

Cutting-Edge Pumping and Mixing Solutions for the Food Processing Industry





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SULZER



PRESSURES
ABOVE 10 BAR

The Sulzer Advantage

Innovative and proven pumping and mixing solutions

As a global leader in pump and agitator design and manufacture, Sulzer is recognized for delivering the excellent product quality and performance reliability required for a wide range of applications in the food processing industry.



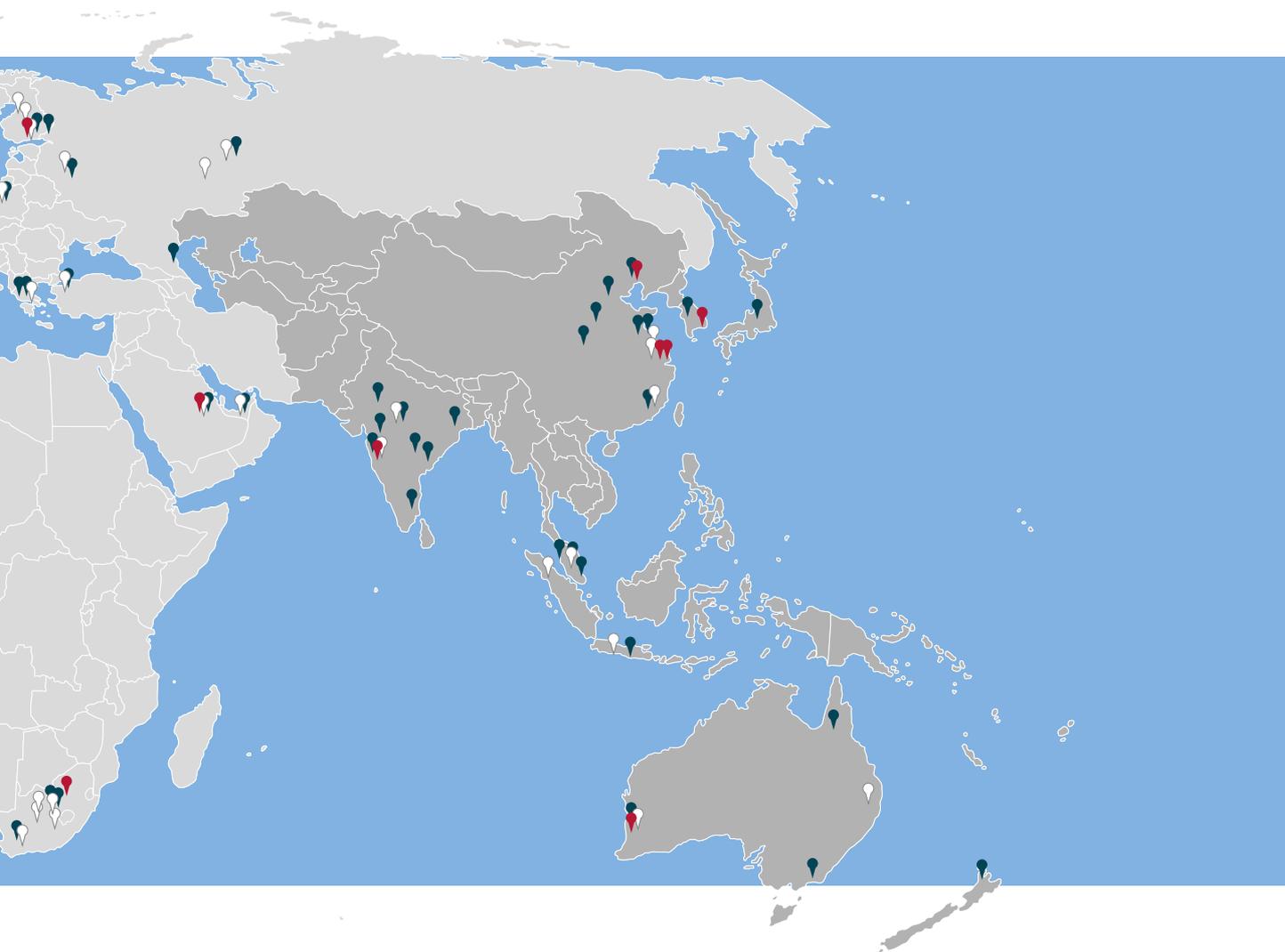
Our Organization Spans Across the Globe



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 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, provides 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.

