SULZER

Pumping and Mixing Specialists for the Chemical Process Industry


SULZER
SULZER PUMPS FINLAND OY
KARHULA PUMP FACTORY
FIN-48601 KARHULA
FINLAND
MADE IN FINLAND
2013

The Sulzer Advantage

Technological leadership

With 180 years of experience and technological expertise, it's no wonder that Sulzer is a major supplier to the world's leading manufacturers and engineering companies within the general and chemical process industries. Our in-depth knowledge and competitive edge comes from years of close cooperation with these companies.

Proven expertise

- With full-scale testing facilities, Sulzer gives you access to increased hydraulic excellence and unique application coverage
- Experience in managing a diversity of process liquids and application environments
- Provide a wide selection of pumps, agitators, mixers, aerators and compressors
- Capacity and experience in the production of demanding metallic materials for corrosive and erosive liquids

Service at your doorstep

- Sulzer's global delivery and customer service network, which includes advanced service and parts processing centers, provides qualified services for the entire product lifecycle, day and night
- Our comprehensive range of services includes energy audits, fast delivery programs, pre-configured retrofit products, various service kits and troubleshooting

Value you can count on

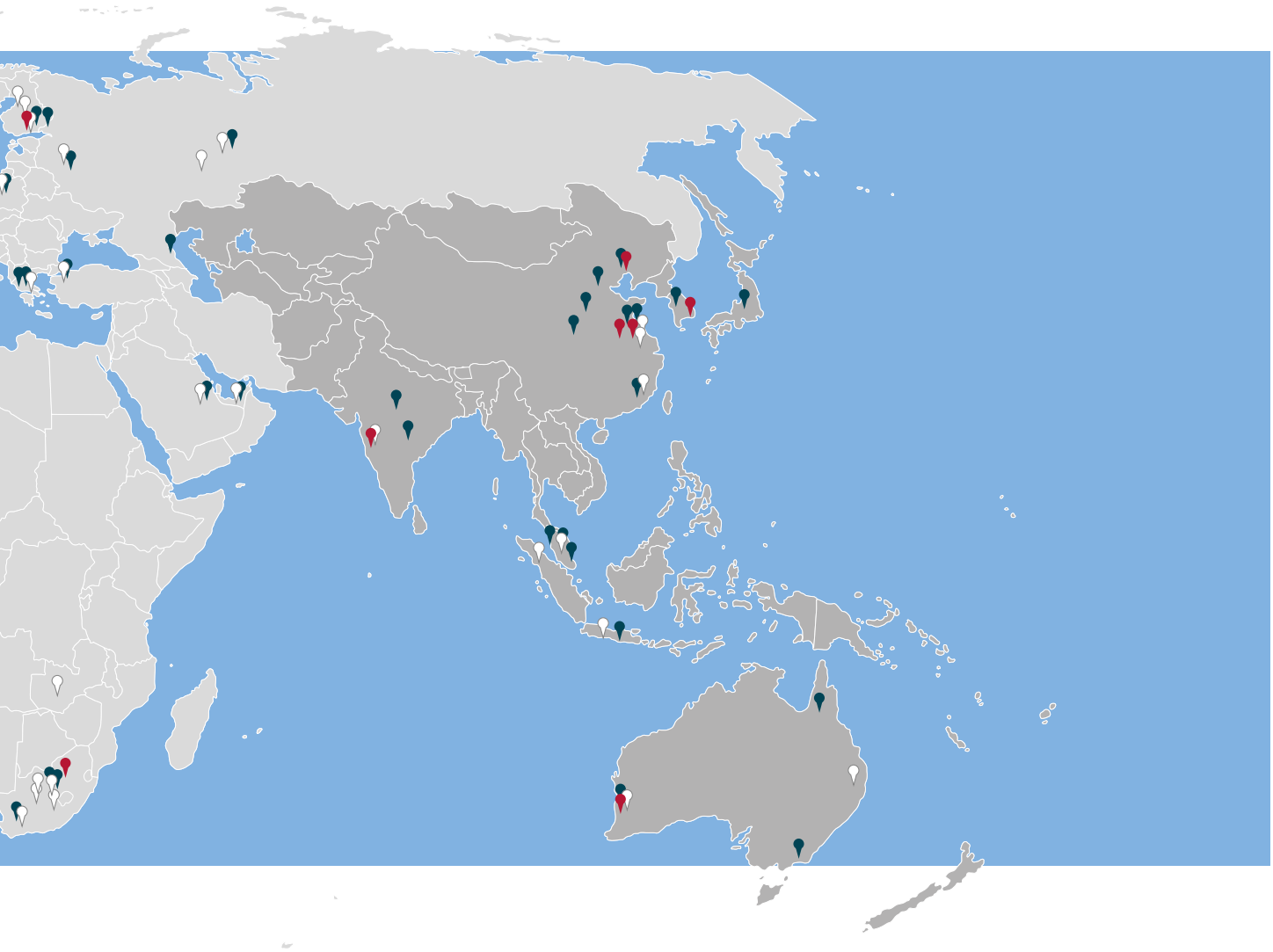
- Customized solutions for your process improvements
- New, innovative solutions for your future applications
- Energy-efficient products with low lifecycle costs and a lighter environmental footprint
- Products that are designed to last and ensure safe operation within demanding process applications

Our Organization Spans Across the Globe

Wherever you are Sulzer is close by, bringing you the best in pumping and mixing technology, expertise and services. With our large global presence, we have a strategically-placed network of sales, customer care and delivery facilities that keep us close to you. Sulzer is your best partner for achieving all your performance, reliability, safety and sustainability goals.

