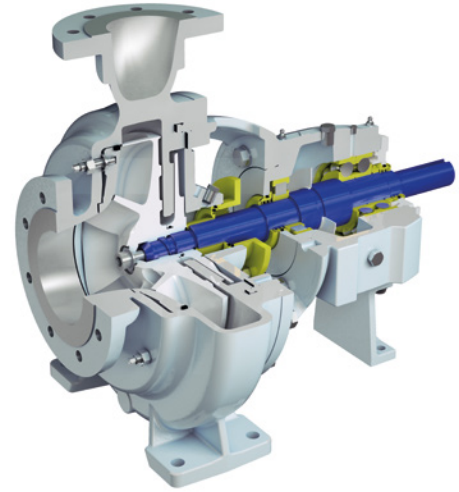
AHLSTAR A/APT

Key characteristics

Capacities	up to 11'000 m ³ /h / 48'400 USgpm
Heads	up to 160 m / 525 ft.
Pressures	up to 16 / 25 bar, 230 / 360 psi, depending on material and size
Temperatures	up to 180°C / 356°F

Applications

- Clean and slightly contaminated liquids
- Viscous liquids
- Fibrous slurries
- Solids-containing liquids
- Gas-containing liquids and self-priming applications
- Various demanding applications



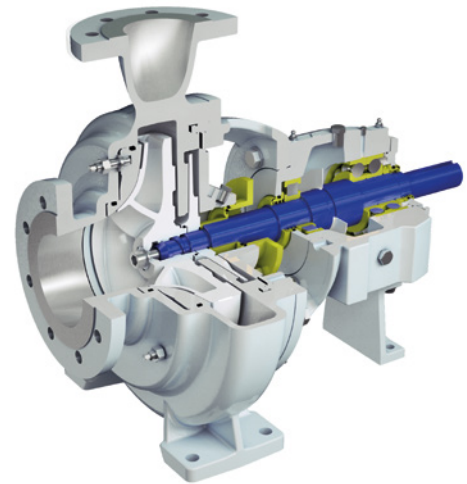
AHLSTAR WPP/T

Key characteristics

Capacities	up to 7'000 m ³ /h / 31'000 USgpm
Heads	up to 110 m / 360 ft.
Pressures	up to 16 / 25 bar, 230 / 360 psi, depending on material and size
Temperatures	up to 180°C / 356°F

Applications

- Abrasive liquids
- Abrasive solids-containing liquids and slurries including self-priming applications



SNS range

Features and benefits

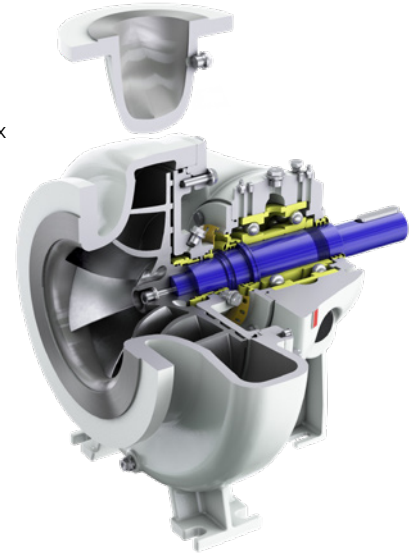
- Designed to meet the design requirements of EN 5199 international standard
- Exceeding the EU's (European Union) requirements for energy-related products (ErP)
- Highest efficiency across the whole pump range, exceeding the benchmark efficiency index MEI 0.7 (minimum efficiency index)
- New, state-of-the-art hydraulics ensure optimum capacity with low net positive suction head required (NPSHr)
- Low energy consumption, high standardization, easy installation and unique construction also equate to lower maintenance and operating costs

Key characteristics

Capacities	up to 1'400 m ³ /h / 6'000 USgpm
Heads	up to 160 m / 525 ft.
Pressures	up to 16 bar / 230 psi
Temperatures	up to 120°C / 250°F

