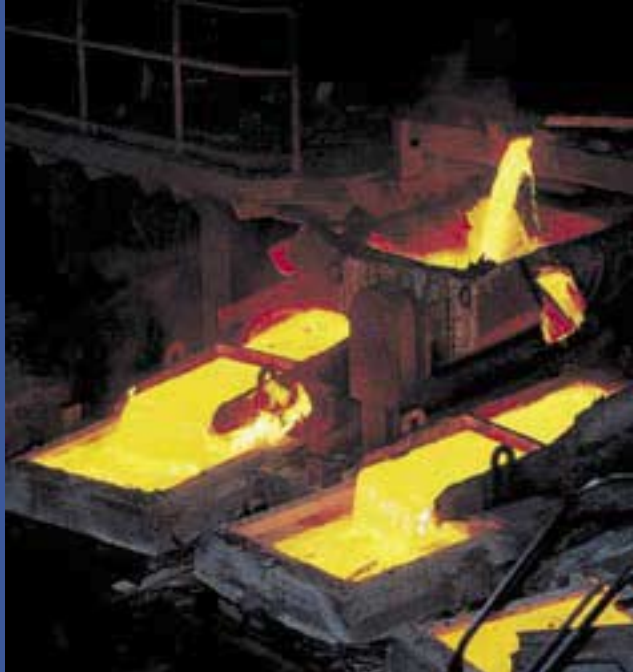


SULZER



Sulzer Pumps for Copper Refining Applications

motralec

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The **Heart**
of Your
Process





Sulzer Pumps at Your Service

Sulzer Pumps

Sulzer Pumps is a leading global supplier of reliable products and innovative pumping solutions for end users. Our active research and development, detailed process and application knowledge together with a comprehensive understanding of market demands keeps us consistently at the leading edge of technical development. Our global network of modern manufacturing and packaging facilities together with sales offices, service centers and representatives located close to major markets provide fast responses to customer needs.

Sulzer Pumps is active serving business partners in the following industries:

- Oil & Gas
- Hydrocarbon Processing
- Pulp & Paper
- Power Generation
- Food, Metals & Fertilizers
- Water & Wastewater

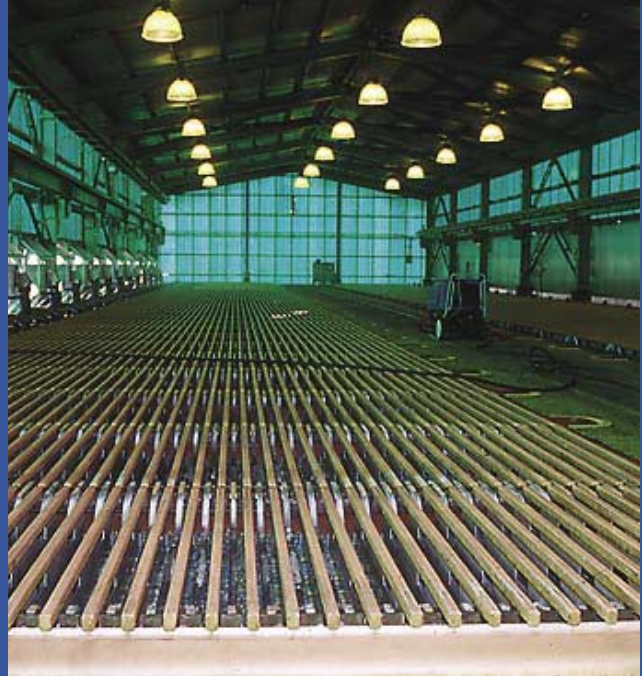
Process know-how

Sulzer Pumps' expertise in the metallurgical industry has been acquired through long experience and a recognition of our customer's needs and requirements. We offer a range of process pumps, special pumps, mixers and agitators for producers of copper, nickel, zinc and aluminium. By working in close co-operation with our customers, and by getting fully involved in the intricacies of the processes we are able to select and provide the right solutions. By this we mean not only the right pump, but also the most suitable pump material, the correct seals, efficiency ratio and everything to ensure long working-life and reliability.

Total production facilities

Sulzer Pumps has its own foundries giving us the capacity to develop and manufacture a range of different materials for protection against corrosion and wear. We specialize in producing different grades of corrosion-resistant cast steels, martensitic, austenitic and duplex. Our newest material, austenitic cast steel Avesta 654 SMO* demonstrates the high technical competence of our foundries. We also have the ability to manufacture pumps from special materials such as titanium and Hastelloy. We are total producers, designing and making everything ourselves.