Sulzer's global delivery and customer service network, which includes a network of advanced service centers and parts processing centers, provide qualified services for the entire product lifecycle. We are well known for our state-of-the-art products, performance, reliability and energy-efficient solutions. Our customers benefit from our intensive research and development in fluid dynamics, process-oriented products and special materials.

All Sulzer manufacturing plants have advanced testing facilities, capable of demonstrating pump performance and testing ancillary equipment to ensure smooth commissioning and start-up procedures.



Quality and sustainability

We are committed to providing our customers with the best products at the highest quality standards in the industry. All of our locations around the world implement certified management systems, in accordance with ISO 9001 (Quality), ISO 14001 (Environment) and OHSAS 18001 (Health and Safety) as an effective way to sustain the continuous improvement of our processes and products. Some of our locations also have specific certifications, such as ATEX IECEx03.

Sulzer Innovations for Chemical Process Industry

Here at Sulzer, our extensive R&D work has resulted in a multitude of pump, mixer and agitator innovations for the process industry. Over the decades, this constant search for better pumping and mixing solutions has extended the service intervals and prolonged the lifecycles of pumps in a range of different applications. We are the corrosive and erosive application specialists, thanks to our leading material technology.

Fertilizers

We provide products for wide range of process stages, such as phosphate fertilizer wet processes involving phosphoric acid, reaction, purification and separation; potash fertilizer processes, like mine injection, separation/ flotation, evaporation, crystallization; agitators for reaction (sedimentation prevention), hydrodesulfurization; and fluorine salt process stages, like storage tanks, acid purification, absorption and effluent treatment.

Acids

Our technology and materials are used for inorganic and organic acid applications and manufacturing.

Chemicals

Whatever the liquid being pumped – caustic, peroxide, pigment, dye, plastic, soap or synthetic fibers – Sulzer has the range of products to meet your needs.

Product Overview

Single stage pumps

AHLSTAR

KEY CUSTOMER BENEFITS

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

AHLSTAR A

KEY CHARACTERISTICS

Capacities	11,000 m³/h / 55,000 USgpm
Heads	160 m / 525 ft
Pressures	16 / 25 bar, 230 / 360 psi, depending on material and size
Temperatures	180°C / 355°F

APPLICATIONS

- For chemicals, liquors, water and solids up to 35%

AHLSTAR N

KEY CHARACTERISTICS

Capacities	2,000 m³/h / 8,700 USgpm
Heads	90 m / 295 ft
Pressures	16 bar / 230 psi, depending on material and size
Temperatures	180°C / 355°F

APPLICATIONS

- For applications where normal process pump cannot handle liquids due to plugging or abrasive wear

AHLSTAR W

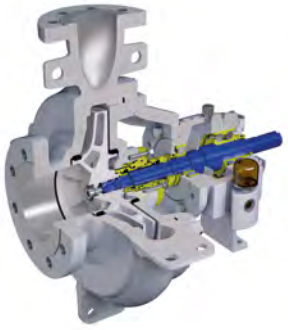
KEY CHARACTERISTICS

Capacities	7,000 m³/h / 32,000 USgpm
Heads	110 m / 360 ft
Pressures	16 / 25 bar, 230 / 360 psi, depending on material and size
Temperatures	180°C / 355°F

APPLICATIONS

- For abrasive pumping applications, where high corrosion resistance is required, e.g. fertilizer manufacturing

AHLSTAR E



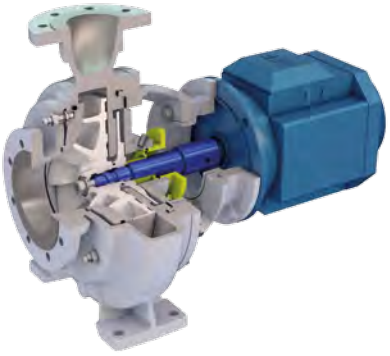
KEY CHARACTERISTICS

Capacities	6,000 m³/h / 24,000 USgpm
Heads	160 m / 525 ft
Pressures	25 bar / 360 psi, depending on material and size
Temperatures	210°C / 410°F

APPLICATIONS

- Developed for the pumping of hot liquids, such as liquors, in continuous and batch reactors

AHLSTAR CLOSE COUPLED



KEY CUSTOMER BENEFITS

- The close coupled design with standard flange or flange/feet type electric motors makes installation fast and simple, thereby reducing overall installation costs

KEY CHARACTERISTICS

Capacities	600 m³/h / 2,600 USgpm
Heads	160 m / 525 ft
Pressures	16 / 25 bar, 230 / 360 psi, depending on material and size
Temperatures	130°C / 266°F

APPLICATIONS

- For clean or slightly contaminated liquids, viscous liquids, fibrous slurries, liquids containing large solids, and liquids with a high gas content of up to 70%

AHLSTAR A, N AND W DEGASSING UNITS FOR STABILITY AND RELIABILITY

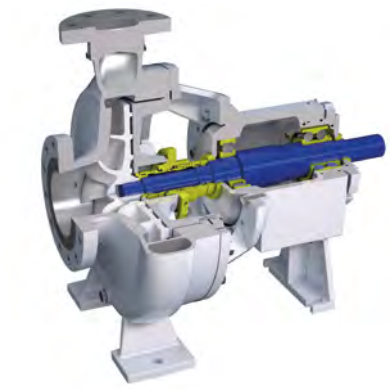
KEY CUSTOMER BENEFITS

- AHLSTAR A, N and W type pumps can be fitted with self-priming or degassing units, to enable the pump to be started fast and reliably with an empty inlet pipe and to allow it to pump liquids with a high gas content
- AHLSTAR pumps with a self-priming unit, such as LM or S liquid ring pumps and the GM, GS or R gas separator units, stabilize the pumping of liquids containing up to 40% weakly bonded gases or up to 70% strongly bonded gases
- The difference in pressure between the pump inlet and the degassing unit outlet or the internal liquid ring pump eliminates gas bubbles from the impeller, thereby stabilizing the system and significantly increasing pump efficiency