Applications

- Clean and slightly contaminated liquids
- Viscous liquids
- Fibrous slurries



CPE ANSI process pumps range ANSI / ASME B73.1

Features and benefits

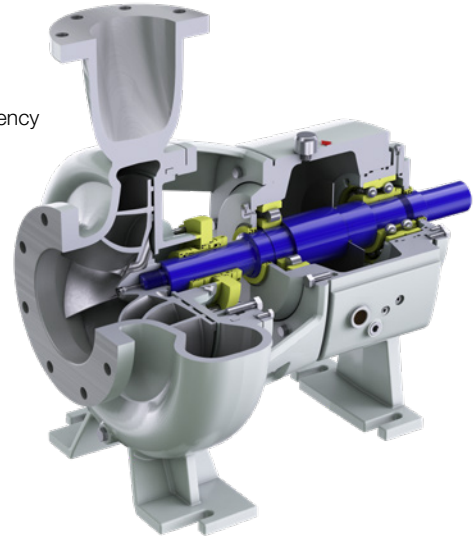
- The highest available efficiency on the ANSI process pump market providing clear savings in energy consumption
- Exceeds the requirements of all environmental (ECO) directives and the energy efficiency targets for pumps globally
- Maximized reliability thanks to shaft sealing conditions and heavy-duty bearing unit
- High standardization, easy installation and robust construction equate to reduced maintenance and operating costs
- The CPE pump uses NSF61 and NSF372 certified materials

Key characteristics

Capacities	up to 1'650 m ³ /h / 7'000 USgpm
Heads	up to 275 m / 900 ft.
Pressures	up to 27.5 bar / 400 psi
Temperatures	up to 260°C / 500°F

Applications

- Clean and slightly contaminated liquids
- Viscous liquids
- Fibrous slurries



Radially-split, multistage, ring section pumps

MBN medium-pressure stage casing pump

Features and benefits

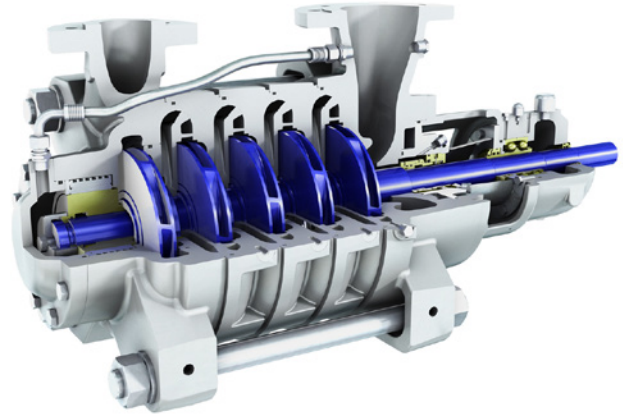
- Simple construction to minimize dimensions and reduce investment and maintenance costs
- High-quality cast impellers and diffusers for better efficiency
- Fast and easy impeller mounting
- Bearing unit can be serviced without disassembling the pumps
- Wide range of materials including chromium steel and duplex stainless steel grades

Key characteristics

Capacities	up to 700 m ³ /h / 3'080 USgpm
Heads	up to 900 m / 2'950 ft.
Pressures	up to 100 bar / 1'450 psi
Temperatures	up to 180°C / 355°F