Whatever the Process, We Have the Pumping Solutions

You set the challenge, we provide the solution.

Sugar cane mill



Wear-resistant and non-clogging pumps and agitators in particular are key pieces of equipment in sugar cane processes for diffusion, purification, evaporation, crystallization, auxiliary systems and wastewater treatment.

Sugar beet mill



Wear-resistant pumps are crucial in beet sugar processing, supported by process pumps and agitators for washing, extraction, purification, carbonation, evaporation, crystallization, auxiliary systems and wastewater treatment.

Sugar refinery



Process pumps and agitators are key pieces of equipment in sugar refining, melting, carbonation filtration and decolorization, evaporation, crystallization, auxiliary systems and wastewater treatment. Degassing pumps are problem solvers in the melting process.

Starch manufacturing



Degassing pumps are crucial problem solvers in many starch applications, whether the source is corn, wheat, potatoes or tapioca. Process pumps and agitators are widely used in steeping, fiber separation, starch washing and auxiliary processes.

Bioethanol production



Process pumps and agitators are key pieces of equipment in saccharification, fermentation, distillation, residue handling, auxiliary systems and wastewater treatment. Sources are typically sugar cane, sugar beets and other crops.

Biodiesel production



Process pumps and agitators are used for all sources of biodiesel, such as canola, soybeans, palm oil or animal fat. Typical processes include oil production, transesterification, separation and flashing, glycerine treatment and auxiliary systems.

Biogas production



Agitators are at the heart of the anaerobic digestion process in biogas production. The digestion of sludge, food leftovers or animal waste requires an even temperature distribution without sedimentation.

