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CASE STUDY

Pressure Gauge Line - Permanent Blinding

Preventive action to eliminate risk of hot water entry through the PI line

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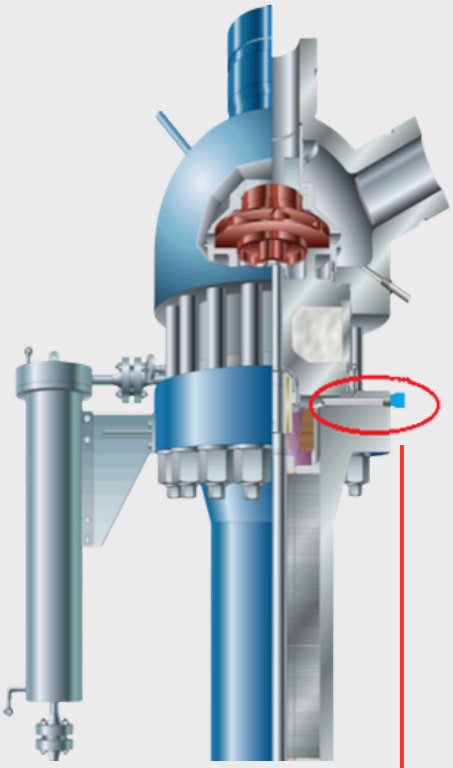
The Challenge

BCP (Boiler Circulating Pump) piping undergoes significant thermal expansion during operation - in excess of 300 mm. A pressure indicator (PI) line connected to the motor casing was vulnerable to this movement. If the PI line fouled with the platform structure due to insufficient expansion space or inadequate sliding support, the line could fracture.

A fractured PI line creates a direct path for high-temperature water to enter the motor casing, potentially causing catastrophic damage to motor windings and plain bearings.



The Solution

To eliminate this risk permanently, the pressure indicator line connected to the motor casing is now permanently blinded (blocked off) during every major overhaul.

For newly manufactured spare BCPs, this line is no longer installed at all - removing the failure mode entirely from new equipment. A dummy plug is fitted at the pressure gauge point to seal the port cleanly.

The Benefit

The permanent blinding of the PI line eliminates the possibility of hot water ingress through this route. This is a zero-cost preventive action with significant risk reduction.

Key benefit: Hot water entry through this path is fully prevented. New BCPs supplied no longer carry this design vulnerability.

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Conclusion

This case highlights Torishima's ability to address complex challenges through a rigorous, innovative, and customer-focused approach. Our team combines technical expertise with an unwavering commitment to sustainability and efficiency, delivering solutions that exceed both commercial and environmental expectations.
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CASE STUDY

Heat Barrier Refurbishment

Restoration of cooling jacket effectiveness to ensure adequate motor protection

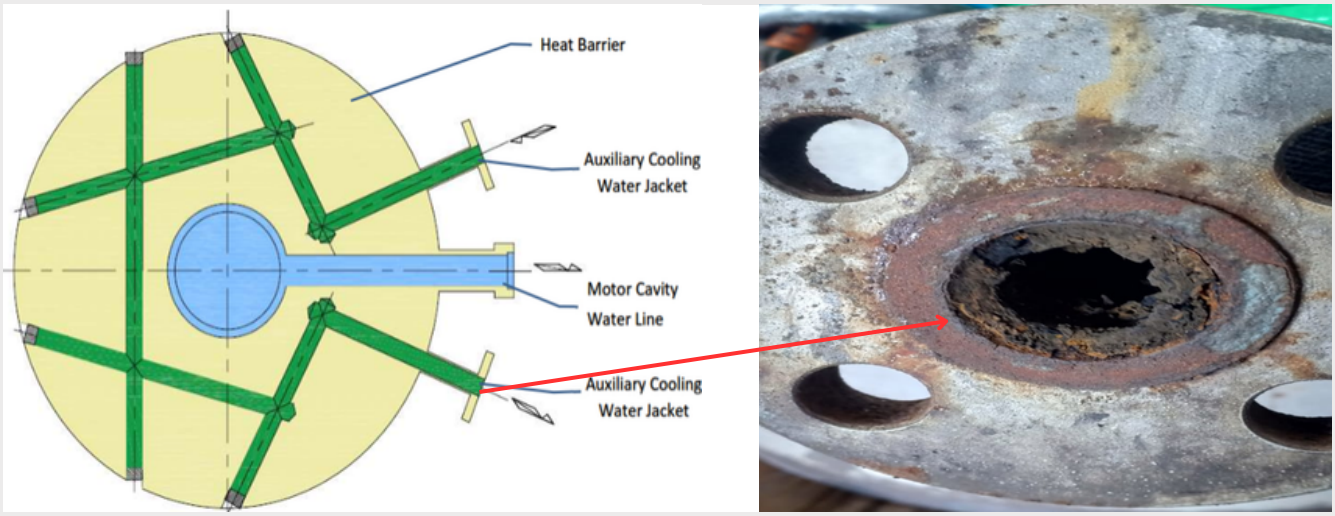
The Challenge

The BCP motor is protected from the high-temperature pump casing by a heat barrier, essentially a water-cooled jacket that forms a thermal shield between the two components.