Applications

- Feedwater pump
- High-pressure pump
- Mine dewatering applications



HPH/HPL high-pressure pump

Features and benefits

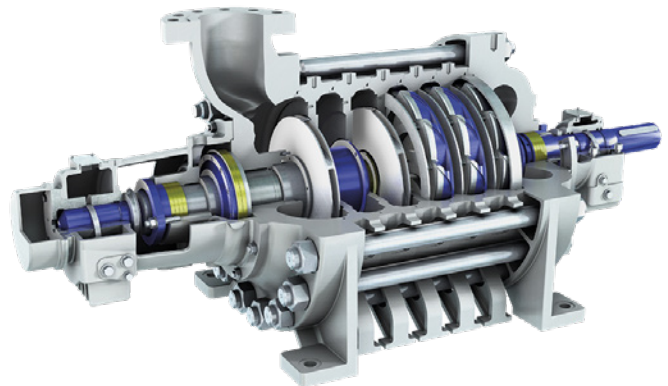
- Designed for operation at two or four pole motor speed
- Wide range of materials including duplex stainless steel grades and chrome steel internals
- Options to supply wear-resistant coatings such as tungsten coating to extend pump life
- Ease of maintenance through split bearing housing
- Robust construction makes it suitable for harsh mining conditions
- Condition monitoring capabilities provide effective scheduling of maintenance
- High-velocity areas protected by replaceable plates. These avoid a need for expensive remachining of high-cost casings
- Exclusive Sulzer wear limit switch monitors balance disc wear

Key characteristics

Capacities	130 - 1'000 m ³ /h / 5'000 USgpm
Heads	120 to 1'800 m / 5'000 ft.
Pressures	up to 180 bar / 2610 psi
Temperatures	up to 105°C / 220°F

Applications

- Clear or slightly polluted water with abrasive particles
- Used as a medium to super high-head pump in deep mining applications
- High-pressure pump
- Mine dewatering applications
- Pump as a turbine



Axially split pumps

SMD axially split, double suction pump

Features and benefits

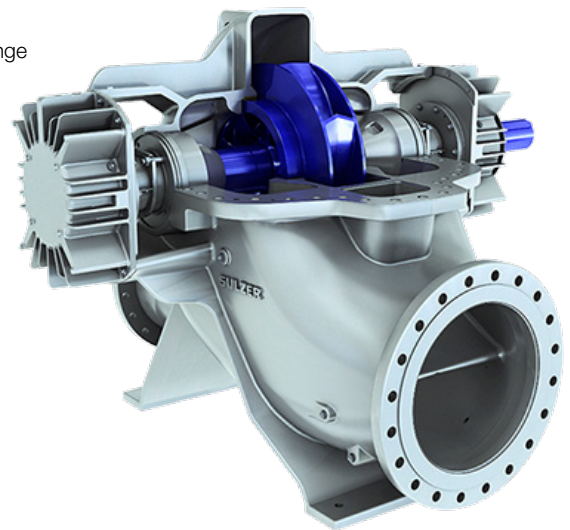
- Optimum hydraulic fit with high efficiency maintained over a wider flow range
- Exceptionally low Net Positive Suction Head Required (NPSHR) value not only at the best efficiency point but also on overload
- Maintenance-friendly features; excellent interchangeability of parts
- Horizontal and vertical constructions

Key characteristics

Capacities	up to 24'000 m ³ /h / 106'000 USgpm
Heads	up to 260 m / 850 ft.
Pressures	up to 34 bar / 490 psi
Temperatures	up to 140°C / 280°F

Applications

- Water intake, transport and supply
- Desalination
- Water treatment
- Industrial water applications



ZPP double suction, axially split single-stage centrifugal pump

Features and benefits

- Long and trusted experience in all industrial segments
- Excellent performance
- Suitable for the most demanding industrial requirements
- Exceeds requirements of international ISO 5199 standard
- Unique and superior design features minimize life cycle costs
- Quick and easy installation, safe operation, easy maintenance and service

Key characteristics

Capacities	up to 25'000 m ³ /h / 110'000 USgpm
Heads	up to 160 m / 525 ft.
Pressures	up to 20 bar / 290 psi
Temperatures	up to 120°C / 250°F

Applications

- Clean and slightly contaminated liquids
- Viscous liquids
- Low-consistency fibrous slurries