APPLICATIONS

- Applications with a high gas content, such as starch processing, fermentation and foam tanks. Can be combined with A, N and W hydraulics.
- All self-priming applications, including pits and raw water intake
- Degassing in high and low inlet head applications (1)
- Degassing in negative inlet head applications (2)
- Self-priming applications as a reliable and convenient alternative to submersible or vertical pumps (2)
- Replacing complicated, expensive and high building-necessitating classic barometric leg systems, e.g. water separator and filter applications (3)

CPT END SUCTION SINGLE STAGE CENTRIFUGAL PUMP



KEY CUSTOMER BENEFITS

- Exceeds requirements of ANSI/ASME B73.1 standards
- Suitable for the most demanding industrial applications
- Unique, patented and superior design features minimize lifecycle costs
- Fast and simple installation, safe operation and easy maintenance and service

KEY CHARACTERISTICS

Capacities	Up to 1,600 m³/h / 7,000 USgpm
Heads	Up to 220 m / 720 ft
Pressures	Up to 26 bar / 375 psi
Temperatures	Up to 260°C / 500°F

APPLICATIONS

- Arduous process and auxiliary applications

OHH/OHHL OVERHUNG SINGLE STAGE PUMP *ISO 13709 / API 610 OH2*

KEY CUSTOMER BENEFITS

- Finned bearing housing and fan cooling for long bearing lifecycle
- Broadest range map in the industry for ISO 13709 (API 610) type OH2 pumps
- Heavy-duty baseplates with 2x ISO 13709 (API 610) nozzle load option
- ISO 21049 (API 682) cartridge type mechanical seals for reduced emissions
- Electric motor, VFD, engine and steam turbine drivers

KEY CHARACTERISTICS

Capacities	Up to 2,250 m³/h / 10,000 USgpm
Heads	Up to 400 m / 1,500 ft
Pressures	Up to 76.5 bar / 1,110 psi
Temperatures	Up to 425°C / 800°F

APPLICATIONS

- Process and boosting applications

OHV/OHVL OVERHUNG VERTICAL INLINE PUMP *ISO 13709 / API 610 OH3*

KEY CUSTOMER BENEFITS

- Finned bearing housing and fan cooling for long bearing lifecycle
- Broad range map for hydraulic coverage
- Heavy-duty pump and driver stand for reduced vibration
- ISO 21049 (API 682) cartridge type mechanical seals for reduced emissions
- OHH/OHHL shaft and bearings for reduced deflection and long seal lifecycle

KEY CHARACTERISTICS

Capacities	Up to 1,150 m³/h / 5,000 USgpm
Heads	Up to 400 m / 1,500 ft
Pressures	Up to 51 bar / 740 psi
Temperatures	Up to 343ºC / 650ºF

APPLICATIONS

- Seawater booster
- Light hydrocarbon boosting
- Low-pressure unit charge
- Pump around services
- Tank farm boosting

ZE/ZF END SUCTION PUMP

KEY CUSTOMER BENEFITS

- Designed for hot or cold water medium design pressure applications with relatively low available Net Positive Suction Head (NPSH)
- Modular construction for maximum interchangeability of spares

KEY CHARACTERISTICS

Capacities	Up to 2,600 m³/h / 11,440 USgpm
Heads	Up to 300 m / 1,000 ft
Pressures	Up to 100 bar / 1,450 psi
Temperatures	Up to 100°C / 212°F

APPLICATIONS

- Condensate extraction for industrial, biomass and CSP
- Feed water booster for CCPP and TPP
- HTF oil for CSP
- Auxiliary services

Two-stage pumps

BBT/BBT-D 2 STAGE RADIALLY SPLIT PUMP *13709 / API 610 BB2*

KEY CUSTOMER BENEFITS

- Centerline support for lower thermally-induced misalignment
- BBT-D double suction impeller for low NPSH
- First critical speed is well above operating speed range for smooth operation
- Casing designed for 2x API 610 nozzle loads for freedom from piping distortions
- Grouted or ungrouted, 1x or 2x nozzle load baseplates for lower installation costs

KEY CHARACTERISTICS

Capacities	Up to 2,300 m³/h / 10,000 USgpm
Heads	Up to 760 m / 2,500 ft
Pressures	Up to 100 bar / 1,440 psi
Temperatures	Up to 425°C / 800°F

APPLICATIONS

- Seawater and crude oil boosting

Axially split pumps

ZPP DOUBLE SUCTION AXIALLY SPLIT SINGLE STAGE PUMP

KEY CUSTOMER BENEFITS

- Broad hydraulic coverage
- Several different products for industrial and auxiliary applications including horizontal and vertical designs
- Low pulsation and high quality surface finishing options available
- Maintenance-friendly features

KEY CHARACTERISTICS

Capacities	Up to 25,000 m³/h / 130,000 USgpm
Heads	Up to 160 m / 525 ft
Pressures	Up to 25 bar / 230 psi
Temperatures	Up to 120ºC / 250ºF

APPLICATIONS

- Industrial water
- Cooling and heating systems

Z22 DOUBLE SUCTION AXIALLY SPLIT SINGLE STAGE PUMP

KEY CUSTOMER BENEFITS

- Broad hydraulic coverage
- Several different products for industrial and auxiliary applications including horizontal and vertical designs
- Low pulsation and high quality surface finishing options available
- Maintenance-friendly features

KEY CHARACTERISTICS

Capacities	Up to 17,000 m³/h / 75,000 USgpm
Heads	Up to 220 m / 720 ft
Pressures	Up to 25 bar / 360 psi
Temperatures	Up to 140°C / 280°F