Beverage industry



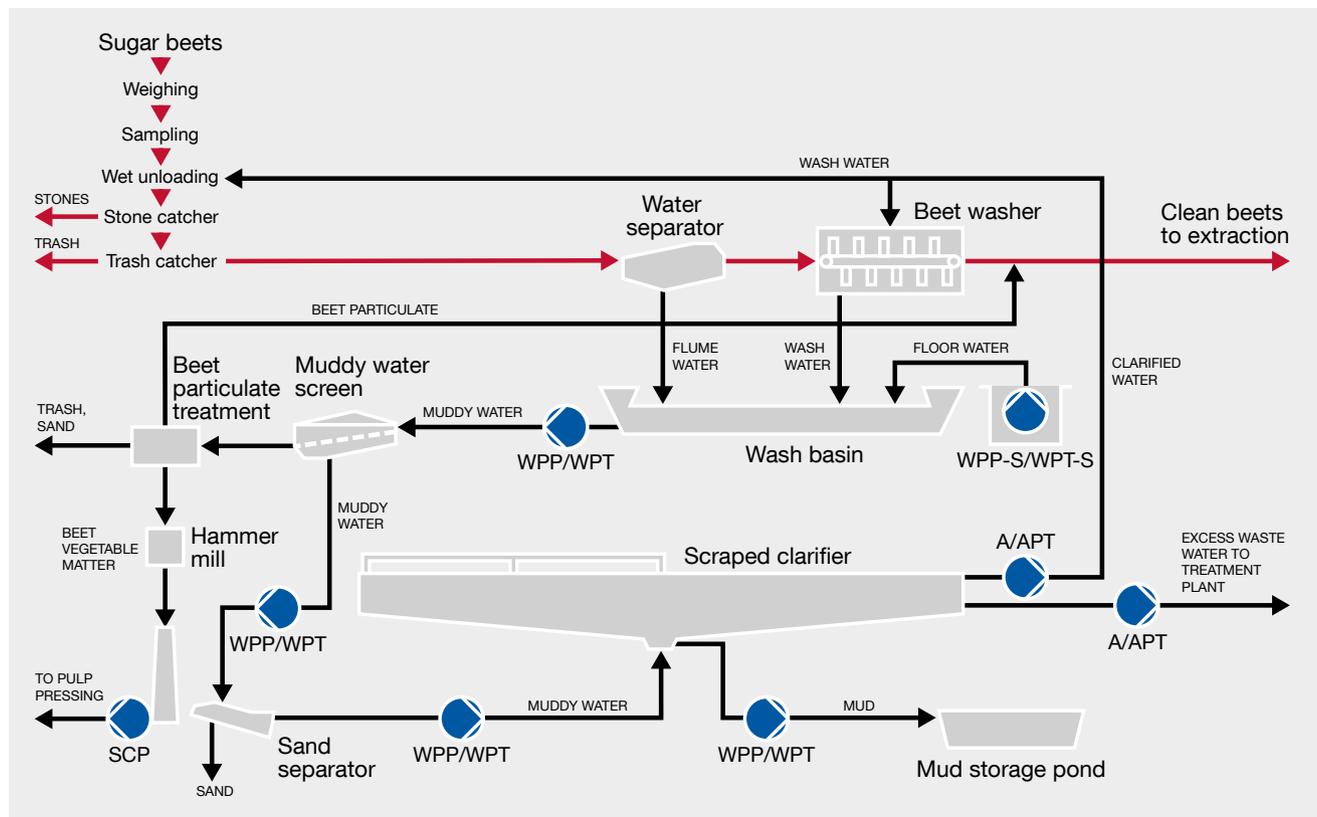
Pumps and agitators are key pieces of equipment in the water-intensive beer and beverage industry. In addition, effluent water quality must meet environmental targets, which necessitates efficient aerators and compressors in the wastewater treatment.

Whatever the Process, We Have the Pumping Solutions

Excellent pump reliability for sugar beet washing

Soil and sand are rinsed off during the wet unloading of sugar beets, generating muddy, abrasive water. Wear-resistant pumps are therefore the key to greater reliability and lower maintenance costs. The AHLSTAR W can extend the pump lifecycle and prevent expensive, unexpected shutdowns.

