Sulzer Pumps for Nickel Applications
Our Experience Dedicated to Your Success

The global metal processing industry has been undergoing significant changes over the past years and now finds itself in a new era.

**Go beyond the limits**
A shortage of skilled workers coupled with stricter environmental regulations have prompted a change in the market dynamics; the trend is now towards remote metals operations where more reliable pumps and pumping equipment, that are less labor intensive, are required. In such a complex market, only a few manufacturers manage to understand the challenges faced in metal pumping applications. Sulzer pushes technologies to their limits and beyond in order to develop state-of-the-art pumps and agitators, capable of meeting even the most demanding needs of customers.

**Designed to withstand highly abrasive environments**
Reliability is crucial in metal industry. Due to processing, erosion, corrosion and lack of regular maintenance, pump efficiency and reliability are continuously challenged. Sulzer Pumps is well aware of the harsh conditions and develops equipment engineered to a high standard. Its experience and product knowhow are dedicated to providing sustainable and reliable solutions, selecting the most appropriate product and material, to sustain the changing environment in metal industry.

**More than a pump supplier**
Sulzer supplies a complete pumping and agitation packages for metal processing industry, from clear liquid to light slurry process to submersible and dewatering pumps including full services and support. By working together with Sulzer, customers benefit from:
- Increased time between failures with extended run times on equipment
- Lower energy consumption due to high efficiencies and optimum selections
- Reduced capital costs and increased profitability with current products, optimizing interchangeability between common parts
- Reduced downtime costs due to improved pump reliability
- Cutting edge technologies from a pump supplier with a strong engineering heritage and a comprehensive local support network
Nickel Smelters

Granulated waters with solid particles
AHLSTAR W/WPT wear and corrosion resistant process pumps
- Open and wear resistant impeller
- Wear resistant chromium iron material A532 IIIA (5B)
- Double mechanical shaft seal or unique dynamic shaft seal

Cooling waters
AHLSTAR A/APT process pumps or CPT chemical process pumps
- Closed, high efficiency and low NPSHr impeller
- Cast iron material A48 CL 35B (53) or stainless steel material ASTM A890 3A (41)
- Unique dynamic shaft seal

Collected floor liquids
AHLSTAR A-S/APT-S self priming process pumps or WPP-S/WPT-S wear resistant self priming process pumps
- Open impeller
- Corrosion and wear resistant stainless steel material ASTM A890 3A (41)
- Integrated vacuum structure

Leaching of Nickel Matte

Corrosive and crystallizable liquids
AHLSTAR A/APT process pumps or 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

Corrosive, incrystallizable and clarified liquids
AHLSTAR A/APT process pumps or CPT chemical process pumps
- Closed impeller
- Corrosion and wear resistant stainless steel material ASTM A890 3A (41)
- Unique dynamic shaft seal

Corrosive and erosive liquids containing solid particles
AHLSTAR W/WPT wear and corrosion resistant process pumps
- Corrosion and wear resistant, open impeller
- Corrosion and wear resistant stainless steel material A STM A890 1B (4L), ASTM A890 5A (4T) or Avesta 654 SMO (4U)
- Double mechanical shaft seal or dynamic shaft seal

Collected floor liquids
AHLSTAR A-S/APT-S self priming process pumps or WPP-S/WPT-S wear resistant self priming process pumps
- Open impeller
- Corrosion and wear resistant stainless steel material ASTM A890 3A (41)
- Integrated vacuum structure

*Trademark owned by Outokumpu Stainless which has granted Sulzer Pumps Finland Oy licence to produce this material.
Extraction Processes

**Nickel and cobalt solutions and washing waters**
AHLSTAR A/APT process pumps or 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

Precipitation Processes

**Nickel and cobalt solutions and mixed liquids**
AHLSTAR A/APT process pumps or 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

