



ONLINE RELIABILITY SERVICES

FOR BALL MILLS

Supporting 9 variants (3 x 3)

3 different mill types:

- UMS-H & UMS Unidan Mill (Slide shoes in both ends)
- UM - Unidan Mill (Trunion support in both ends)
- TUM & TM - Tirax Unidan Mill (Slide shoes at feed end & trunion bearing at discharge end)

3 different gear types:

- Gear LGDX or LGD or DMG2 (Side drive)
- Gear SYMETRO (Central drive)
- Gear CPU or PPU (Central drive)

MONITORING AND EXPERTISE TO IMPROVE BALL MILL PERFORMANCE AND AVOID UNPLANNED DOWNTIME

A well-functioning ball mill quickly, efficiently, and reliably achieves the desired fineness with minimum energy consumption and low maintenance. Conversely, a poorly performing ball mill is a significant expense and can detrimentally impact product quality. Understanding any potential issues with your ball mill early is, thus, critical to delivering stable, high-performance comminution.

Our Online Reliability Service for ball mills enables early identification of potential issues before they escalate. Multiple sensors installed on your mill 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 mill's performance.

KEY BENEFITS

01

Increase uptime
and output.

02

Gain fuel and
power savings.

03

Lower labor costs by
transforming unplanned shutdowns
into planned ones.

04

Extend equipment lifespan with
improved preventive maintenance.

05

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

06

Return of investment:
3 months

BALL MILL

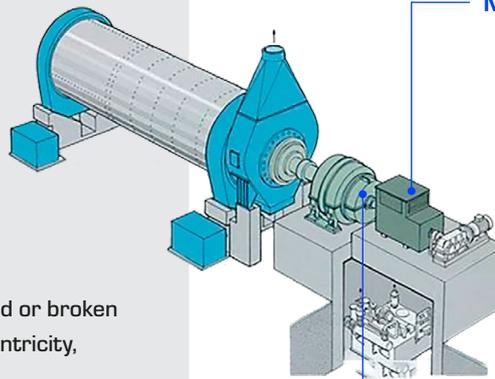
SLIDE DRIVE

Girth Gear

- Tooth wear.
- Cracked or broken tooth.
- Misalignment.
- Eccentricity.
- Backlash.

Pinion, Trunnion

- Pinion: tooth wear, cracked or broken tooth, misalignment, eccentricity, backlash.
- Pinion Shaft Bearing: inner/outer race defect, rolling element defect, cage defect, rotational looseness, inner ring/shaft, rotational looseness, outer ring/housing, cocked bearing, lubrication issues.
- Trunnion: loosening bolts, high axial movement.
- Bearings: identify overload/improper lubrication.
- Analysis of temperature trend/hot bearings.



Motor

- Rotor failure: broken/cracked rotor bar, rotor imbalance, loose rotor, rotor bow.
- Bearing failure: subcomponent, rotational looseness, lubrication problems, cocked bearing, structural looseness.
- Stator failure (voltage imbalance, eccentricity, soft foot, phase loss, insulation and windings problems).
- Misalignment.
- High/low bearing temperature.

Gearbox

- Bearing failure: subcomponent, rotational looseness.
- Tooth wear (cracked or broken).
- Gear or motor misalignment.
- Eccentricity and backlash.
- Bearings: high tank/supply oil temperature, lack of cooling.



Auxiliary drive

- Pressure (if hydraulic).



Lubrication system

- Identify filter clogging Indicates Heat Exchanger Performance
- Indicates health of lubrication system like oil flow, pressure, and sump temperature.

The OEM expert advantage

Many providers offer to monitor your equipment, but do they truly understand your ball mill? We have decades of experience installing, troubleshooting, maintaining, and optimising our ball mills. We have integrated that OEM experience and insight into our ORS. So, while others tell you what to worry about, we advise 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 optimised maintenance planning and effective maintenance procedures.

A comprehensive monitoring package

Our ORS use existing control system signals to identify common issues with your mill's bearings, drive, motor, and lubrication systems. On top of

this, we provide additional monitoring systems, such as vibration, electromagnetic, ultrasonic, and oil analysis, to detect a broader range of abnormal conditions and component failures, delivering continuous insight into your ball mill's status.

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?