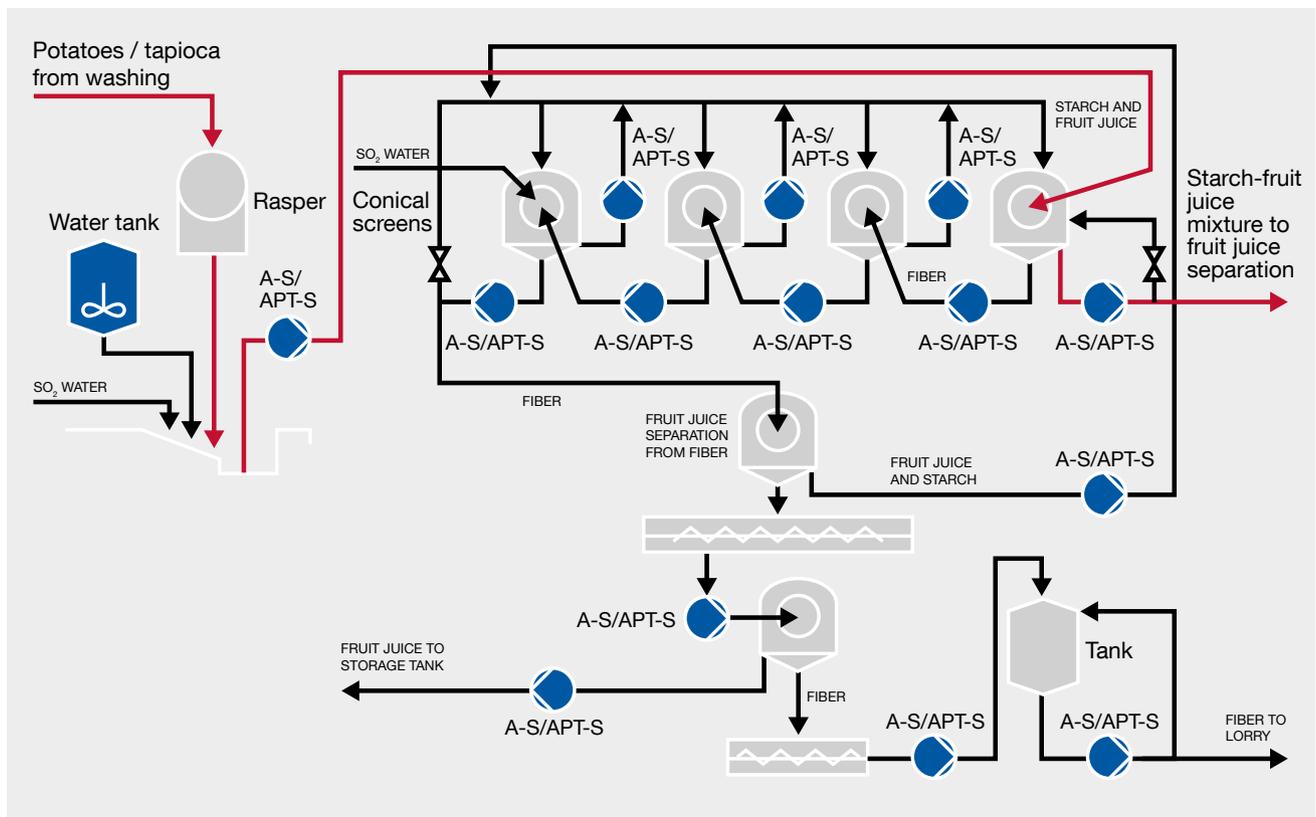
Beet pulp has a high fiber and gas content, and our SCP pumps have been designed to handle this type of suspension. With an efficient degassing and inducer system for the inlet feed, this technology can replace high-maintenance progressive cavity pumps.



- A/APT = AHLSTAR A, APP or AHLSTAR APT pump
- WPP/WPT = AHLSTAR WPP or WPT pump with wear resistant hydraulic
- WPP-S/WPT-S = AHLSTAR WPP-S/WPT-S pump with wear resistant hydraulic and gas separation
- SCP = Degassing pump for high concentrated suspension

Degassing pumps in starch manufacturing

In starch production from tapioca and potatoes, the mixture of water and rasped stock contains a high air content of about 40% in combination with high viscosity. This type of suspension is difficult to pump using conventional pumps. AHLSTAR degassing pumps have been designed to handle this suspension effectively and reliably, ensuring trouble-free operation and a steady process.