**Liquids containing solid particles**
AHLSTAR W/WPT wear and corrosion resistant process pumps
- Corrosion and wear resistant, open impeller
- Corrosion and wear resistant stainless steel material ASTM A890 1B (4L), ASTM A890 5A (4T) or Avesta 654 SMO (4U) *
- Double mechanical shaft seal or dynamic shaft seal

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Hydrogen Reduction Processes

**Crystallizable solutions**
AHLSTAR A/APT process pumps or 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

**Incrystallizable solutions**
AHLSTAR A/APT process pumps or CPT chemical process pumps
- Closed high efficiency and low NPSHr impeller
- Corrosion and wear resistant material ASTM A890 3A (41)
- Unique dynamic shaft seal

**Collected floor liquids**
AHLSTAR A-S/AST-S 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

Gas Scrubbing

**Corrosive circulation water of the scrubber**
AHLSTAR A/APT process pumps or CPT chemical process pumps
- Closed impeller
- Corrosion and wear resistant stainless steel material ASTM A890 1B (4L)
- Unique dynamic shaft seal

**Electrowinning**

**Nickel sulfate and sulfuric acid**
AHLSTAR A/APT process pumps or CPT chemical process pumps
- Closed, high efficiency and low NPSHr impeller
- Various stainless steel materials from ASTM A890 3A (41) to ASTM A890 5A (4T)
- Double mechanical shaft seal or dynamic shaft seal
- Special floating installation
Other Utilities

Water transport
The SJP vertical wet pit pumps are primarily used in water lift, transfer and cooling water applications. ZPP, Z22 and SMD single stage double suction pumps are designed for applications including cooling and circulating water pumping. AHLSTAR NVP/NVT non-clogging vertical pumps are intended for all kinds of hard applications with wastewater, slurries or waste stock.

Boiler feed
The MBN 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 4 standard pressure ranges.

Submersible dewatering pumps
The submersible dewatering pumps XJ and XJS are ideal for pumping dirty water or sludge in harsh mining environment. Pumps are built in with Aqua-Tronic intelligence to ensure safe and smart operation.

High head 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.
## Sulzer Product Range

<table>
<thead>
<tr>
<th>Product type</th>
<th>Name</th>
<th>Capacities</th>
<th>Heads</th>
<th>Pressures</th>
<th>Temperatures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multistage</td>
<td>HPH</td>
<td>130 to 1,000 m³/h 680 to 5,000 USgpm</td>
<td>120 to 1,800 m 600 to 5,000 ft</td>
<td>180 bar 2,610 psi</td>
<td>Up to 105°C Up to 220°F</td>
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<td></td>
<td>HPL</td>
<td>36 to 1,000 m³/h 170 to 5,000 USgpm</td>
<td>40 to 400 m 190 to 1,300 ft</td>
<td>40 bar 560 psi</td>
<td>Up to 105°C Up to 220°F</td>
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<td></td>
<td>MBN</td>
<td>Up to 700 m³/h Up to 3,080 USgpm</td>
<td>Up to 900 m Up to 2,950 ft</td>
<td>Up to 100 bar Up to 1,450 psi</td>
<td>Up to 180°C Up to 355°F</td>
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<td></td>
<td>MSD</td>
<td>Up to 3,200 m³/h Up to 14,000 USgpm</td>
<td>Up to 2,900 m Up to 9,500 ft</td>
<td>Up to 300 bar Up to 4,400 psi</td>
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### End suction