APPLICATIONS

- Industrial water
- Cooling and heating systems

SMD AXIALLY SPLIT CASING DOUBLE SUCTION PUMP

KEY CUSTOMER BENEFITS

- Optimum hydraulic fit and highly efficient over a wider flow range
- Exceptionally low NPSHR value (Net Positive Suction Head Required), not just at optimum efficiency but also at overload
- Maintenance-friendly features, such as excellent parts interchangeability
- Horizontal and vertical designs

KEY CHARACTERISTICS

Capacities	Up to 16,000 m³/h / 70,000 USgpm
Heads	Up to 260 m / 850 ft
Pressures	Up to 34 bar / 490 psi
Temperatures	Up to 140°C / 280°F

APPLICATIONS

- Industrial water
- Cooling and heating systems

SMN AXIALLY SPLIT CASING DOUBLE SUCTION PUMP *BB1*

KEY CUSTOMER BENEFITS

- Broad hydraulic coverage with more than 50 different sizes
- Highly efficient
- Robust design for long service life
- Simple maintenance
- Flexible layout, thanks to clockwise and counterclockwise rotation / vertical and horizontal designs

KEY CHARACTERISTICS

Capacities	Up to 10,000 m³/h / 44,000 USgpm
Heads	Up to 200 m / 650 ft
Pressures	Up to 30 bar / 435 psi
Temperatures	Up to 50°C / 120°F

APPLICATIONS

- Water intake, treatment and supply
- Cooling and heating systems
- Industrial water

SMH AXIALLY-SPLIT SINGLE STAGE PUMP *ISO 13709 / API 610 BB1*

KEY CUSTOMER BENEFITS

- Between bearing design for reliability at high flow rates
- Broad hydraulic coverage at speeds of 50 and 60 Hz
- Axially split casing for easier repairs
- Vertical shaft (SMHv) for limited deck space applications

KEY CHARACTERISTICS

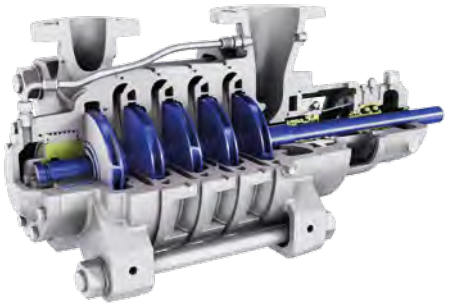
Capacity	Up to 11,000 m³/h / 50,000 USgpm
Head	Up to 200 m / 650 ft
Pressure	15 to 26 bar / to 380 psi
Temperatures	Up to 150°C / 300°F

APPLICATIONS

- Cooling systems (flammable, toxic or critical cooling liquids)
- Applications requiring API compliance

Multistage pumps

MBN MULTISTAGE RING SECTION PUMP



KEY CUSTOMER BENEFITS

- Features our innovative polygon fit between impellers – no keys required
- Maintenance-free dynamic seal, mechanical seals and gland packing are available for shaft sealing
- Easy to maintain – only requires one roller bearing unit and one shaft seal

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

- For clean or slightly contaminated liquids in shower water, sealing water or boiler feed water applications, where a high pressure/high head is required

MC/MD HIGH-PRESSURE MULTISTAGE PUMP

KEY CUSTOMER BENEFITS

- Highly efficient with a wide hydraulic coverage
- Special hydraulics with a low NPSHR value provide cavitation-free operation and low noise levels
- With the PERMAVOR® lift off device, which extends the pump's service life

KEY CHARACTERISTICS

Capacities	Up to 1,000 m^3/h / 5,000 USgpm
Heads	Up to 2,400 m / 8,200 ft
Pressures	Up to 330 bar / 4,790 psi
Temperatures	Up to 210°C / 410°F

APPLICATIONS

- For clean liquids in recovery boiler feeds

Vertical pumps

NKP/NKT AND WKP/WKT NON-GLOGGING CANTILEVER PUMPS

KEY CUSTOMER BENEFITS

- Exceeds requirements of the ISO 5199 international standard
- Unique, patented and superior design features minimize lifecycle costs
- Suitable for all types of extreme application in seal pits and floor channels

KEY CHARACTERISTICS

Capacities	Up to 430 m³/h / 1,900 USgpm
Heads	Up to 60 m / 200 ft
Pressures	Up to 10 bar / 150 psi, depending on material and size
Temperatures	Up to 95°C / 205°F

APPLICATIONS

- For slurries and wastewater containing large solid particles
- Also available with wear-resistant hydraulics

NVP/NVT NON-GLOGGING VERTICAL PUMP

KEY CUSTOMER BENEFITS

- Exceeds requirements of the ISO 5199 international standard
- Unique, patented and superior design features minimize lifecycle costs
- Suitable for all types of extreme application in seal pits and floor channels

KEY CHARACTERISTICS

Capacities	Up to 1,200 m³/h / 5,400 USgpm
Heads	Up to 85 m / 280 ft
Pressures	Up to 10 bar / 150 psi, depending on material and size
Temperatures	Up to 95°C / 205°F

APPLICATIONS

- For slurries and wastewater containing large solid particles
- Also available with wear-resistant hydraulics

CVT VERTICALLY SUSPENDED SUMP PUMP *VS4*

KEY CUSTOMER BENEFITS

- Exceeds requirements of the ISO 5199 international standard and fulfills many API 610 features
- Suitable for the most demanding industrial sump pump applications
- Unique, patented and superior design features minimize lifecycle costs
- Fast and simple installation, safe operation and easy maintenance and service

KEY CHARACTERISTICS

Capacities	Up to 750 m³/h / 3,200 USgpm
Heads	Up to 120 m / 550 ft
Pressures	Up to 25 bar / 360 psi
Temperatures	Up to 205°C / 400°F