A-S/APT-S = AHLSTAR A-S, APP-S or APT-S gas separating pump

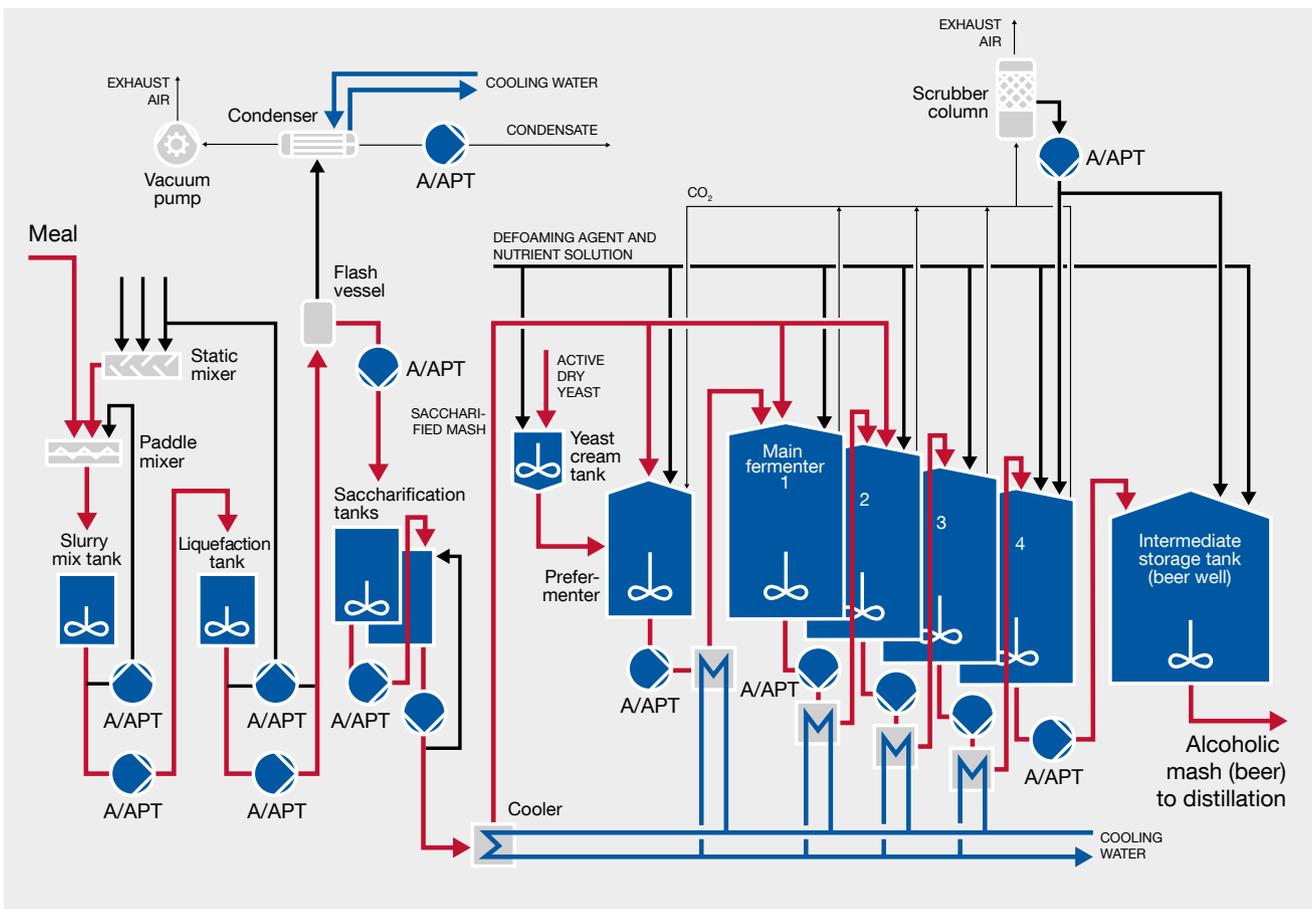


= Scaba or SALOMIX® agitator

Efficient bioethanol production through optimum agitation

Fermentation of various starch or sugar based sources requires reactors with good agitation. In this example, starch powder is mixed in a slurry tank and the agitator must be able to mix the dry powder into the liquid. In the saccharification tank, starch is converted with enzymes at high temperatures. Fermentors can be either batch or continuous; for batch fermentors the propeller must be located near the bottom in order to also enable agitation during emptying. Agitation must be effective in both cases, to ensure satisfactory mixing of nutrients.

Reliable, sturdy agitators that meet process requirements with a minimum energy input are important goals when designing agitators. Sulzer's SALOMIX® and Scaba agitators are engineered for each individual application.