Vertical pumps

SJT vertical turbine pump

Features and benefits

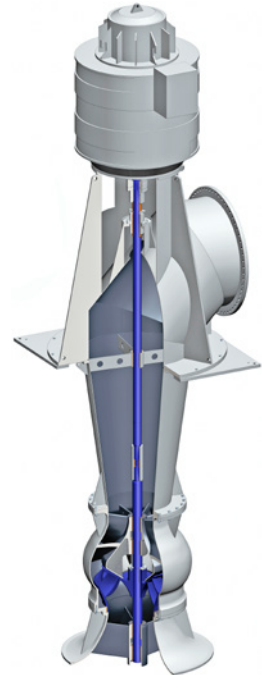
- Optimized hydraulics for high efficiency
- Packed stuffing box for reliable sealing and simple maintenance; mechanical seal is optional
- Rubber-lined product-lubricated bearing in bowls and columns for long maintenance-free periods; other bearing materials are also available
- Optional spacer coupling allows servicing of seal and thrust bearing as required

Key characteristics

Capacities	up to 62'000 m ³ /h / 270'000 USgpm
Heads	up to 110 m per stage / 350 ft. per stage
Pressures	up to 64 bar / 930 psi
Temperatures	up to 50°C / 122°F

Applications

- Cooling water
- Water intake



VE/VN heavy-duty vertical turbine pump

Features and benefits

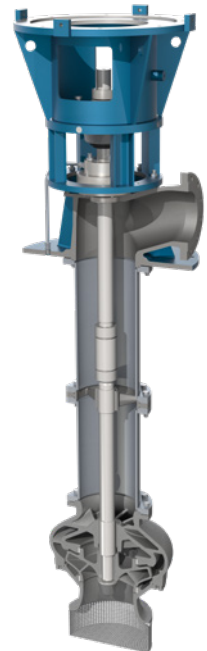
- Designed for heavy-duty applications in various industries
- Exceeds the requirements of ISO 13709 (API 610) 11th edition, type VS1/VS6
- Wide range of materials and variant designs (high temperature, high pressure, high length, double casing, etc.)
- Reliable design ensures longer maintenance-free operation
- Easy assembly and maintenance

Key characteristics

Capacities	up to 5'000 m ³ /h / 22'000 USgpm
Heads	up to 750 m / 2'460 ft.
Pressures	up to 100 bar / 1'450 psi
Temperatures	from -150 to 400°C / from -238 to 752°F

Applications

- Clear and contaminated slurry
- Corrosive liquid



VA cantilever sump pump

Features and benefits

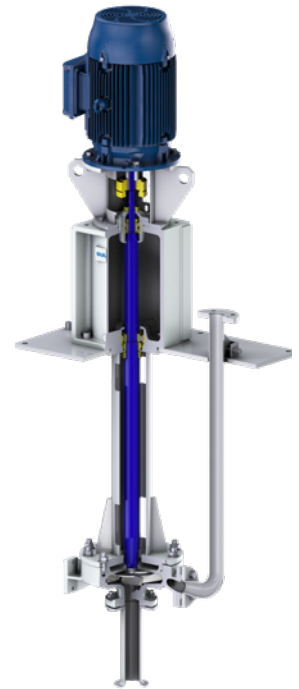
- Simple and robust design with ease of maintenance
- All types of hydraulics available: semi-open, open, closed or vortex impellers
- No sealing required
- No intermediate bearing
- Dry running allowed

Key characteristics

Capacities	up to 1'500 m ³ /h / 6'600 USgpm
Heads	up to 100 m / 328 ft.
Pressures	up to 20 bar / 290 psi
Temperatures	up to 120°C / 248°F

Applications

- Clear and contaminated sump
- Corrosive, encrusting liquids and slurries



Agitators

Scaba top-mounted agitators

Features and benefits

- Scaba top-mounted series covers gear or belt-driven agitators mounted vertically on the tank top or bottom flange.
- Dry-installed agitators rely on a deep process knowledge, which enables us to tailor the agitators to meet your specific need. This ensures the required process result with a minimum energy input
- Versatile impeller options
- High-efficiency SHP propellers
- Good axial flow
- Scaba TreatX standardized agitators for water and wastewater treatment processes

Key characteristics

Impeller diameter	up to 6 m / 236 in.
Shaft length	up to 30 m / 100 ft.
Power	up to 450 kW / 600 hp
Temperatures	up to 180°C / 356°F

