Building materials / QM-06

Predictive maintenance

Data-based equipment condition monitoring to reduce unplanned kiln and mill stoppages.

Unplanned downtime is the most expensive hour.

Cement plants worldwide are moving to equipment condition monitoring through digital twins and analytics. Vendors are announcing significant results, but these have not been independently verified.

Conceptual architecture. No operating results are shown.

01 Logbook	Stoppage · Cause · Duration
02 Warehouse	Spare part · Stock · Order
03 Signal	Temperature · Vibration · Current
04 Analysis	Recurring cause · Plan · Report

At a glance

820 → 740 — Visionaize press release: heat consumption in kcal/kg at a plant in South Asia (company statement). [1]

250+ — Process variables connected to the AI platform in this project. [1]

17 — Idle cement plants in Uzbekistan (modernisation programme data). [2]

November 2026

01 Evidence and context

Who it is for

Chief mechanical engineer	Equipment condition.
CEO	Cost of downtime.
Procurement	Spare parts.
Chief process engineer	Operating mode.

Facts and global practice

Visionaize (press release)

Visionaize connected more than 250 DCS and SCADA variables to an AI platform at a cement plant in South Asia. [1]

Visionaize (press release)

According to the company statement, heat consumption fell from 820 to 740 kcal/kg, mill and kiln stoppages fell by 60%, and refractory lining service life increased by 50%. [1]

ABB (FICEM 2026)

ABB's cement portfolio includes Downtime Management and LIMS modules. [3]

Modernisation programme

17 cement plants in Uzbekistan are idle; energy audits have been carried out at 34 large enterprises. [2]

These figures are vendor statements, not an independent audit. They indicate direction only.

02 Where the losses occur

Paper logbook

Repair history is not analysed.

Cause not recorded

Downtime duration is logged, but not the cause.

Spare parts

A required part missing from the warehouse prolongs downtime.

Signals not monitored

Vibration and temperature trends are not reviewed.

How the loss is calculated

Downtime	unplanned downtime hours per month × hourly output (t/h) × margin per tonne
Restarts	number of restarts per month × fuel cost per restart
Spare parts	rush-purchase premium per case × number of cases per month
Refractory lining	premature replacements per year × cost per replacement

Illustrative calculations; establish the baseline, units and rates during the site assessment. Avoid counting the same loss twice.

03 Solution architecture

From downtime records to predictive maintenance

The first step is to record every stoppage with its cause and link spare parts to the warehouse. Then monitor signal trends.

01 Logbook

Stoppage · Cause · Duration

02 Warehouse

Spare part · Stock · Order

03 Signal

Temperature · Vibration · Current

04 Analysis

Recurring cause · Plan · Report

Modules

Downtime log	Cause and duration	Engineering capability
Spare parts warehouse (WMS)	Stock and location	Commercially available
Signal trends	From existing sensors	Engineering capability
Predictive analytics	With a partner	In development

Each module has a readiness status. Third-party results are not a forecast for your site.

04 Implementation and measurement

01 Maintenance audit

Logbook and warehouse are reviewed.

Output: downtime map.

02 Logbook and warehouse

60 days on one line.

Output: cause statistics.

03 Signal trends

Key equipment.

Output: early warning.

04 Subscription

Monthly report.

Output: downtime trend.

What is measured

Unplanned downtime	Hours per month	Logbook
Recurring cause	Share of a single cause	Logbook
Spare part unavailable	Cases	WMS
Repair time	Hours	Logbook

What is needed to start

- Chief mechanical engineer
- Equipment list
- Spare parts list
- Existing sensors

05 Readiness checklist and next step

01 Is every stoppage recorded with its cause?	Yes / No / Unknown
02 Is there a list of recurring failures?	Yes / No / Unknown
03 Is spare parts stock held in a system?	Yes / No / Unknown
04 Is a minimum stock level set for critical parts?	Yes / No / Unknown
05 Are vibration or temperature trends monitored?	Yes / No / Unknown
06 Is refractory lining service life calculated?	Yes / No / Unknown
07 Is restart consumption accounted for?	Yes / No / Unknown
08 Is the maintenance plan based on data?	Yes / No / Unknown
09 Is equipment history stored in one place?	Yes / No / Unknown
10 Is there a responsible person?	Yes / No / Unknown

What we do not promise

• Fixed timeline and price without an audit

• Exchange rules and government decisions

• Repair of plant equipment

• Unmeasured results or savings

• Replicating results announced by vendors

Maintenance audit

We review downtime and spare parts records and show where unplanned stoppages are coming from.

• Downtime map

• Pilot plan

• Implementation fee and monthly subscription

Scope, price and schedule are agreed after reviewing the site and its data.

06 Sources and scope

[1] Visionaize Inc. press release: AI and digital twin in cement production. newswire.com, 21.10.2026.

newswire.com

[2] Meeting on the modernisation programme for building materials enterprises. anhor.uz, 2026.

anhor.uz

[3] ABB: FICEM 2026 presentation (LIMS Quality Management, Downtime Management, EMS). ficem.org, 2026.

ficem.org

Prepared from the cited sources. Vendor statements and reported sector figures are attributed, not independently verified here. No performance, certification or regulatory outcome is guaranteed. Check the current official rules before making decisions.

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