A/APT = AHLSTAR A, APP or AHLSTAR APT pump

 = Scaba or SALOMIX® agitator

Your Ideal Service Partner

Our commitment and expertise always delivers reliability, responsiveness, rapid turnaround and innovative solutions



Our Comprehensive Product Portfolio

Sugar								
Product technology	Product name	Washing	Extraction	Purification	Evapora- tion	Crystalliza- tion	Auxiliaries	Waste- water treatment
Single stage pumps	AHLSTAR A range	✓	✓	✓	✓	✓	✓	✓
	AHLSTAR N range	✓	✓				✓	✓
	AHLSTAR W range	✓	✓	✓		✓	✓	✓
	AHLSTAR CC	✓	✓	✓	✓	✓	✓	✓
	Degassing and self-priming A, N and W range	✓	✓		✓	✓	✓	
	CPT	✓	✓	✓	✓	✓	✓	✓
MC® products	SCP pumping system	✓	✓					
Multistage pumps	MBN			✓		✓	✓	
Vertical pumps	NKP/NKT, WKP/WKT	✓					✓	✓
Agitators	SALOMIX® L, Scaba top-mounted		✓	✓		✓	✓	✓
	SALOMIX® SL/ST, Scaba side-mounted		✓	✓		✓	✓	✓
Submersible mixers	XRW and XSB							✓
Submersible pumps	XFP, AFLX and VUPX	✓					✓	✓
Compressors	HST							✓
Submersible aerators	OKI, XTA and DDS							✓

Starch								
Product technology	Product name	Wheat fractioning	Corn steeping	Fiber separation	Starch washing	Gluten/ corn oil handling	Auxiliaries	Waste- water treatment
Single stage pumps	AHLSTAR A range	✓	✓	✓	✓	✓	✓	✓
	AHLSTAR N range		✓				✓	✓
	AHLSTAR W range		✓			✓	✓	
	AHLSTAR CC	✓	✓	✓	✓	✓	✓	✓
	Degassing and self-priming A, N and W range	✓	✓	✓	✓	✓	✓	
	CPT	✓	✓	✓	✓	✓	✓	✓
Vertical pumps	NKP/NKT, WKP/WKT						✓	
Agitators	SALOMIX® L, Scaba top-mounted		✓	✓	✓	✓	✓	✓
	SALOMIX® SL/ST, Scaba side-mounted		✓	✓	✓	✓	✓	✓
Submersible mixers	XRW and XSB							✓
Submersible pumps	XFP, AFLX and VUPX						✓	✓
Compressors	HST							✓
Submersible aerators	OKI, XTA and DDS							✓

Bioethanol

Product technology	Product name	Saccharification	Fermentation	Distillation	Residue handling	Storage	Auxiliaries	Waste-water treatment
Single stage pumps	AHLSTAR A range	✓	✓	✓	✓	✓	✓	✓
	AHLSTAR N range						✓	✓
	AHLSTAR W range	✓			✓		✓	
	AHLSTAR CC	✓	✓	✓	✓	✓	✓	✓
	Degassing and self-priming A, N and W range		✓				✓	
	CPT	✓	✓	✓	✓	✓	✓	✓
Multistage pumps	MBN						✓	
Agitators	SALOMIX® L, Scaba top-mounted	✓	✓		✓	✓	✓	✓
	SALOMIX® SL/ST, Scaba side-mounted	✓	✓		✓	✓	✓	✓
Submersible mixers	XRW and XSB							✓
Submersible pumps	XFP, AFLX and VUPX						✓	✓
Compressors	HST							✓
Submersible aerators	OKI, XTA and DDS							✓

Biodiesel

Product technology	Product name	Oil production	Oil pre-treatment	Biodiesel production	Glycerin treatment	Storage	Auxiliaries	Waste-water treatment
Single stage pumps	AHLSTAR A range	✓	✓	✓	✓	✓	✓	✓
	AHLSTAR N range							✓
	AHLSTAR W range	✓						
	AHLSTAR CC	✓	✓	✓	✓	✓	✓	✓
	Degassing and self-priming A, N and W range		✓				✓	
	CPT	✓	✓	✓	✓	✓	✓	✓
Multistage pumps	MBN						✓	
Agitators	SALOMIX® L, Scaba top-mounted		✓	✓		✓	✓	✓
	SALOMIX® SL/ST, Scaba side-mounted		✓	✓		✓	✓	✓
Submersible mixers	XRW and XSB							✓
Submersible pumps	XFP, AFLX and VUPX						✓	✓
Compressors	HST							✓
Submersible aerators	OKI, XTA and DDS							✓