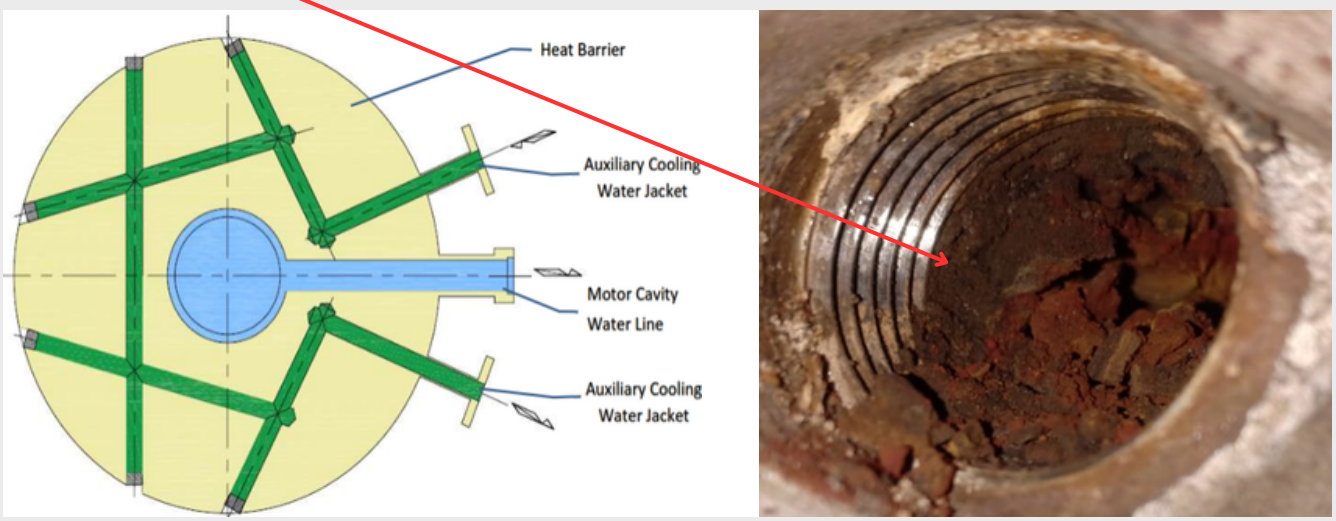
Over time, the LP (Low Pressure) cooling water circulating through this jacket carries contamination and particulate matter. This causes the internal passages of the heat barrier jacket to choke (block up), significantly reducing cooling water flow.

A blocked heat barrier jacket results in insufficient cooling of the motor, leading to elevated operating temperatures and increased risk of thermal damage.

b.) Blocked heat barrier jacket results in insufficient cooling.



a.) Heat barrier cooling jacket gets choked due to contamination in L.P cooling water.



The Solution

Heat barrier refurbishment by cleaning with High pressure water jetting and flushing has been incorporated as a mandatory activity during BCP overhauls. This includes disassembly, internal inspection, Mechanical water jet spray cleaning and flushing of the cooling jacket passages, and performance verification before reassembly.

The Benefit

Restoring the heat barrier cooling jacket to full flow capacity ensures the motor operates within its designed thermal envelope. This extends motor life and prevents overheating-related failures.

Key benefit: Improved cooling reliability. Reduced risk of motor winding damage due to thermal stress.

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CASE STUDY

Cooler Overhaul. Mandatory Inclusion

Addressing a gap in the maintenance schedule that affected pump performance

The Challenge

BCP major overhauls including rewinding are carried out on a 9-year cycle. However, the cooler - a critical component responsible for maintaining cavity water temperature - was historically not included in the overhaul scope.

Cavity water circulates continuously through the cooler. Over time, magnetic particles from the system accumulate inside the cooler tubes. This progressive buildup reduces the heat exchange efficiency of the cooler.

Reduced cooling efficiency directly impacts BCP performance and can lead to increased cavity temperatures, accelerating wear on internal components.

The Solution

Cooler overhaul has now been made a mandatory activity during every BCP major overhaul. The scope includes: internal cleaning of cooler tubes, tube inspection for damage or erosion, and performance verification after cleaning.

Two types of coolers are in service across BCP units - Torishima-supplied and BHEL-supplied. Both types are covered under this revised maintenance protocol.

The Benefit

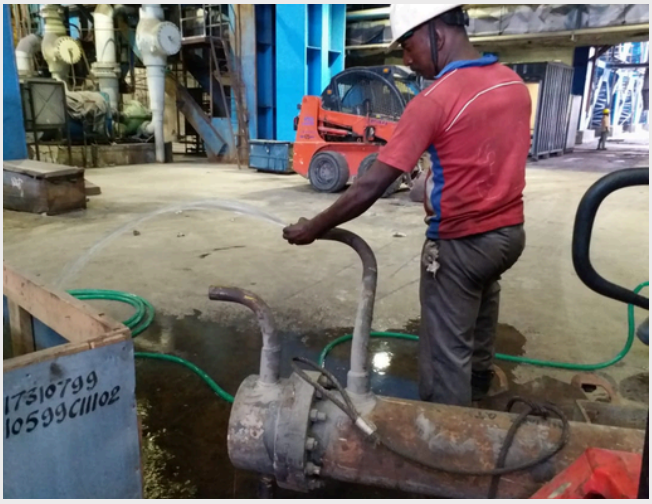
- **Improved heat exchange efficiency** - the cooler restores its designed capacity to remove heat from cavity water.
- **Enhanced pump performance and extended service life -** lower cavity temperatures reduce thermal stress on seals, bearings, and motor components.

Key benefit: A previously overlooked maintenance gap is now systematically addressed, improving the long-term reliability of BCP units.

Images

2 Types of Cooler for BCP's: Torishima supplied & BHEL supplied

Cleaning of Cooler - BHEL supplied



Cleaning of Cooler - Torishima supplied

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Conclusion

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