The World Leader in Pumps and Mixers for the Pulp and Paper Industry
Sulzer Pumps, a Company with Proven Expertise in Pulp and Paper Pumping and Mixing

Sulzer Pumps’ success is founded on expertise. Our know-how and competitiveness is based on close cooperation with the world’s leading pulp and paper producers, machinery suppliers and engineering companies. Wherever you are, Sulzer Pumps is close by to bring you the best in pumping and mixing technology and services. Now that Scanpump is an integrated part of Sulzer Pumps, we can provide for your key process applications even more full line. Our expanded high-performance product portfolio also includes complete water and effluent treatment applications. We will improve your potential to achieve all of your goals for performance, reliability, safety and sustainability.

Reliability
The reliability of your pumping and mixing solution mainly depends on the right selection, proper product design, precise manufacturing, timely delivery process, efficient after-market service and all associated support.

The latest manufacturing technology, together with strict quality control procedures, assures high levels of efficiency and performance over a full range of process conditions. Sulzer Pumps tests all its pumps before delivery. The wide references from pulp and paper operation around the whole world confirm our proven reliability. Together, all these factors mean high pumping and mixing performance and create high lifecycle value for our customers.

Research
Research and development are always top priority at Sulzer Pumps. The world’s largest R&D center specialized in PPI pumping and mixing is located in Kotka, Finland. We work closely with our customers to develop pumps and mixers that suit our customers’ processes in the best possible way. At our full scale PPI testing facilities, all process equipment can be tested under operating conditions controlled to closely match customer operations. We are also able to make pumping and mixing test runs based on customers’ own furnish.

We apply our own foundry expertise and deep metallurgical knowledge to developing equipment for applications requiring strong resistance to corrosion and wear.

Excellent Service at Your Doorstep
Sulzer Pumps employs expert sales and service people who are focused and bring their extensive PPI knowledge to every customer relationship.

Sulzer Pumps service centers are close to you, offering fast response times and quick deliveries.

Of course, we not only supply original spare parts, we also develop improved product solutions in partnership with our customers to increase process performance. Wherever you are, Sulzer Pumps is close by to help you to achieve all your performance, reliability, safety and sustainability goals.
Sulzer Innovations for Pulp and Paper

The R&D work at Sulzer Pumps has resulted in many pump, mixer and agitator innovations for the pulp and paper industry. Over the decades, this continuous search for better pumping and mixing solutions has lengthened service intervals and prolonged pump life times in various applications. We are the forerunner in stock pumping and mixing over the whole consistency range from 0 to 18%.

1980  Medium consistency MC® pumping technology
1987  AHLSTAR™ stock/process pump, AHLMIX™ chemical mixer, MC® flow discharger
1988 – MCA, MCV; the 2nd generation MC® pumping
1990  systems with external & internal degassing
1991  ZPP low-pulse headbox feed pump
1992  SALOMIX® SL side entry agitator family
1993  AHLMIX™, the 2nd generation chemical and steam mixer
1995  AHLSTAR™ ASP self-priming gas removal pump
1996  AHLMIX™ FS, gas mixing concept
1999  SALOMIX® TES top entry spreader
2000  SALOMIX® GLI bottom zone mixing and dilution arrangement

2000 – MCE™, the 3rd generation MC® pumping system
2001  products
2004  The Fluidier™ stock pumping concept
2005  New AHLSTAR series process pumps
2006  MBN multistage ring section pump
2009  SX Chemical mixer
2009  New product sizes and higher capacities for AHLSTAR, MCE, KCE and MBN pumps
2011  New, large-size, high-efficiency AHLSTAR series process pumps
2011  Expanded product portfolio through Cardo Flow Solutions acquisition and Scanpump integration

Chemical pulp fiberline
Pulp drying machine
Chemical recovery
Chemicals
Water supply
Water and effluent treatment
Stock preparation and paper/board machines
Power plant
Coating and finishing
Mechanical pulp line
Recycled fiber line
Leading Products for the Pulp and Paper Industry

Sulzer PPI pumps and mixers are famous for their innovative and sturdy design. We make standardized products for all normal applications and specialty products for applications with special requirements.