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 m ³ /h / 48,400 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 all types of liquid or suspension, such as sugar extraction and evaporation, starch pumping, chemicals, water, wastewater and sludge



AHLSTAR N

KEY CHARACTERISTICS

Capacities	2,000 m ³ /h / 8,800 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 centrifugal pumps cannot handle liquids due to plugging or abrasive wear
- Cossette pumping for sugar extraction, sugar cane milling, slurries, rejects, wastewater, sludge and other liquids containing large solids and other particles



AHLSTAR W

KEY CHARACTERISTICS

Capacities	7,000 m ³ /h / 31,000 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 or erosive applications, such as sugar extraction and purification and suspensions with hard or sandy solids
- Specially designed wear-resistant pumping hydraulics (W) with wear-resistant materials deliver a 6-8 times longer life-cycle than conventional pumps



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 m ³ /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

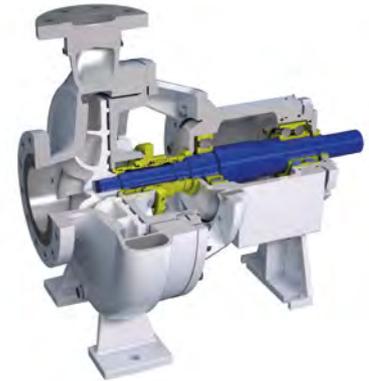
- Exceeds requirements of ANSI/ASME B73.1 standards
- Suitable for the most demanding industrial applications
- Unique, patented and superior design features minimize lifecycle costs
- Fast and simple installation, safe operation and easy maintenance and service

KEY CHARACTERISTICS

Capacities	Up to 1,600 m ³ /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



MC® products

SCP PUMPING SYSTEM

KEY CUSTOMER BENEFITS

- Advanced patented SCP pumping technology replacing maintenance requiring positive displacement pumps
- Highest efficiency, reducing power consumption and installation costs
- Correct fluidization prevents fiber over-treatment
- Degassing alternatives include a built-in degassing system, a separate external MDS degassing system, and degassing without a vacuum pump
- Low and high inlet level pumping
- Proven long-life mechanical design

KEY CHARACTERISTICS

Heads	Up to 190 m / 620 ft
Capacities	Up to 1,200 m ³ /h / 5,300 USgpm
Consistency range	6 - 12% (dry substance)

APPLICATIONS

- Pumping high consistency wet pulp, typically after sugar beet extraction



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	700 m ³ /h / 3,080 USgpm
Heads	900 m / 2,950 ft
Pressures	100 bar / 1,450 psi
Temperatures	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



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	430 m ³ /h / 1,900 USgpm
Heads	60 m / 200 ft
Pressures	10 bar / 150 psi, depending on material and size
Temperatures	95°C / 205°F

APPLICATIONS

- For all types of liquid, such as water, slurries or liquids with large or abrasive solids



Top-mounted agitators

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 ft³

KEY CHARACTERISTICS

Impeller diameter	Up to 8,000 mm / 316 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 AGITATOR

The top-mounted series covers gear 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 8,000 mm / 316 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



Side-mounted agitators

SALOMIX® RANGE

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
- SLF/STF, SLR/STR and SLF with gear drive
- SLB/STB and SLH for belt drive
- Versatile mechanical sealing solutions

KEY CHARACTERISTICS

Propeller diameters	800 – 1,650 mm / 31.5 – 65 in
Power	2.2 – 110 kW / 10 – 150 hp

