

## CUSTOMER PROFILE

Industry:

Cement Manufacturing

Product Capacity

2.5 Mtpy (clinker), 2.7 Mtpy (cement)

Deployment Scope

47 AI models, 2,500+ data tags

Alert Response Rate

>90%

Projected Savings

>\$1M per avoided failure event

# UPTIMEAI PREVENTS \$1M KILN MAIN DRIVE MOTOR BEARING FAILURE AT LEADING US CEMENT PRODUCER

Early-stage degradation detected failure before conventional alarm systems, enabling proactive maintenance on cement's most critical asset

## When Unplanned Downtime Means Significant Profit Loss

In a cement plant, the rotary kiln is where raw meal is processed under extreme thermal and mechanical conditions to produce clinker. The kiln's main drive motor enables continuous rotation, ensuring uniform heat distribution and material residence time, stable torque and rotational speed critical to clinker quality, and high thermal efficiency across the process.

Failure of the kiln main drive motor results in an immediate kiln shutdown, halting clinker production and cascading into downstream losses that compound by the hour. For a facility producing approximately 7,000 tons per day, every hour of unplanned kiln downtime represents a direct hit to throughput, energy efficiency, and plant profitability. Early detection of motor bearing degradation is not a maintenance preference. It is an operational imperative.

## The Cement Industry's Complex Reliability Problems Aren't Solved in Silos

Historically, predictive maintenance solutions in cement have taken an equipment-level view. Issues were detected where they manifest, and repairs fixed the immediate problem but rarely addressed the root cause, so problems frequently returned.

Plants got around this shortcoming by leveraging human experts to investigate the root cause of alerts. Process engineers, maintenance teams, and operations personnel would collaborate to connect the dots between disparate systems. But as expertise wanes in organizations—with experienced operators retiring faster than replacements can absorb their knowledge—this reliance is becoming unsustainable. The cement producer needed a solution that could identify root causes, not just symptoms, and scale expert-level analysis across all operating areas.

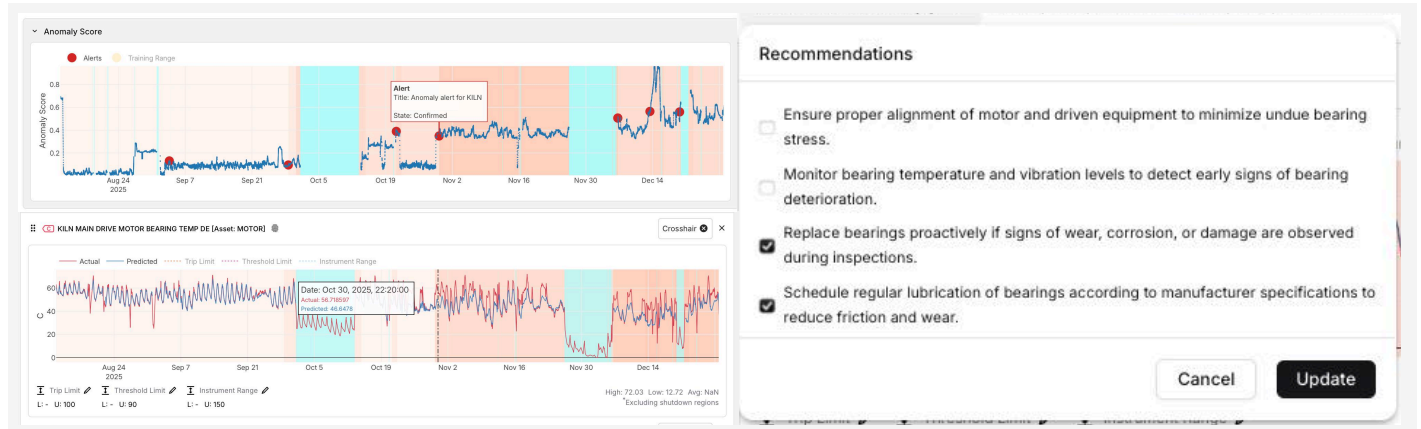
## AI Reasoning Agents That Scale Expertise

Rather than relying solely on human experts to connect the dots between disparate systems, the cement producer partnered with UptimeAI to deploy AI reasoning agents that analyze operations the way their expert team does—but if their team was available continuously, across all units, 24/7. The facility deployed 47 AI models monitoring 2,500+ data tags, integrating data from the control system, CMMS, Analytical Laboratory, auxiliary vibration monitoring, and temperature monitoring systems.

When the Root Cause Agent detects data quality issues, integrity operating window deviations, or anomalies, it issues alerts along with specific recommendations for how to troubleshoot or mitigate the problem. The model then self-learns through the acceptance or rejection of alerts by operations teams and subject matter experts, continually improving alert quality over time.

## The Catch: Bearing Degradation Identified Before DCS Alarm Threshold

UptimeAI identified the root cause other systems couldn't—treating the source, not the symptoms.



Well before the DCS alarm threshold and prior to any conventional operator notification, UptimeAI issued an anomaly alert indicating early-stage bearing degradation. UptimeAI RCA Agent followed the same diagnostic logic a seasoned reliability engineer would apply and without the bottleneck of waiting for experts to notice the right trend at the right time.

### Scaling Operational Excellence For Cement Producer

Avoided \$500K In Asset Performance Issues In First Month

#### Quantifiable Gains

- ~\$1M impact avoided from prevented kiln main drive motor bearing failure
- ~\$500K in total avoided issues within the first 4 weeks
- \$4–6M projected annual savings
- >90% alert response rate from operations teams

#### Transformational Results

- Behavior-based AI monitoring detecting degradation before conventional DCS alarms
- Continuous learning feedback loop keeping false positive rates low and precision high
- Reduced reliance on individual experts to connect the dots between systems
- Expert-level analysis scaling across all shifts and operating conditions

## What's Next?

With \$500K in avoided issues caught in the first 4 weeks, the team is now looking beyond mechanical and production reliability. Future applications include applying system-level analysis to emissions performance, supporting environmental compliance and sustainability objectives, and optimizing process conditions for consistent product quality, leveraging the same platform and approach that proved successful for reliability.

## About UptimeAI

UptimeAI provides AI reasoning agents that help industrial operations teams make goal-oriented, real-time optimal decisions. Our solutions achieve 90%+ pilot-to-production success rates and are trusted by leading companies in cement, oil & gas, power generation, chemicals, and metals industries. Backed by industry leaders including ABB, Yokogawa, and Mitsubishi.