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<th>Product Technology</th>
<th>Product Type</th>
<th>Wood Yard</th>
<th>Fiberline</th>
<th>Recovery</th>
<th>Recycled Fiber</th>
<th>Mechanical Pulping</th>
<th>Stock Preparation / Paper &amp; Board Machine</th>
<th>Water and Effluent Treatment</th>
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AHLSTAR
The Answer to Your Process Needs

Designed especially for the pulp and paper industry, every AHLSTAR pump is tailor-made to ensure process reliability, high efficiency and low operating costs. AHLSTAR pumps save energy, sealing water and environment. Designed to meet the EN ISO 5199 reliability standard, these pumps also comply to 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 pump is designed for fast and easy installation, maintenance and service.

**AHLSTAR A**
For all normal pumping applications, with stocks up to 8%, e.g., liquors, water, chemicals, white water, condensate, etc.
- Head 160 m / 525 ft
- Capacity 2,500 l/s / 39,600 USgpm
- Pressure 16 bar / 230 psi
- Temperature 180 °C / 356 °F

**AHLSTAR N**
For applications where normal stock pumps cannot handle liquids due to plugging or abrasive wear. Suitable for unsorted stocks up to 8%, e.g., slurries, rejects, waste water, chips, or other liquids containing large solids and other particles.
- Head 90 m / 295 ft
- Capacity 550 l/s / 8,700 USgpm
- Pressure 16 bar / 230 psi
- Temperature 180 °C / 356 °F

**AHLSTAR W**
For the most abrasive and erosive pumping applications, such as lime milk and mud, and coating pigments. Specialy designed wear-resistant pumping hydraulics (W) with wear-resistant materials deliver six to eight times longer life time than conventional pumps.
- Head 110 m / 360 ft
- Capacity 2,000 l/s / 31,700 USgpm
- Pressure 16 bar / 230 psi
- Temperature 180 °C / 356 °F

**AHLSTAR E**
Developed especially for pumping hot liquors such as in continuous and batch digesters (E hydraulics). Centerline supported design prohibits heat and pressure shock distortions.
- Head 140 m / 460 ft
- Capacity 1,700 l/s / 30,000 USgpm
- Pressure 25 bar / 360 psi
- Temperature 210 °C / 410 °F
Is Air or Gas a Problem in Your Process?

The AHLSTAR range includes the total pumping concept for air and gas containing liquids with stock pumping (A), non-clogging (N) and wear-resistant (W) pumping hydraulics.

These pumps are used for pumping various air or gas containing stocks with consistency up to 8%, e.g., liquors, soap, foaming liquids, slurries, and liquids with a low level in the tank. They are also suited for free air/gas content of up to 40%.

AHLSTAR A, N and W Self-Priming Gas Removal Pumps

- A built-in vacuum pump
- Due to the self-priming capability, the pump can be used in seal pit and floor channel applications instead of vertical or submersible pumps.
AHLSTAR A, N and W Pumps with Gas Separator

Advantages and Benefits

- A built-in gas separator
- Trouble-free process operation, despite high air content
- Reduces the need for expensive and environmentally-damaging anti-foam agents
- Maintains a stable pumping pressure for smooth production
- Gas/air removal improves the efficiency of other process equipment
- An A, N or W pump can be later converted into an A, N or W self-priming gas removal pump or into a pump with gas separator or vice versa
Pumps for Your Most Critical Applications and Demanding Conditions

The Sulzer Pumps product range includes several pump types designed for applications with special requirements in various pulp and paper mill processes. As the entire paper machine production passes through the headbox feed pump, it is one of the most critical pumps in the mill.

**ZPP/Z22**
ZPP and Z22 headbox feed pumps are designed especially for today's high-speed paper and board machines requiring minimum pulsation, absolute reliability and high efficiency. Precision castings from our own foundry are a key factor in fulfilling the low pulsation requirements. High-quality surface finishing eliminates fiber hang-up or build-up of deposits. Proven reliability with various paper grades in most world-record paper and board machines.
- **Head** 220 m / 720 ft
- **Capacity** 6,500 l/s / 103,000 USgpm
- **Pressure** 25 bar / 360 psi
- **Temperature** 140 °C / 280 °F