APPLICATIONS

- All sump applications with moderate solid content

Agitators

SALOMIX® SIDE-MOUNTED GEAR OR BELT DRIVEN PROPELLER AGITATORS

KEY CUSTOMER BENEFITS

- High efficiency, results in energy savings and improved agitation
- Cast, four-bladed, adjustable propeller blades give accurate power control
- Conical body shape supports the propeller and ensures vibration free operation
- Unique solutions

SALOMIX® SLF/STF GEAR DRIVE

KEY CHARACTERISTICS

Maximum agitation consistency	Up to 6%
Propeller diameters	800, 1,000 and 1,250 mm / 30, 40 and 50 in
Power	7.5 to 55 kW / 10 to 75 hp

APPLICATIONS

- For all agitation processes requiring side-mounted designs

SALOMIX® SLG/SLT GEAR DRIVE

KEY CHARACTERISTICS

Maximum agitation consistency	Up to 6%
Propeller diameters	500 to 1,700 mm / 20 to 65 in
Power	5.5 to 90 kW / 7.5 to 120 hp

APPLICATIONS

- For all agitation processes requiring side-mounted designs

SALOMIX® SLB /SLH, STB BELT DRIVE

KEY CHARACTERISTICS

Maximum agitation consistency	Up to 6%
Propeller diameters	500 to 1,700 mm / 20 to 65 in
Power	5.5 to 90 kW / 7.5 to 120 hp

APPLICATIONS

- For all agitation processes requiring side-mounted designs

SALOMIX® SLR/STR

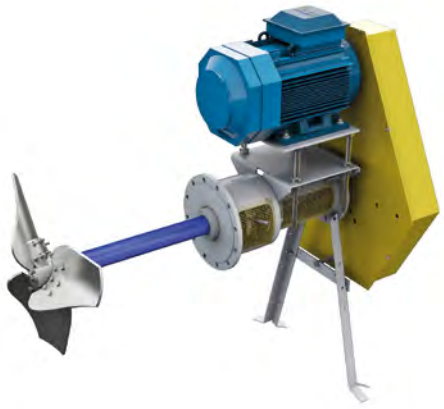
KEY CHARACTERISTICS

Maximum agitation consistency	Up to 6%
Propeller diameters	315 to 800 mm / 12 to 30 in
Power	2.2 to 11 kW / 3 to 15 hp

APPLICATIONS

- For all agitation processes requiring side-mounted designs, such as small storage tanks

SCABA SIDE-MOUNTED BELT DRIVEN AGITATOR



KEY CUSTOMER BENEFITS

- Sturdy construction with rigid shaft and bearings
- High efficiency results in energy savings and improved agitation
- High flow SHP1 and SHP18 propellers are used to generate good axial flow
- Both mechanical seals and stuffing box alternatives
- Seal can be changed without emptying the tank with stuffing box

KEY CHARACTERISTICS

Propeller diameter	735 – 1,450 mm / 29 – 57 in
Power	7.5 – 200 kW / 29 – 57 hp

APPLICATIONS

- For all agitation processes requiring side-mounted designs

SALOMIX® L TOP-MOUNTED GEAR OR BELT DRIVEN AGITATOR

The L series covers gear or belt driven agitators mounted vertically on the tank top or bottom flange.

KEY CUSTOMER BENEFITS

- Versatile impeller options meet any process needs to comply with the rheology of the mixed fluid
- Maximum modular component flexibility
- Suitable for tanks from 1 to 2,500 m³ / 88,285 ft

KEY CHARACTERISTICS

Impeller diameter	Up to 5,500 mm / 217 in
Shaft Length	Up to 30 m / 100 ft
Power	Up to 450 kW / 600 hp

APPLICATIONS

- For storage towers, dissolvers, reactors and production vessels

SCABA TOP-MOUNTED GEAR OR BELT DRIVEN AGITATOR

The top-mounted series covers gear or belt driven agitators mounted vertically on the tank top or bottom flange.

KEY CUSTOMER BENEFITS

- Dry installed agitators rely on an in-depth process knowledge, which enables us to tailor the agitators to meet your specific needs. This ensures the desired process results with minimal energy input
- Versatile impeller options
- High efficiency SHP propellers
- Good axial flow

KEY CHARACTERISTICS

Impeller diameter	Up to 6,000 mm / 236 in
Shaft length	Up to 30 m / 100 ft
Power	Up to 450 kW / 335 hp

APPLICATIONS

- For storage towers, dissolvers, reactors, and production vessels
- Wastewater treatment

Submersible pumps

SUBMERSIBLE SEWAGE PUMP TYPE ABS XFP

KEY CUSTOMER BENEFITS

- Significant energy savings with high efficiency hydraulics and IE3 motor
- Long term reliability with 100,000 h rigid shaft and bearing lifecycle
- Impellers designed specifically for wastewater and optimized for rag handling
- Minimum 75 mm / 3 in free solids passage
- Submersed or dry installed
- Sizes up to DN600 and 350 kW

KEY CHARACTERISTICS

Flow	7,200 m^3/h / 22,220 USgpm
Head	78 m / 360 ft
Temperature	40°C / 104°F

APPLICATIONS

- Raw water intake, wastewater treatment plant, wastewater with large solids, various pumping stations of all sizes

Compressors

TURBOCOMPRESSOR TYPE ABS HST

KEY CUSTOMER BENEFITS

- Ensures that you get the highest efficiency for your biological treatment
- No wear due to the magnetic bearings
- Lubrication free
- Simple installation through integral design
- Low noise level: no additional soundproofing required
- Flow control by integrated variable frequency drive

KEY CHARACTERISTICS

Air flow	700 – 16,000 Nm^3/h / 25,000 – 560,000 ft^3/h
Pressure range	30 – 125 kPa / 4 – 18 PSIG

APPLICATIONS

- Aeration for industrial wastewater treatment

Aeration systems

SUBMERSIBLE AERATOR MIXER TYPE ABS OKI

The submersible aerator mixer, together with the high-speed turbo blower, is the key to solving many aeration problems in industrial applications. This freestanding unit is easy to position at the bottom of the tank and can be used as either an aerator or a mixer.