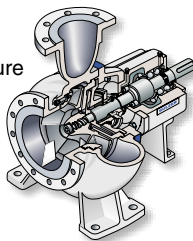
*) Avesta 654 SMO is a trade mark owned by Outokumpu Stainless which has granted Sulzer Pumps Finland Oy licence to produce this material.



AHLSTAR™ APP/APT process pumps for all the normal pumping applications in the process industry.

Capabilities

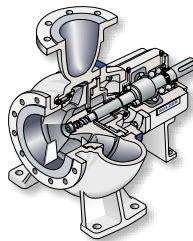
- to 160 m head
- to 2000 l/s capacity
- to 180° C temperature



AHLSTAR™ ASP/AST self priming gas removal pumps are designed for continuous operation in industrial processes to pump gas containing liquids up to 70 % or when self priming pumps are needed.

Capabilities

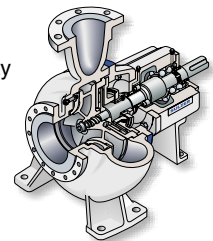
- to 160 m head
- to 1300 l/s capacity
- to 180° C temperature



AHLSTAR™ WPP/WPT wear resistant pumps are designed for corrosive and abrasive applications where durability is essential.

Capabilities

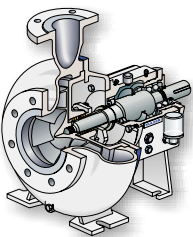
- to 110 m head
- to 2000 l/s capacity
- to 180° C temperature



ADVANTAGE CPT chemical process pumps series is designed according to ANSI/ASME B73. 1 M standards for normal pumping applications for clean, abrasive or corrosive liquids and also for liquids containing fibres.

Capabilities

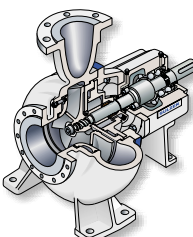
- to 170 m head
- to 280 l/s capacity
- to 180° C temperature



AHLSTAR™ WSP/WST wear resistant self priming gas removal pumps enable trouble free pumping of corrosive and abrasive liquids containing gas up to 70 % or when self priming pumps are needed.

Capabilities

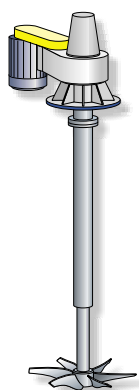
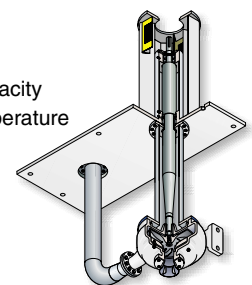
- to 110 m head
- to 2000 l/s capacity
- to 180° C temperature



AHLSTAR™ NKP/NKT non-clogging and WKP/WKT wear resistant vertical cantilever pumps are used in applications with liquids containing solids or abrasive slurries and when no support bearing inside the liquid is allowed.

Capabilities

- to 55 m head
- to 120 l/s capacity
- to 95° C temperature



SALOMIX® L-series top mounted agitators with gear or belt drive

- impeller type and size is selected always according to the agitation need
- power range 0,5 - 450 kW
- shaft lengths up to 25 m
- impeller diameters 300 - 7200 mm
- special glide ring shaft seals for high pressures and temperatures
- wear resistant SiC bottom support for abrasive circumstances



Copper Smelters

Granulated waters with solid particles

AHLSTAR™ WPP/WPT wear and corrosion resistant process pumps

- open, wear resistant impeller
- wear resistant chrome iron material ASTM A532 IIIA (5B)
- double mechanical shaft seal or dynamic shaft seal