**MBN**
MBN multi stage ring section pump for clean or slightly contaminated liquids in shower water, sealing water, boiler feed water applications, etc., where a high pressure/high head is needed.
- Features our innovative polygon fit between impellers – no keys needed. Maintenance-free dynamic seal, mechanical seals and gland packing are available for shaft sealing. Easy to maintain, needing only one roller bearing unit and one shaft seal.
- **Head** 900 m / 2950 ft
- **Capacity** 110 l/s / 1,740 USgpm
- **Pressure** 100 bar / 1,450 psi
- **Temperature** 180 °C / 355 °F

**AHLSTAR A Process Pumps for Headbox Application**
AHLSTAR A with the LowPulse impeller are especially well-suited for the latest high-speed paper and board machines requiring minimum pulsation, absolute reliability and high efficiency.
MC/MD high-pressure, multi stage pumps for clean liquids in recovery boiler feed applications. High efficiency and wide hydraulic coverage. Special hydraulics with low NPSHr value provide cavitation-free functioning and low noise level. PERMAVOR® lift off device for extended service life.

- Head 2,600 m / 8,500 ft
- Capacity 280 l/s / 4,400 USgpm
- Pressure 270 bar / 3,900 psi
- Temperature 210 °C / 410 °F

NKP/NKT, WKP/WKT NKP/WKP non-clogging, cantilever pumps for all types of severe applications in seal pits and floor channels. For waste stock, slurries and waste water containing large solid particles.

- Head 55 m / 180 ft
- Capacity 120 l/s / 1,900 USgpm
- Pressure 10 bar / 150 psi
- Temperature 95 °C / 205 °F

NVP/NVT NVP non-clogging vertical pumps for all types of severe applications in seal pits and floor channels. For waste stock, slurries and waste water containing large solid particles.

- Head 85 m / 280 ft
- Capacity 340 l/s / 5,400 USgpm
- Pressure 10 bar / 150 psi
- Temperature 95 °C / 205 °F

LSP/LST LSP/LST two-stage, low-speed, high-pressure pumps designed especially for pumping make-up and wash liquor in continuous digester service. A two-stage pump with back pull-out design for easy maintenance. Special hydraulics with low NPSHr value.

- Head 220 m / 720 ft
- Capacity 300 l/s / 4,760 USgpm
- Pressure 25 bar / 360 psi
- Temperature 180 °C / 356 °F
Rely on the Pioneers in Medium Consistency (MC®) Technology

Sulzer Pumps’ MCE™ pumping systems for medium consistency (MC®) stock have proven to be the most reliable solution in the pulp and paper industry. Sulzer Pumps utilizes application-related Fluider™ technology when selecting pumping solutions for pulp and paper mills.

The Fluider™ technology include proven patented stock pumping ranges:
- MCE™ Pumping Systems
- LCE™ Pumping Systems
- KCE™ Pumping Systems

Advantages and Benefits
- 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
- High-temperature pumping
- Low and high inlet level pumping
- One-drive unit system in most applications
- Proven long-life mechanical design

Capabilities
- up to 240 m / 790 ft
- from 20 to 5,000 ADMT/d
- consistency range 6 - 18%
MCE™ Pumping System
The most advanced patented MC® pumping technology for all pulp and paper mill applications.

KCE™ Pumping System
The most efficient pumping technology for all pulp and paper mill applications when feeding press washers in the Semi-MC™ (intermediate consistency) range and high volume flows.

LCE™ Pumping System
The most efficient pumping technology for recycled fiber and mechanical pulp line applications.

MC® Discharge Scraper and the Tower Discharge Pumping
To be used for discharging high consistency towers. Capability to 13% tower consistency without dilution, and to 20 - 35% tower consistency with dilution. Outlet consistency typically 8 - 13%.

SX Chemical Mixer
Chemical mixer for mixing both gaseous and liquid bleaching chemicals as well as steam into the paper stock.

MC® Discharger
MC® Discharger for dividing and controlling high-consistency stock flow and for discharging towers or reactors. It is possible to remove gas from the process with an MC® Discharger.
Sulzer Pumps TMS – The Tower Management System for the Pulp and Paper Industry

Sulzer Pumps has a unique knowledge of the pulp and paper industry’s agitation processes and requirements. With more than 30 years experience in PPI, we can help you succeed in today’s most challenging mixing tasks.