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</tr>
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<tbody>
<tr>
<td></td>
<td>AHLSTAR</td>
<td>Up to 9,000 m³/h Up to 40,000 USgpm</td>
<td>Up to 160 m Up to 525 ft</td>
<td>Up to 25 bar Up to 360 psi</td>
<td>Up to 210°C Up to 410°F</td>
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<tr>
<td></td>
<td>ZE/ZF</td>
<td>Up to 2,600 m³/h Up to 11,440 USgpm</td>
<td>Up to 300 m Up to 1,000 ft</td>
<td>Up to 100 bar Up to 1,450 psi</td>
<td>Up to 425°C Up to 800°F</td>
</tr>
<tr>
<td></td>
<td>CPT</td>
<td>Up to 1,600 m³/h Up to 7,000 USgpm</td>
<td>Up to 220 m Up to 720 ft</td>
<td>Up to 26 bar Up to 375 psi</td>
<td>Up to 260°C Up to 500°F</td>
</tr>
<tr>
<td>Submersible</td>
<td>ABS XJ and J</td>
<td>Up to 1,220 m³/h Up to 5,390 USgpm</td>
<td>Up to 100 m Up to 330 ft</td>
<td>Up to 13 bar Up to 190 psi</td>
<td>Up to 40°C Up to 104°F</td>
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<tr>
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<td>ABS XJS</td>
<td>Up to 110 m³/h Up to 475 USgpm</td>
<td>Up to 40 m Up to 130 ft</td>
<td>Up to 5.2 bar Up to 75 psi</td>
<td>Up to 40°C Up to 104°F</td>
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<tr>
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<td>ABS XFP</td>
<td>Up to 8,780 m³/h Up to 38,675 USgpm</td>
<td>Up to 110 m Up to 360 ft</td>
<td>Up to 15 bar Up to 220 psi</td>
<td>Up to 40°C Up to 104°F</td>
</tr>
</tbody>
</table>

### Vertical

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NKP/NKT</td>
<td>Up to 430 m³/h Up to 1,900 USgpm</td>
<td>Up to 60 m Up to 200 ft</td>
<td>Up to 10 bar Up to 150 psi</td>
<td>Up to 95°C Up to 205°F</td>
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<tr>
<td></td>
<td>NVP/NVT</td>
<td>Up to 1,200 m³/h Up to 5,400 USgpm</td>
<td>Up to 85 m Up to 280 ft</td>
<td>Up to 10 bar Up to 150 psi</td>
<td>Up to 95°C Up to 205°F</td>
</tr>
<tr>
<td></td>
<td>SJP</td>
<td>200 to 25,500 m³/h 900 to 240,000 USgpm</td>
<td>Up to 12 m Up to 40 ft</td>
<td>Up to 2 bar Up to 30 psi</td>
<td>Up to 50°C Up to 120°F</td>
</tr>
</tbody>
</table>

### Double suction

<table>
<thead>
<tr>
<th>Product type</th>
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<th>Capacities</th>
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<th>Pressures</th>
<th>Temperatures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SMN</td>
<td>Up to 10,000 m³/h Up to 44,000 USgpm</td>
<td>Up to 200 m Up to 650 ft</td>
<td>Up to 30 bar Up to 435 psi</td>
<td>-10 to 50°C 15 to 120°F</td>
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<tr>
<td></td>
<td>ZPP</td>
<td>Up to 30,000 m³/h Up to 132,000 USgpm</td>
<td>Up to 160 m Up to 525 ft</td>
<td>Up to 25 bar Up to 362 psi</td>
<td>Up to 120°C Up to 250°F</td>
</tr>
<tr>
<td></td>
<td>Z22</td>
<td>Up to 17,000 m³/h Up to 75,000 USgpm</td>
<td>Up to 220 m Up to 720 ft</td>
<td>Up to 25 bar Up to 362 psi</td>
<td>Up to 140°C Up to 280°F</td>
</tr>
</tbody>
</table>

### Agitator

<table>
<thead>
<tr>
<th>Product type</th>
<th>Name</th>
<th>Impeller diameter</th>
<th>Shaft length</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SALOMIX® L</td>
<td>Up to 8,000 mm Up to 315 in</td>
<td>Up to 30 m Up to 100 ft</td>
<td>Up to 450 kW Up to 600 hp</td>
</tr>
<tr>
<td></td>
<td>Scaba</td>
<td>Up to 8,000 mm Up to 315 in</td>
<td>Up to 30 m Up to 100 ft</td>
<td>Up to 450 kW Up to 600 hp</td>
</tr>
</tbody>
</table>