Cooling waters

AHLSTAR™ APP/APT process pumps or ADVANTAGE CPT chemical process pumps

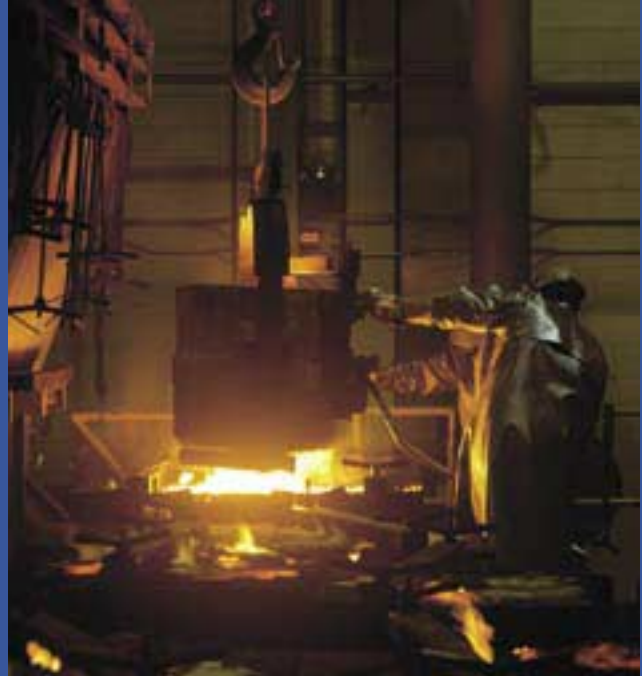
- closed, high efficiency and low NPSHr impeller
- cast iron material A48 CL 35B (53)
- dynamic shaft seal

Collected floor liquids

AHLSTAR™ ASP/AST self priming process pumps or WSP/WST wear resistant self priming process pumps

- open, high efficiency and low NPSHr impeller
- corrosion and wear resistant stainless steel material ASTM A890 3A (41)
- integrated vacuum structure





Electrorefining of Copper Anodes

Overflow of the electrolyte precipitation basin, washing waters and other clean liquids

AHLSTAR™ APP/APT process pumps or ADVANTAGE CPT chemical process pumps

- open, high efficiency and low NPSHr impeller
- corrosion and wear resistant stainless steel material ASTM A890 3A (41)
- double mechanical shaft seal or dynamic shaft seal with balancing holes

Underflow of the electrolyte precipitation basin

AHLSTAR™ WPP/WPT wear and corrosion resistant process pumps

- open, corrosion and wear resistant impeller
- corrosion and wear resistant stainless steel material Avesta 654 SMO*
- double mechanical shaft seal or dynamic shaft seal

Collected floor liquids

AHLSTAR™ ASP/AST self priming process pumps or WSP/WST wear resistant self priming process pumps

- open, high efficiency and low NPSHr impeller
- corrosion and wear resistant stainless steel material ASTM A890 3A (41)
- integrated vacuum structure



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Electrolyte Purification and Anode Slime Treatment

Corrosive and crystallizable liquids

AHLSTAR™ APP/APT process pumps or ADVANTAGE CPT chemical process pumps

- open impeller
- corrosion and wear resistant stainless steel material ASTM A890 1B (4L)
- double mechanical shaft seal or dynamic shaft seal

Corrosive and incrustable liquids

AHLSTAR™ APP/APT process pumps or ADVANTAGE CPT chemical process pumps

- closed, wear resistant impeller
- corrosion and wear resistant stainless steel material ASTM A890 3A (41)
- double mechanical shaft seal or dynamic shaft seal

Corrosive and erosive liquids containing solid particles

AHLSTAR™ WPP/WPT wear and corrosion resistant process pumps

- open, corrosion and wear resistant impeller
- corrosion and wear resistant stainless steel material Avesta 654 SMO*
- double mechanical shaft seal or dynamic shaft seal

Collected floor liquids

AHLSTAR™ ASP/AST self priming process pumps or WSP/WST wear resistant self priming process pumps

- open impeller
- corrosion and wear resistant stainless steel material ASTM A890 3A (41)
- integrated vacuum structure

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Gas Scrubbing

Corrosive circulation waters of the scrubber

AHLSTAR™ APP/APT process pumps or ADVANTAGE CPT chemical process pumps

- closed, high efficiency and low NPSHr impeller
- corrosion and wear resistant stainless steel material ASTM A890 1B (4L)
- dynamic shaft seal

Other Utilities

Water transport

The B series of vertical line shaft pumps consist of BK, BS and BP ranges. They are primarily used in water lift, transfer and cooling water applications.

AHLSTAR™ NVP/NVT non-clogging vertical pumps are intended for all kinds of hard applications with waste water, slurries or waste stock.

SM/SMN single stage double entry pumps are used across a broad range of industries in liquid transport and transfer applications.

ZPP double suction pumps are designed for applications including cooling and circulating water pumping.

Boiler feed

The HPP/HPT high pressure multistage pumps are used for pumping clean or slightly contaminated liquids in high pressure applications in various industries.

The M series of ring section multistage pumps consist of MB, MC, MD and ME ranges. A wide range of common hydraulic components and bearing assemblies are used within the four standard pressure ranges.

Mine dewatering

The HPH/HPL multistage pumps are specifically designed for mine dewatering applications. Their robust construction is designed to combat the highly abrasive environment in which they operate.

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