

KHD Group

Kiln Audit Service

A comprehensive assessment of your kiln’s mechanical condition - identify issues, assess causes, and plan corrective actions

KHD | HUMBOLDT WEDAG

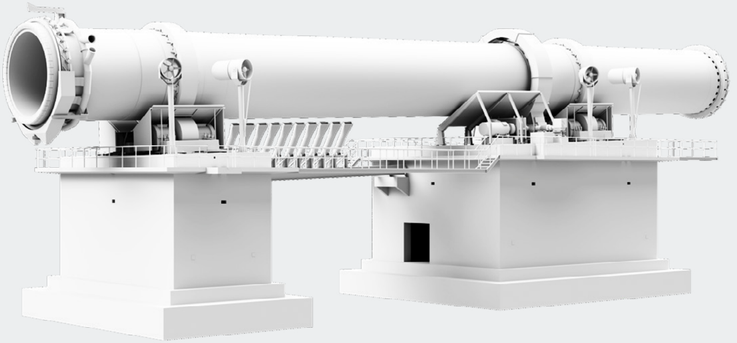
Maximize reliability. Minimize risk.

The rotary kiln is the heart of the cement plant. Its performance directly affects production stability, energy efficiency, equipment life, and maintenance costs.

Because kilns operate under extreme thermal and mechanical loads, deviations in alignment, geometry, or load distribution can contribute to failures and unplanned stoppages.

Any interruption can result in lost output, additional heat-up energy, thermal stress on the refractory lining, and increased maintenance needs. Competitive pressures, rising energy costs, and environmental obligations add to these challenges. At the same time, many of today’s kiln lines are aging, placing additional demands on maintenance teams.

Assessing kiln condition helps identify maintenance needs and prioritize corrective actions.



Our approach

The challenge

Kiln failures can arise from axial misalignment, shell ovality, uneven load distribution, and mechanical wear or instability. These issues may develop gradually and remain undetected until they disrupt operation.

The KHD solution

Our plant survey and measurement services help identify mechanical issues, quantify deviations from design, investigate root causes, and develop prioritized corrective recommendations.

Measurements are taken under operating conditions to assess the kiln at the time of the survey, without requiring a production shutdown. Our modular approach allows comprehensive plant surveys or targeted assessments of specific components or concerns.

From measurement to insight

Drawing on close to 170 years of experience in the cement-making process, OEM expertise in kiln design and operation, diagnostic technologies, and global service experience, we interpret measurement results in the context of your plant. The findings can help you:

- Support equipment reliability and uptime.
- Reduce the risk of unplanned stoppages.
- Support refractory and component life.
- Identify opportunities to reduce energy and maintenance costs.
- Plan shutdowns and repairs.
- Develop a more proactive maintenance approach.

What we measure

Kiln geometry and alignment

- Axis determination and horizontal and vertical deviation analysis
- Roller alignment, slope, skew, and axial thrust condition

Benefit: Supports assessment of load distribution and operating stability.

Shell ovality and structural deformation

- Shell flexing and ovality during rotation
- Mechanical stress on the shell and refractory lining

Benefit: Helps identify conditions that can affect refractory life and structural integrity.

Run-out and dynamic behavior

- Tire, roller, and girth gear run-out
- Wobbling and eccentricity detection

Benefit: Helps identify vibration sources and mechanical instability.

Shaft and gear displacement

- Roller shaft bending and load distribution across support rollers
- Gear run-out and alignment
- Shaft movement and structural displacement

Benefit: Assesses mechanical loading conditions and stress during the survey.



Kiln shell scanning

- Shell geometry analysis
- Detection of eccentricity and local deformation

Benefit: Supports repair planning and assessment of structural condition.

Drive system diagnostics

- Girth gear run-out and alignment
- Gear mesh condition and wear analysis

Benefit: Helps identify conditions that can contribute to gear failures.

Vibration analysis

- Detection of bearing faults, imbalance, and misalignment
- Root cause analysis

Benefit: Supports maintenance planning and investigation of developing faults.

Mechanical condition inspection

- Visual and functional assessment of critical components
- Evaluation of seals, bearings, rollers, and gear systems

Benefit: Adds visual and functional findings to the assessment.

Recommended inspection frequency: schedule a comprehensive plant survey at least annually to monitor condition and plan maintenance.



Technology and methodology

Measurement technology

We use specialized measurement instruments, including:

- Laser-based alignment and scanning systems
- High-precision survey instruments (total stations)
- Inductive distance measurement (IDM) tools
- Vibration analyzers and diagnostic systems

These technologies provide high-accuracy, non-contact measurements under operating conditions, supporting data collection without requiring a plant shutdown.

A structured approach

Our methodology follows four stages:

1. **Measurement** - Data collection
2. **Analysis** - Engineering evaluation
3. **Diagnosis** - Investigation of root causes
4. **Recommendation** - Prioritized corrective actions

The findings support maintenance planning and prioritization of corrective actions.



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