FLSMIDTH
CEMENT

ONLINE CONDITION MONITORING SERVICES

FOR HAMMER CRUSHERS

MONITORING AND EXPERTISE TO IMPROVE HAMMER CRUSHER PERFORMANCE AND AVOID UNPLANNED DOWNTIME

A hammer crusher's job is tough. In a single pass, it reduces run-of-mine limestone, often containing large boulders, into a mill feed of particles measuring no more than 25mm. This heavy-duty application raises challenges for the equipment. However, failure is not an option, causing production delays, increased costs, and quality issues.

It is, therefore, essential to address any issues with your hammer mill promptly. Our online condition monitoring services (OCMS) for hammer crushers help you do just that. OCMS highlight issues before they become a problem. Multiple sensors installed on your hammer crusher send information to our Global Remote Service Centre. We continuously monitor the equipment for process abnormalities, part failures, and other issues, with specialists always on hand to recommend corrective action and help optimise your hammer mill performance.

KEY BENEFITS

Increase availability to a benchmark level of 90%.

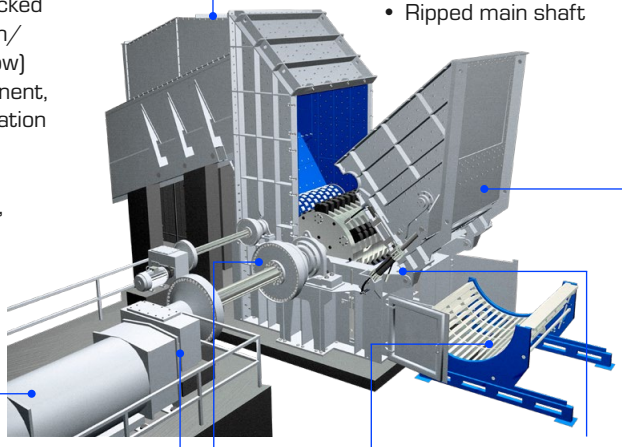
Increase reliability to a benchmark level of 95%.

Improve decision-making with data-driven insights and expert analysis.

Reduce maintenance costs.

Extend equipment lifespan by up to 5 years.

HAMMER CRUSHER



Motor
- **Rotor Failure** (broken/cracked rotor bar Imbalance, broken/cracked rotor bar, loose, bow)
- **Bearing failure** (subcomponent, rotational looseness, lubrication problems, cocked)
- Structural looseness
- **Stator failure** (eccentricity, soft foot, phase loss, windings problem)
- Misalignment
- high/low temperature

Apron Feeder
- VFD failure
- Ripped main shaft

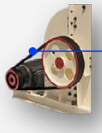
Crusher
- **Bearing failure** (subcomponent, rotational looseness, cocked, lubrication problems, high/low temperatures)
- Structural looseness
- Broken hammer or other parts
- Damaged rotor or grate bars or breaker plates
- Overload
- Hopper over/un filling
- Hopper uneven feeding

Gear
- High gear temperature

Outlet Grate
- Outlet grate-wear

Hydraulics
- Breaker plates opening

Coupling
- Axial and radial run out



Belt
- Belt looseness and slipage
- Belt tensile failure

The OEM expert advantage

Many providers offer to monitor your equipment, but do they truly understand your crusher? We have decades of experience installing, troubleshooting, maintaining, and optimising our hammer mills. We have integrated that OEM experience and insight into our OCMS. So, while others tell you what to worry about, we tell you how to solve recurring problems and enhance reliability. This includes extensive root cause analysis to prevent minor issues from escalating into major problems.

After all, your success is our success. Our OEM expert advisors support and coach your maintenance personnel to achieve excellence, delivering optimized maintenance planning and effective maintenance procedures.

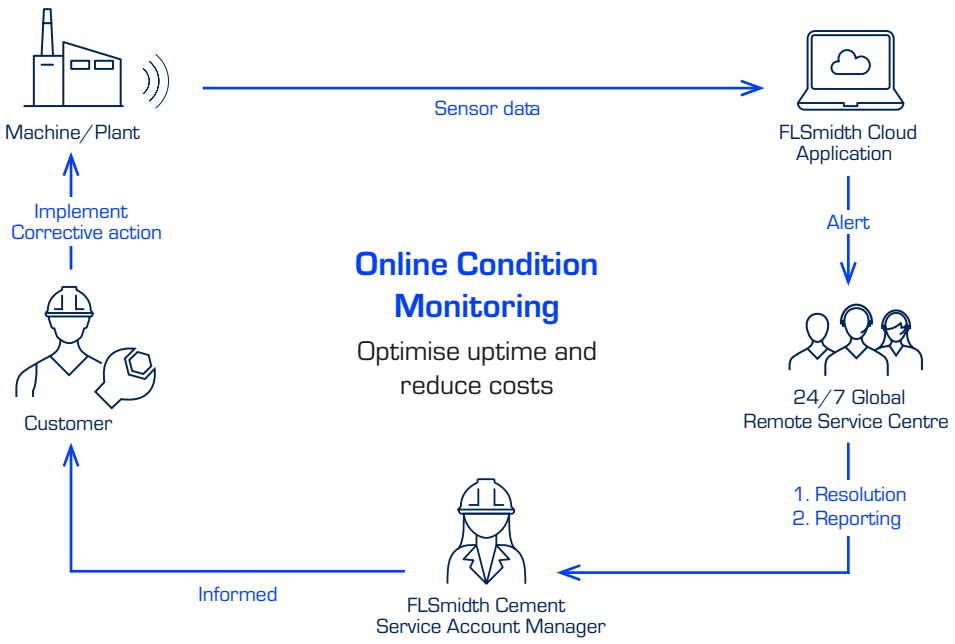
A comprehensive monitoring package

Our OCMS uses existing control system signals to identify common issues, such as over- and underfilling, component damage, bearing and drive failure, and overheating gears and bearings. On top of this, we provide additional monitoring systems, such as vibration, optics, image processing, electromagnetic, ultrasonic, and oil analysis, to detect a broader range of abnormal conditions and component failures, delivering continuous insight into your hammer mill's status.

Implementing OCMS

A FLSmidth Cement project manager will oversee the delivery of any additional hardware required for OCMS to your site. Your maintenance team will usually be able to install the sensors themselves; however, we can offer installation as an optional extra. After the sensors are commissioned, the project manager hands over to a dedicated Service Account manager, whose job is to be your maintenance department's best friend: the person they go to when they need help. They will initiate and drive your OCMS to deliver your KPIs, ensuring you receive optimal value.

HOW DOES OCMS WORK?



Signals from monitoring systems installed on your equipment are sent securely via the Cloud to our Global Remote Service Centre. Here, your equipment is monitored continuously, and our expert advisors are notified of any alarms/events. These experts will further analyse the data and generate a report detailing our recommendations for preventive actions. Your customer success manager will always keep you informed, ensuring a timely response to any abnormalities to avoid escalating problems.

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www.flsmidth-cement.com