KEY CUSTOMER BENEFITS

- High process efficiency
- Designed for non-clogging operation
- Liftable and freestanding, making it easy to change the plant configuration — no need to empty the tank
- Can run as an aerator and/or mixer depending on the process requirements

KEY CHARACTERISTICS

Oxygen transfer	Up to 405 kg O_2/h / up to 890 lb O_2/h
Motor range	3 – 37 kW

APPLICATIONS

- For aeration processes

SUBMERSIBLE MIXER TYPE ABS XRW AND FLOW BOOSTER TYPE ABS XSB

KEY CUSTOMER BENEFITS

- Energy efficient design, such as IE3 motors, high efficiency propellers and slow running design
- Self-cleaning propellers provide vibration-free operation
- Robust construction guarantees superior reliability and long operating lifecycle

KEY CHARACTERISTICS

Propeller diameter	210 to 2,750 mm / 8,3 in to 9 ft
Operational speed	High – Medium – Medium Low and Low speed

APPLICATIONS

- For all sizes of treatment plant

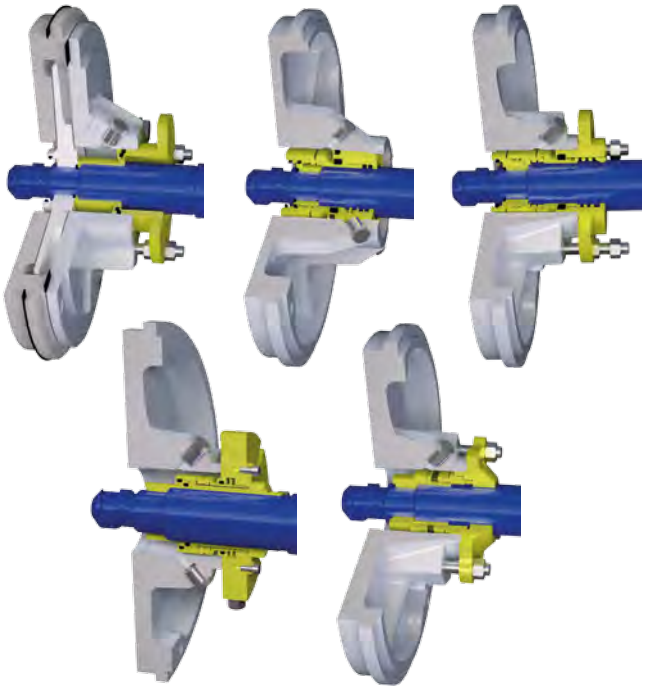
Features that Ensure Safe Operation even in the Most Demanding Chemical Applications

The following options are also available for our ISO and ANSI process pumps

Mechanical seals

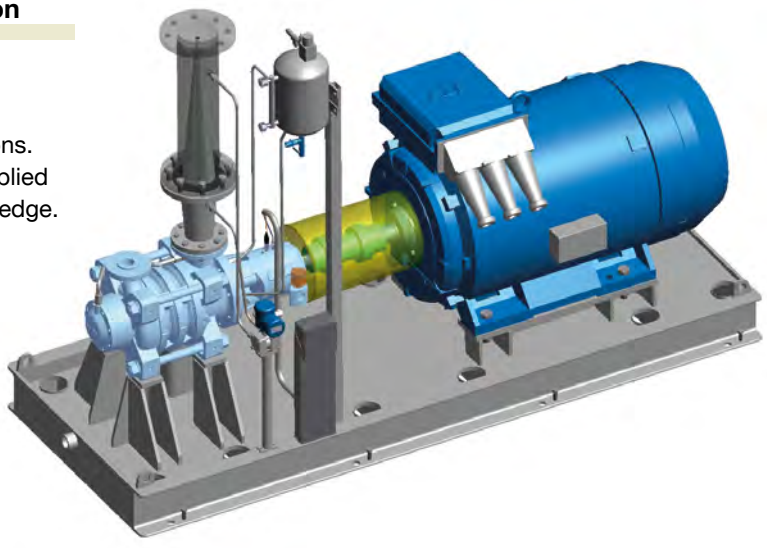
Sulzer ISO/ANSI pumps can be fitted with a range of sealing options to suit different fluids and applications:

- Standard soft-packed glands
- Waterless dynamic seals
- Integrated single and double mechanical seals
- Ready-fitted single and double mechanical seals
- Single and double cartridge seals
- API 682 cat.1 style mechanical seals



Sealing water equipment and instrumentation

API or ISO/ANSI seal support plans can be ready-fitted to the pump and baseplate in flanged piping, tubing or flexible connections to suit most applications. Instrumentation for the pump and motor can be supplied as fitted or ready wired to a terminal box at the skid edge.



