

One of the largest cement producers
increased its total factory uptime by 1618 hours
using Real-Time Machine Diagnostics &
Predictive Maintenance solutions.

Total Downtime Cost
Avoided in 6 months
across multiple plants

~\$ 669.7 Mn

Additional saving on
gearbox repairs

USD 30,000

Prevented a highly
catastrophic disaster
in the clinker unit

About the client:



Industry: Cement



Plant Capacity:

120 MTPA



Machines Monitored:

Various industrial fans, Kiln-feed, DCP, roller-press, gearboxes, double facer drum, conveyor-pulley bearings, shaft impeller, suction vacuum pumps, corrugated, slag mill, head sprocket, hammer, separator motors.

Business Case

Availability concerns are a top priority in cement production. In addition, unplanned shutdowns caused by equipment failure can significantly lose production and reputation. The cost of these secondary damages can be astronomical in case of unexpected downtime and abrupt plant failures. Typical applications where condition monitoring supplemented with Diagnostics is applicable in cement plants are double facer drum, conveyor belts, various fans, bearings, shaft impeller, kiln drives, separators, crushers, gearboxes, raw mills, ball mills, elevators, blowers and much more.

The client achieved its production targets but frequently faced an abnormal rise in vibrations in one of the raw mill fans affecting the bearings and risking the hygiene of the plant. The underperformance of the cooling fan in the clinker unit adversely affected the quality of several minerals like C3S, C3A, C2S, and C4AF. To improve plant reliability, The client wanted to adopt a proactive approach towards plant maintenance.

Solution

Infinite Uptime's real-time analytics and equipment insights made the perfect recipe for maximizing the value of condition monitoring.

The remote monitoring of the critical gearbox associated with a grinder detected the irregularity in its operation. The pinpointing of its root cause and suggesting practical corrective measures to avoid a devastating disaster facilitated prioritized maintenance. The Solution comprises advanced predictive analytics and syndicated insight reports to

empower the Maintenance team. Some of the assets tracked included the main gearbox, the grinder in the raw mill unit, the cooling fan in the clinker, the separator fan, the Main mill motor, the silo-feed elevator and the fresh-feed elevator gearbox.

The Predictive Maintenance strategy increased the availability of rotating equipment, extended the RUL, entrusted the Maintenance team with equipment data, facilitated correct resource management, and confirmed the reduction in repairs and spares.

Client Testimonial

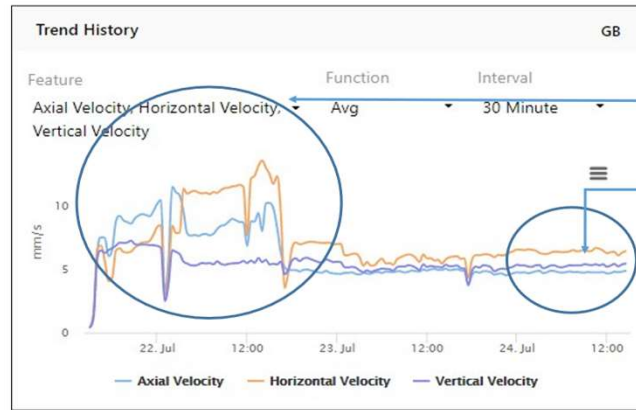
"Your accurate machine health analysis helped us to **prevent significant down time** which otherwise could have been higher depending upon failure. Infinite Uptime's technology led machine diagnostics solutions and analytical insights for predictive maintenance has enabled us to **set new benchmarks and best practices in improving our maintenance programs** for timely detection of machine faults."

Implementing Digital Machine Health Solution

The gearbox attached to the silo feed bucket elevator is critical and works in sync with a raw mill. The efficient functioning of the gearbox guarantees the streamlined movement of the input and ensures no return of the material. Furthermore, the correct supply of raw material minimizes scattering during feeding and unloading, and thus it facilitates the reduction in mechanical wear.

Real-time monitoring of the asset raised early warnings enabling the quick replacement of the coupling pin (sub-component of the gearbox) and collateral damage. The continuous support featuring precise diagnosis, remedial recommendations helped to avoid a catastrophic disaster.

TRIAxIAL VIBRATION TREND BEFORE AND AFTER CORRECTIVE ACTION



VIBRATION AMPLITUDE BEFORE MAINTENANCE
HIGHEST: 14 MM/SEC

VIBRATION AMPLITUDE AFTER MAINTENANCE
HIGHEST: 5.9 MM/SEC

The image indicates the rise in vibrations during fault detection and the usual trend after implementing the corrective actions.

Summary

The Diagnostic Services supplemented with a patented Vibration Monitoring System (VMS) affirmed Predictive Maintenance Strategy and helped mitigate unplanned downtimes on all the rotating critical machines. The plants have shifted their Run-to-failure Maintenance strategy to Predictive Maintenance. Moreover, the additional benefits include an optimized control on the inventory of spares and repairs, improvised and aligned resource allocation, and the extension of the Remaining Useful Life (RUL) of the legacy gearbox. The client has decided to further scale up the implementation of Diagnostic services to multiple other plants.



Infinite Uptime is a global Predictive Maintenance Services and Plant Reliability solutions company. We help the maintenance and manufacturing teams to attain the highest level of plant reliability by reducing unplanned downtime, mitigating operational risks, and improving overall efficiency. We leverage industry 4.0 technologies and a digital-first approach to create responsive maintenance strategies for diverse global manufacturing industries including Cement, Steel, Metals & Mining, FMCG, Chemicals, Oil & Gas, Power, Pharma, Tire & Rubber, Automotive, Construction, Pipes and more.

Our advanced analytics and real-time industrial diagnostics help plant maintenance leaders and condition-based monitoring teams to accurately predict and avoid machine failure every single time. To create a reliability-based maintenance strategy contact our Customer Success Team today. Write to us at contact@infinite-uptime.com or visit <https://www.infinite-uptime.com> to know more.

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