**SALOMIX® TES**
Top Entry Spreader *)

TES spreads stock evenly on the top surface to control the flow in the upper, high-consistency part of the tower. The quality of the discharged stock remains good. This method offers several advantages:

- Creates a uniform continuous downflow, with no stagnant stock zones
- Variable rotating speed always spreads a fresh top layer of stock, regardless of the surface level
- Prevents channeling and air entrainment in the stock

**SALOMIX® VULCA *)**

VULCA is a tower bottom center fillet pillar. While VULCA stands at the tower bottom, filling and pumping stock through VULCA saves pumping energy, boosts bottom zone mixing, and prevents the mixing of air into the stock at low stock levels.

**SALOMIX® GLI *)**

GLI is a special center fillet located at the bottom of the storage tower. GLI enables trouble-free operation of high-consistency storage and bleaching towers with a large bottom zone using several agitators. GLI ensures effective mixing, and dilution is intensified by baffles:

- GLI with dilution baffles is used to create a well controlled mixing/dilution zone to the tower bottom.
- GLI effectively separates the storage zone and the active mixing and dilution zone of the tower, thus giving a powerful tool to ensure even discharge consistency and good operation of the tower

*) Patented
Customer Case: TES Solves Entrained Air Problem

The air content of pulp in the customer’s storage tower was fluctuating badly and averaging 6% (blue curve in the figure). After installing the TES, the air content decreased to 2% and the variation was markedly reduced, as shown by the red curve.

Customer Case: TES Solves Retention Time Problem

A customer’s 2,000 m³ / 70,600 ft³ storage tower, with an upper diameter of 12 m / 39 ft and a bottom diameter 6.5 m / 21 ft, was operating at less than half its theoretical retention time or four hours for a full stock level.

Test run results show how TES corrected the tower operations to achieve the correct retention time:

<table>
<thead>
<tr>
<th>Tower level</th>
<th>89%</th>
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SALOMIX® TES Top Entry Spreader
Solving Your Storage Tower Problems

TES spreads stock evenly on the top surface to control the flow in the upper medium- or high-consistency part of the tower. The quality of the discharged stock remains good.

Benefits
- Creates a uniform continuous downflow, with no stagnant zones
- Variable rotating speed always spreads a fresh top layer of stock, regardless of the surface level
- Prevents channelling and air entrainment into the stock

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Effective Agitation in the Pulp and Paper Industry

The Sulzer agitators are designed for the demanding agitation applications in the pulp and paper industry. From the fiberline to the waste water treatment you will find reliable Sulzer agitators handling the agitation requirements. But this without the input of too much power, to save energy costs for our customers.

Agitation of pulp is a demanding process. The type of wood used for the pulp, the pulping process, consistency, and other properties all affect the selection of a correctly sized agitator. It is also important to know other factors that affect the selection, like the shape of the agitated chest and the production rate of the mill.

Agitation is also needed in the coating kitchen, where fillers, pigments and other additives are produced and stored. Here you can select a vertical agitator from Sulzer, especially designed for the fluid properties and required level of agitation.

There are several demanding agitation processes also in the evaporations and chemical recovery plants. Sulzer has developed suitable agitators for all these processes, including mixing of ash into thick black liquor and dissolving of smelt from the recovery boiler into weak white liquor.

Sulzer also has agitators designed for treatment of waste water from pulp and paper mills. For coagulation, flocculation and other agitation processes Sulzer can provide high efficiency, low power agitators to handle all agitation requirements in the waste water treatment plant.
SALOMIX®® Mixing Technology Products for a More Reliable and Efficient Process

SALOMIX®® SL/ST
SL/ST sidemounted gear or belt driven propeller agitators are specially designed for all stock process conditions:
- 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
- Maximum agitated consistency 6%, power 110 kW / 150 HP and propeller diameter 1,700 mm / 67 in
- Unique solutions

SALOMIX®® L Series
The L series covers gear or belt driven agitators mounted vertically on the tank top or bottom flange. L series agitators are intended for storage towers, dissolvers, reactors, and production vessels.
- Versatile impeller options meet any process needs in compliance with the rheology of the mixed fluid
- Maximum modular component flexibility
- Applicable for tanks from 1 to 2,500 m³ / 88,285 ft³
- Impeller diameters up to 8,300 mm / 27 ft and power range up to 450 kW / 600 HP
Scaba Side- and Top-mounted Agitators for a More Reliable and Efficient Process

