

FULLER[®]



ONLINE RELIABILITY SERVICES

FOR CROSS-BAR[®] COOLERS

MONITORING AND EXPERTISE TO IMPROVE CROSS-BAR COOLER RELIABILITY AND EXTEND COOLER LIFETIME

The continuous operation of your Cross-Bar Cooler is integral to plant productivity – so how can you prevent downtime? Our online reliability services give you the insights you need to predict problems before they become outages, so that you can act fast and reduce maintenance costs.

Our Online Reliability Service for cross-bar coolers enables early identification of potential issues before they escalate. Multiple sensors installed on your cooler transmit real-time data to our Global Remote Service Centre, where specialists continuously monitor the equipment for process abnormalities, component failures, and other operational deviations. By applying early-warning analysis techniques, including Rule Based methods, Condition Based monitoring, Artificial Intelligence and Machine Learning (AI/ML), and custom-created models, we identify when equipment failures may occur and recommend the appropriate corrective actions to optimize your cooler's performance.

KEY BENEFITS

01

Increase uptime
and output.

02

Lower labor costs by
transforming unplanned shutdowns
into planned ones.

03

Extend equipment lifespan with
improved preventive maintenance.

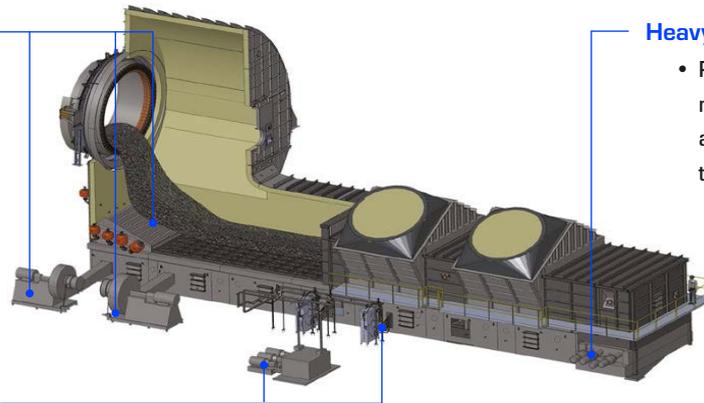
04

Reduce premium costs and services
by having the right spares on
site at the right time.

WHAT'S MONITORED IN THE CROSS-BAR COOLER

ABC inlet and cooler fans

- Recuperation zone cooling air coefficient and pressure drop coefficient



Heavy-duty roller breaker

- Roller torque, reversing frequency and bearing temperature

Cooler hydraulic system

- Hydraulic drive force
- Hydraulic pump utilisation factor

Catch Problems before they escalate

Often, small changes in your cooler go undetected by inspections or other on-site maintenance. But it's these small changes that can develop into major problems, so early detection is beneficial. These irregularities can be seen in the data gathered from your equipment, which is why our continuous online reliability services are so successful at reducing outages. Our experts have the experience to interpret the data, report critical events and, in regular reports, provide recommendations and solutions to help you optimise cooler reliability and performance.

For example, a leaking hydraulic cylinder seal would not be visible. However, the data we collect enables us to compare hydraulic pump performance against relevant KPIs, allowing our experts to identify the problem. Resolving such issues in a timely fashion can help you avoid catastrophic failure.

Data analysis enables us to predict failures that would not be picked up by other means until much later. Not only does this enable you

to act quickly, it also often reduces the size of the repair, the length of the outage and the cost of maintenance. The hydraulic drive is a complex system that drives the cooler lanes to convey the clinker. It has crucial components, such as pumps, proportional valve, cylinders etc. Any abnormal condition in the hydraulic system that goes unnoticed or undetected can impact the productivity and maintenance cost.

For example, the online reliability system helped us to identify the root cause of high-pressure operation in a customer's hydraulic system, as the system was operating at a higher pressure compared to the normal operation. By analysing the data not just as it happened but also in comparison with the historical trend, we were able to discover the source of the problem – the hydraulic system's natural frequency. We advised the plant to retune the system, which fixed the problem and reduced the stress on the hydraulic system and components, thereby extending their life. This would have been impossible without the availability of historical data, captured and analysed in the online reliability system with the algorithm set forth by our experts.

Implementing ORS

A Fuller project manager will oversee the delivery of any hardware required to provide the service. Your maintenance team will usually be able to install the sensors themselves; however, we can offer installation as an optional extra. After the Health and Usage Monitoring System (HUMS) is installed, we will come to you and commission the systems. Once commissioning is complete, the project manager will hand over to a dedicated service account manager, whose job is to support your maintenance department as their go-to contact whenever assistance is needed. The service account manager will initiate and drive the service to deliver on your KPIs, ensuring that you receive optimal value.

HOW DOES ORS WORK?