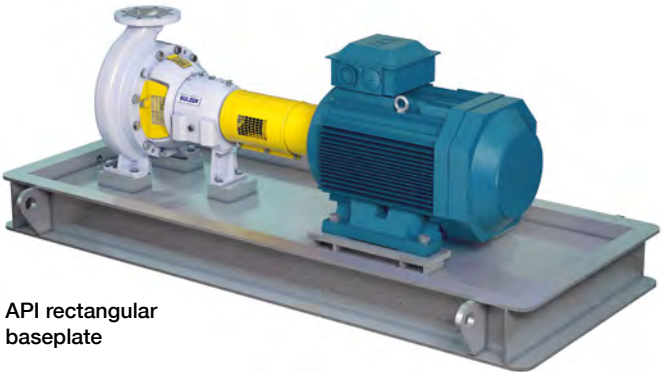
Versatile installation options

Fast, simple installation of long coupled (LC) pumps with T-frame baseplates

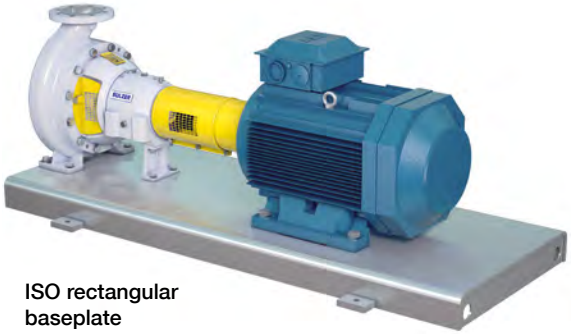
- The purpose of the baseplate is to facilitate installation of the pump-motor combination at the installation site
- The robust, rigid baseplate supports the substantial load of the piping and drive motor
- The baseplates have been designed to accommodate the next size of frame on the same baseplate
- Galvanized riser blocks as standard enable installation of the next size of drive motor frame, when required
- Stainless steel alignment blocks as standard facilitate fast, simple adjustment of the motor when aligning the coupling
- Alternative foundation bolts available, depending on application: welded, grouted or chemical anchors

Classic installation of long coupled (LC) pumps with grouted Sulzer ISO and API rectangular baseplates

- ISO and API standard rectangular baseplates are grouted into the concrete foundation
- Possible leaks are collected on the baseplate
- Galvanized riser blocks as standard enable installation of the next size of drive motor frame, when required
- Stainless steel alignment blocks as standard facilitate fast, simple adjustment of the motor when aligning the coupling
- Alternative foundation bolts available, depending on application: welded, grouted or chemical anchors



API rectangular baseplate



ISO rectangular baseplate

Other baseplate options

For ANSI pumps

- ANSI drip lip style 3 - similar to the ANSI style 2 with a sloped rim to welded drain
- PIP base - baseplate designed to PIP standards with raised mounting pads and a drip rim
- Non-metallic base - polymer composite base with stainless steel inserts, designed for highly corrosive applications

For ISO pumps

- ISO rectangular frame base - steel base plate with a slopped drip pan and welded drain and lifting points

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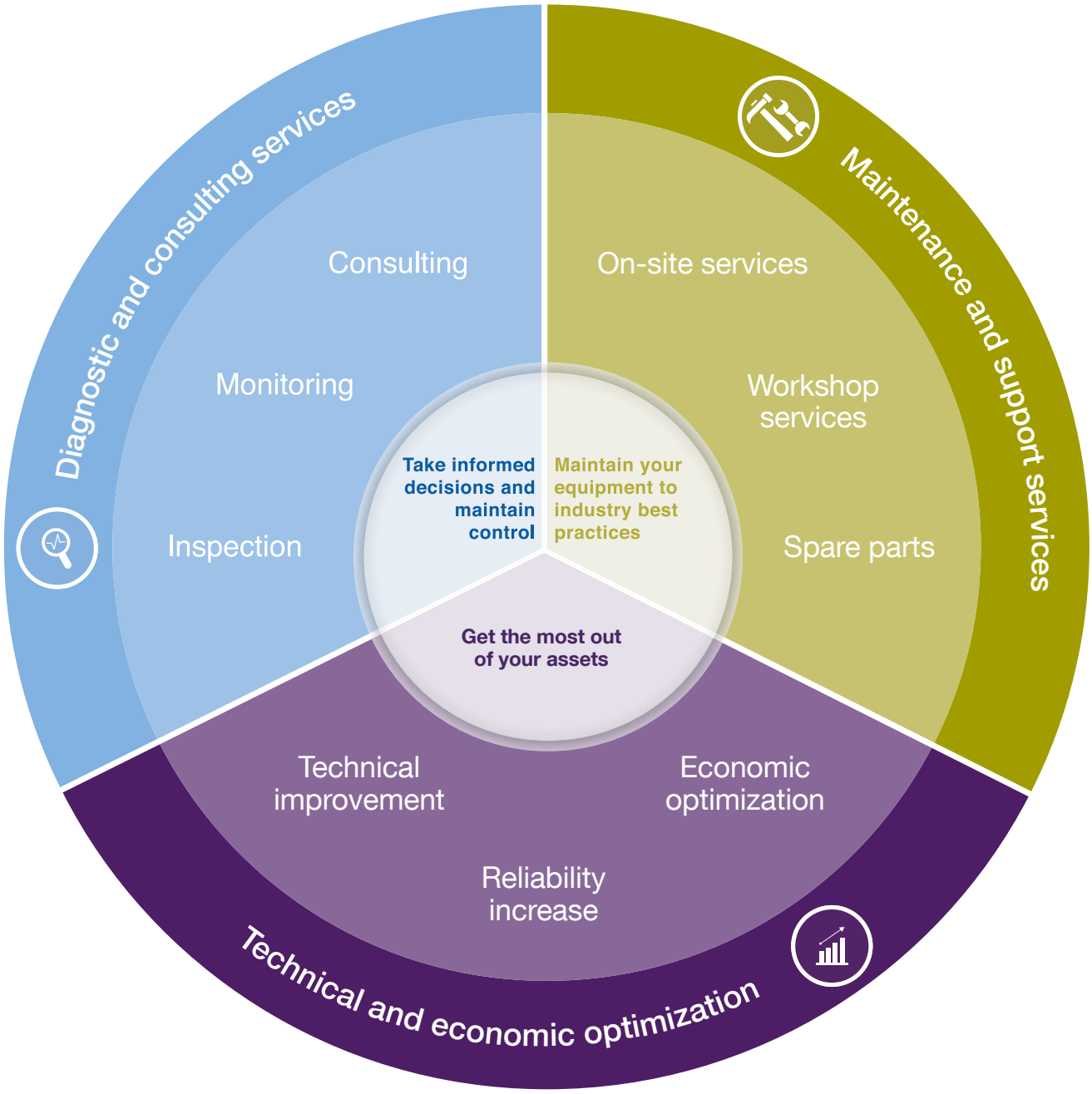

