

## Custom pump **combats corrosion** at power plant

CUSTOMER	Indonesian independent power producer (IPP)
LOCATION	North Sumatra, Indonesia
INDUSTRY	Power generation
KEY SERVICES	<ol style="list-style-type: none"><li>1. Bespoke pump design</li><li>2. Pump manufacturing</li><li>3. Testing and commissioning</li><li>4. Field services</li><li>5. Pumps training</li></ol>



# Solving severe corrosion and vibration by Chinese OEM pump



One of the vertical column pumps providing cooling sea water to the generating units at the 400 MW power plant was beginning to fail. Despite being constructed from carbon steel and a combination of impressed current cathodic protection (ICCP) and sacrificial anode cathodic protection (SACP) to prevent corrosion - the maritime environment was taking its toll.

- The Chinese-OEM cooling water pump was suffering from excessive corrosion and vibration which led to catastrophic leakage.
- Bearings within the pump were starting to fail.
- The operations team was under pressure to find a solution before a pump breakdown.
- A solution was needed that wouldn't result in a generating unit being taken offline and with expensive site modifications.



**1.** Old inefficient Changsa cooling water pumps showing signs of corrosion and loss of efficiency

**2.** Pump readied for dismantling

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## THE SOLUTION

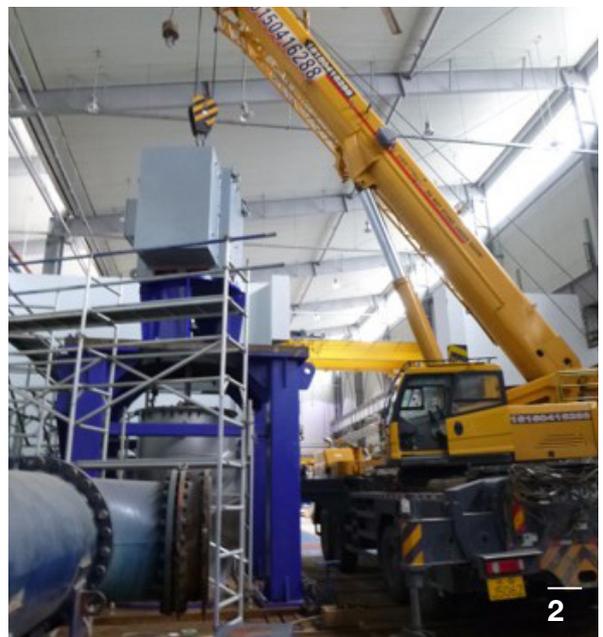
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# Bespoke engineering delivers a durable pump

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After a detailed tendering process, the IPP selected Sulzer to deliver the project due to its exceptional OEM expertise and technical knowledge. The IPP's pump engineers and Sulzer collaborated to deliver a custom, drop-in replacement based on the proven SJT CWP series of large vertical pumps. A host of specializations ensured a perfect solution that offered upgraded performance and durability.

- Sulzer created a new hydraulic design that matched the power plant's duty requirements.
- All the wet-end components of the pump were manufactured in Super Duplex stainless steel, providing superior durability and long-term corrosion resistance.
- Every external mechanical, electrical and hydraulic interface was a precise match for the original asset, ensuring a drop-in pump replacement was feasible.
- Extensive computation fluid dynamics (CFD) simulation, structural dynamic, lateral rotordynamic analysis as well as torsional dynamic analysis was conducted in-house by Sulzer.
- Sulzer sourced a new 1.5 MW motor, enabling a turnkey drivetrain solution.
- The project was duly delivered in under 3 months, well exceeded customer's expectations.



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1. On-site installation

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2. Sulzer SJT pump manufactured and tested in facility

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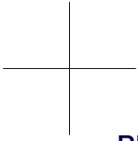
# A turnkey approach unlocks the perfect solution



With a bespoke design specialized to offer exceptional corrosion resistance and low vibration, the new pump has delivered performance and efficiency since May 2020, resisting sea water damage. Furthermore, Sulzer's turnkey approach to the project helped to minimize any disturbance to operations. Going forward, intelligent pump design will ease maintenance, while Sulzer's robust supply chain will be able to deliver spare parts to the plant maintenance team for the next 20 years.

- Material upgrades, matched with an improved net positive suction head required (NPSHr) to reduce the risk of cavitation, minimized corrosion and vibration.
- New thrust and thordon bearing are able to withstand harsh conditions and better resist against abrasive nature of sea water.
- Sulzer's world-class pump design and manufacturing capabilities, backed by field service teams, ensured a turnkey approach for the complete project.
- Sulzer's pump experts engineered all associated work within the planned shutdown period of under 3 months, helping to secure power generation uptime and profitability.
- Bespoke design with drop-in replacement to minimize on-site civil engineering and reduce impact to surrounding plant infrastructure.
- Long -term OEM maintenance support is available locally from Sulzer to reduce pump downtime in the future, with Sulzer experts already providing training to plant maintenance teams.

## 1. New pumps with upgraded materials & efficient hydraulics



## PROJECT KEY FACTS

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PROJECT DELIVERED IN UNDER

**3 months**

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POWER PLANT

**400 MW**

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OEM SPARE PARTS SUPPORT  
FOR AT LEAST

**20 years**

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MOTOR SOURCED FOR A COMPLETE  
DRIVETRAIN SOLUTION

**1.5 MW**

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## THE IMPACT

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**Deep pump and power industry expertise along with flawless project execution helped secure power generation uptime.**