Scaba Side-mounted Agitator
Scaba side-mounted belt driven propeller agitators are specially designed for all stock process conditions:
• 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
• Maximum agitated consistency 6%, power 200 kW / 270 HP and propeller diameter 1,400 mm / 55 in

Scaba Top-mounted Agitator
The top-mounted series covers gear or belt driven agitators mounted vertically on the tank top or bottom flange. These agitators are intended for storage towers, dissolvers, reactors, and production vessels.
• Versatile impeller options meet any process needs in compliance with the rheology of the mixed fluid
• Maximum modular component flexibility
• Applicable for tanks from 1 to 5,000 m³ / 176,600 ft³
• Impeller diameters up to 6,000 mm / 20 ft and power range up to 250 kW / 335 HP
Growing environmental awareness and increasing demands on waste water gives higher requirements on the effluent treatment. Many pulp and paper mills are now leading the way of applying groundbreaking technologies and bringing significant environmental and economical benefits. The requirements of the effluent water is very different depending on the process, and the composition from a bleached pulp line will be very different from a fine paper mill, a tissue machine or what comes from a mechanical fiber line – both regarding amount of fibers and suspended solids, oxygen requirement in the aeration process or the seasonal changes.

Sulzer have a deep knowledge in effluent treatment and when combining the product range of process pumps with agitators, submersible pumps and mixers, aerators and compressors we can offer you great options for energy efficient solutions for now – and for your future operation.

In addition to the Ahlstar range, Sulzer also offers the following dedicated products to perfectly meet your various water and wastewater treatment application needs:

**Submersible Sewage Pumps XFP**
This wide range of waste water pumps covers all needs of an industrial treatment plant. With their highly efficient IE3 motors, they offer long-term reliability, a future-proof design, and significant energy savings.
- Sizes up to DN600 and 400 kW
- Contrablock, vortex or closed impellers
- Premium-efficiency due to IE3 motors
- Long-term reliability, bearing lifetime 100,000 h
- Can be submersed or dry installed

**AHLSTAR A, N and W Self-priming Gas Removal Pumps**
For pumping high solids and gas content suspensions and water in digester, cleaning, clarifying and sludge treatment applications.
- Reliability
- Easy maintenance
- No plugging
- Self-priming
- Degassing
Scaba Top-mounted Agitators
Dry installed agitators rely on a deep process knowledge, which enable us to tailor-make the agitators to meet your specific need. This ensures the required process result with a minimum energy input. They are suitable for very large applications – such as digesters – down to small flash mixers.
- High efficiency propellers
- Good axial flow
- Propeller diameter from 100 mm – 6,000 mm
- Shaft length up to 30 m

Submersible Aerator Mixer OKI
The submersible aerator mixer, together with our high-speed HST turbo blower, is the key to solving many aeration problems in industrial applications. This freestanding unit is simple to position at the bottom of the tank, and can run as either an aerator or a mixer. It is a unique solution well-suited for aeration processes, in the pulp and paper industry.
- High process efficiency
- Non-clogging
- Liftable system
- Mixing

HST Turbocompressor
By supplying the air to the biological treatment with an HST turbocompressor you ensure that you get the highest efficiency for your biological treatment. High speed technology with magnetic non-contact bearings gives practically no wear and lowest possible life cycle cost.
- Very high efficiency
- No wear due to the magnetic bearings
- Lubrication free
- Easy installation by integral design
- Low noise level
- Flow control by integrated variable frequency drive

Submersible Mixer XRW and Flow Booster XSB
With a great range of submersible mixers Sulzer covers all sizes of treatment plants. Common features are robust constructions suitable for industry applications, self-cleaning properties and energy efficient design, such as IE3 motors, high efficiency propellers and slow running design.
- Wide range for several applications
- Self-cleaning propellers
- Robust construction
This brochure is a general product presentation. It does not provide a warranty or guarantee of any kind. Please, contact us for a description of the warranties and guarantees offered with our products. Directions for use and safety will be given separately. All information herein is subject to change without notice.