APPLICATIONS

- For all types of liquid or suspension



SCABA SIDE-MOUNTED BELT DRIVEN AGITATOR

KEY CUSTOMER BENEFITS

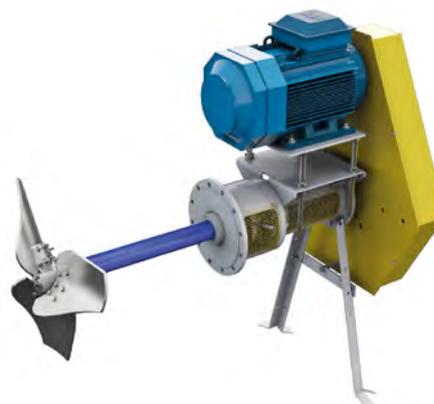
- Sturdy construction with rigid shaft and bearings
- High efficiency results in energy savings and improved agitation
- High flow SHP1 and SHP18 propellers are used to generate good axial flow
- Both mechanical seals and stuffing box alternatives
- Seal can be changed without emptying the tank with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

KEY CHARACTERISTICS

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

APPLICATIONS

- For all types of liquid or suspension
- Seal unit can be changed without emptying the tank



Submersible mixers

SUBMERSIBLE MIXER TYPE ABS XRW AND FLOW BOOSTER TYPE ABS XSB

KEY CUSTOMER BENEFITS

- Energy efficient design, such as IE3 or permanent magnet 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

Mixing flow	Up to 6,300 m ³ /h / 28,000 USgpm (XRW) Up to 22,200 m ³ /h / 95,200 USgpm (XSB)
Propeller diameter	Up to 900 mm / 3 ft (XRW) Up to 2,750 mm / 9 ft (XSB)
Temperature	40°C / 104°F*

APPLICATIONS

- For all sizes of treatment plant



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 rigid shaft and 100,000 h 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 (50 Hz) / 400 kW (60 Hz)

KEY CHARACTERISTICS

Flow	7,200 m ³ /h / 22,220 USgpm
Head	78 m / 360 ft
Temperature	40°C / 104°F*
Motor power	1.3 to 350 kW / 2 to 400 kW, 2.7 to 536 hp

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



*Consult Sulzer for higher temperatures

Aeration systems

SUBMERSIBLE AERATOR MIXER TYPE ABS OKI

KEY CUSTOMER BENEFITS

- High process efficiency, especially when combined with the Sulzer turbocompressor type ABS HST
- Designed for heavy-duty 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 O₂/h / up to 890 lb O₂/h
Motor range 3 – 37 kW

APPLICATIONS

- For aeration in heavy-duty applications, such as deep tanks or high sludge concentration



SUBMERSIBLE AERATOR TYPE ABS XTA/XTAK

KEY CUSTOMER BENEFITS

- Self-aspirating unit eliminates need for blower
- No aerosol effects or sedimentation at the bottom of the basin
- Good oxygen transfer and aeration efficiency
- Liftable and freestanding, making it easy to change the plant configuration — no need to empty the tank
- XTAK version with extended pipes increases efficiency by 15-20%

KEY CHARACTERISTICS

Oxygen transfer Up to 70 kg O₂/h / 175 lb O₂/h (60 Hz)
Motor range 2,9 – 75 kW / 10 – 115 hp (60 Hz)

APPLICATIONS

- Mixing and equalizing tanks
- Activated sludge tanks and SBR reactors
- Efficient alternative to surface aerator



DISC DIFFUSER SYSTEM TYPE ABS NOPON

KEY CUSTOMER BENEFITS

- Fine bubble membrane with highest aeration efficiency, especially when combined with the ABS HST turbo compressor
- High quality EPDM or polyethylene discs for various applications
- Well proven non-return valve ensures trouble free operation in non-continuous processes
- Sliding ring for fast and simple assembly and maintenance

KEY CHARACTERISTICS

Net effective area 0.025 m² (HKL, KKI, MKL)
0.060 m² (PIK, PRK)
0.186 m² (DS 20)
Operating range 0.5 – 15 m³/h (referred air t° = 20°C and 101.3 kPa ambient pressure)

APPLICATIONS

- Continuous and non-continuous aeration systems



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