Cast Materials

	Internal code	USA ASTM [1]	Comparable grades EN10283		Nominal chemical			
			Item	Number code	C	Cr	Ni	Mo
Corrosion-resistant cast steels								
Martensitic cast steels	E2	A743 Grade CA-6NM	G-X 4 CrNi 13 4	1.4317	max. 0.06	11.5-14.0	3.5-4.5	0.40-1.0
	4E	A747 Grade CB7Cu-2	G-X 5 CrNiCu 16 4	1.4525	max. 0.07	14.0-15.5	4.5-5.5	
Austenitic cast steels	4C	A743 Grade CF-8	G-X 6 CrNi 19 10	1.4308	max. 0.08	18.0-21.0	8.0-11.0	
	4G	A743 Grade CG-3M	C-X 5 CrNiMo 19 11 3	(1.4412)	max. 0.03	18.0-21.0	9.0-13.0	3.0-4.0
	43	A743 Grade CN-7M	C-X 4 NiCrCuMo 30 20 4	1.4527	max. 0.07	19.0-22.0	27.5-30.5	2.0-3.0
	4U	(UNS S32654)	AVESTA 654SMO [3]		max. 0.025	23.0-25.0	21.0-23.0	7.1-7.5
Duplex steels (austenitic-ferritic)	41	A890 Grade 3A	(G-X 2 CrNiMoN 25 6 3)	(1.4468)	max. 0.06	24.0-27.0	4.0-6.0	1.75-2.5
	4L	A890 Grade 1B	(G-X 2 CrNiMoN 25 6 3 3)	(1.4517)	max. 0.04	24.5-26.5	4.7-6.0	1.7-2.3
	4T	A890 Grade 5A	G-X 2 CrNiMo 26 7 4	1.4469	max. 0.03	24.0-26.0	6.0-8.0	4.0-5.0
Nickel alloys	4J	A494 Grade CW-6M			max. 0.07	17.0-20.0	balance	17.0-20.0
Carbon and low alloy cast steels								
Carbon steels	46	A216 Grade WCB	GP 240 GH	EN 10213-2	max. 0.30			
Cast irons								
Grey cast irons	52	A48 Class No 30 B	EN-GJL-200	EN-JL-1030				
	53	A48 Class No 35 B	EN-GJL-250	EN-JL-1040				
Ductile cast irons	5H	A395 Grade 60-40-18	EN-GJS-400-18	EN-JS-1020				
Wear-resistant cast irons	5B	A532 Class III Type A	EN-GJN-HV600 (XCr23)	EN-JN-3049	2.0-3.3	23.0-30.0	max. 2.5	max. 3.0

[1] Standard corresponding to the internal code is ASTM.
[2] The hardness is informative value.
[3] AVESTA 654SMO is a trademark owned by Outokumpu Stainless, who have granted Sulzer Pumps license to produce this material.
[4] PRE ≥ 40

composition			Guaranteed mechanical properties				General properties and examples of applications
Cu	**N**	**Others**	**Tensile strength N/mm²**	**Yield strength N/mm²**	**Elonga-tion %**	**Hard-ness [2]**	
			755	550	15	250	Air-hardening steel with good strength properties. Used e.g. in power industry applications.
2.5-3.2		Nb 0.15-0.35	1170	1000	5	400	A precipitation hardening grade with good strength properties and corrosion and wear resistance. Used for pump components.
			485	205	35	150	Standard stainless steel grade with good toughness and resistance to nitric acid solutions.
			515	240	25	160	Improved resistance to hot sulphuric and organic acids due to a high molybdenum content. Molybdenum increases the pitting resistance of steel.
3.0-4.0			425	170	35	140	A grade for castings where resistance to sulphuric acid is essential.
0.3-0.7	0.40-0.55		600	350	35	220	Excellent corrosion resistance. Nitrogen also gives very good resistance to pitting and crevice corrosion. Resistant to hot acids with high chloride content. Used in pulp bleaching plants, sea water applications, and in the handling of liquids containing halides.
	0.15-0.25		655	450	25	230	Steel with better tensile and yield strength compared to austenitic steels. Used for various process industry and seawater applications.
2.7-3.3	0.10-0.25		690	485	16	250	Similar grade to the previous one. The copper content improves corrosion resistance in e.g. weak sulphuric acid solutions. Molybdenum improves general corrosion resistance.
	0.10-0.30		690	515	18	250	Used for equipment in the chemical and pulp industries. Good resistance to sea water. [4]
		Fe max. 3.0%	495	275	25	180	High Mo and Cr contents make the alloy suitable for reducing and oxidizing and otherwise severely corroding conditions. Good resistance to sulphuric acid, and also to hydrochloric acid up to concentrations of approx. 10%.
		Mn. 1.0 %	485-655	250	22	160	Ductile and strong weldable steel, used e.g. in pump support structures. Also used in hot water pumps.
			207			190	Used e.g. in pump bearing units.
			241			210	Used in pump casings, casing covers and parts of bearings.
			414	275	18	150	Used in casings and covers in various industries.
max. 1.2						600	High-chromium white cast iron for wear resistant pumps. The high chromium content guarantees reasonable corrosion resist-ance. Well suited for wearing applications alkaline conditions.

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