Applications

- Suspension of all kinds of slurries
- Mixing and storage of chemicals
- Wastewater treatment plants
- For slightly and heavily contaminated liquids



SALOMIX™ L top-mounted vertical agitators

Features and benefits

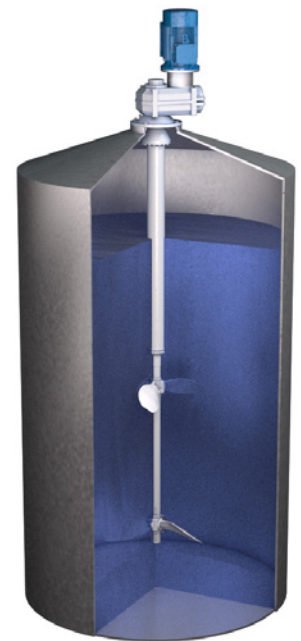
- The L-series covers gear or belt-driven agitators mounted vertically on the tank top or bottom flange
- Versatile impeller options meet any process needs in compliance with the rheology of the mixed fluid
- Maximum modular component flexibility
- Applicable to tanks from 1 to 2'500 m³ / 88'285 ft³
- The large hydraulic coverage satisfies the most demanding requirements of industrial agitation applications

Key characteristics

Impeller diameter	up to 6 m / 236 in.
Shaft length	up to 30 m / 100 ft.
Power	up to 450 kW / 600 hp
Temperatures	up to 180°C / 356°F

Applications

- Suspension of all kinds of slurries
- Mixing and storage of chemicals
- Wastewater treatment plants
- For slightly and heavily contaminated liquids



Proper maintenance drives cost savings and improves safety

When it comes to process equipment, performance is everything. Pumps need to be in working order at all times. Obtaining optimum working life from your equipment requires regular and efficient servicing. With Sulzer as your partner, you can always get the best out of your process. Our globally available Customer Support Services teams deliver fast, reliable and innovative solutions during the whole life cycle of your equipment.



Spare parts

Sulzer has a worldwide network of spare part delivery centers to quickly deliver original spare parts from the stock or manufacture them promptly based on your order.



Field services

Our field services cover installation, start-up service, regular inspections, troubleshooting, performance measurements, condition monitoring and more.



Service centers

We offer full service for your process equipment and spare parts availability for daily maintenance and repairs, process optimization and know-how, and complete energy audits.



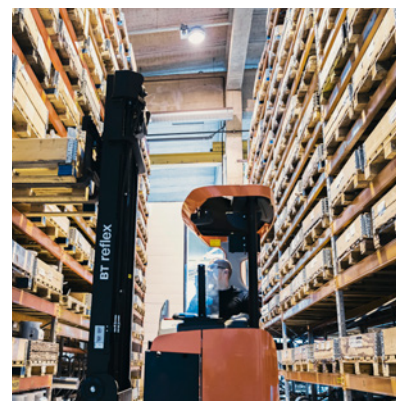
Repairs

With our modern equipment and highly skilled personnel at our service centers we can repair and refurbish even the most demanding equipment back to its original performance. We also offer modernizations that enhance the performance or increase the lifetime of your equipment.



Process optimization and know-how

With Sulzer at your doorstep, you can improve your competitive advantage and ensure safe operation. Our partnership program offers you customized solutions for your process improvements and future applications.



Service contracts

If you need to free your own resources to other valuable tasks or if you want to save money by not keeping spare parts in your own stock, Sulzer can offer various service contract options for you.

The Sulzer Flow Equipment division keeps your processes flowing. Wherever fluids are treated, pumped, or mixed, we deliver highly innovative and reliable solutions for the most demanding applications.

The Flow Equipment division specializes in pumping solutions specifically engineered for the processes of our customers. We provide pumps, agitators, compressors, grinders, screens and filters developed through intensive research and development in fluid dynamics and advanced materials. We are a market leader in pumping solutions for water, oil and gas, power, chemicals and most industrial segments.

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