

# Emerson's Condition Monitoring Solution helps Arabian Cement Company protect its critical assets and prevent 70,000-ton production loss

## RESULTS

- Prevented production loss of 70,000 tons.
- Improved plant availability.



## APPLICATION

Online Machinery Health Monitoring of a gearbox in a horizontal ball mill.

## CUSTOMER

Arabian Cement Company (ACC) is the third largest cement producer in Egypt. Its plant has two production lines in El Ain El Sokhna in Suez. ACC has a production capacity of 5 million tons per year, producing high quality cement for the local and international market. ACC is a Spanish - Egyptian joint stock company.

## CHALLENGE

In cement production, rotating assets like crushers and mills are at great risk. Worn rotating parts lead to internal faults like mechanical imbalance, loose components, and rubbing parts. These manifest themselves as vibration, which is monitored and analyzed using portable data collectors. Typically, a plant's maintenance team gathers the data manually using a handheld monitoring device, following a standard schedule and route based on equipment criticality.

The ACC plant operates four horizontal ball mills that are driven by a 6-megawatt gearbox, helping to produce 185 tons of cement per hour for each mill. In December 2014, the plant team detected a sudden increase in the vibration levels of the gearbox, and consequently by inspection discovered a fracture in one of the gearbox's bearings.

***“We wanted to protect the asset from further damage, but stopping the mill for a complete month meant losing a quarter of our production capacity .”***

**Ahmed Orban**  
Mechanical Manager

“Considering that the ordered spare bearings had not yet arrived and we had to wait for another month to get them, the challenge was deciding whether to run the mill or have a shutdown,” said Ahmed Orban, ACC’s Mechanical Manager.

“We wanted to protect the asset from further damage, but stopping the mill for a complete month meant losing a quarter of our production capacity.”

### SOLUTION

“Our challenge was to run the mill as long as possible while minimizing the risk of a sudden failure in the gearbox bearings and internals. We needed to implement a continuous and intensive monitoring system that would monitor the gearbox condition and alert us to stop the equipment if we detected any further progression in the vibration levels,” said Orban.

ACC asked for Emerson’s recommendation and the company proposed the use of the Emerson’s Online Machinery Health Monitor. This technology would enable automated and continuous condition monitoring and allow the equipment to continue performing with the minimum risk of further damage. A CSI 6500 Machinery Health Monitor was installed the following day, giving personnel visibility to the health of the gearbox online, 24/7.

The cement mill had a smooth and safe production for 17 consecutive days, until the online monitoring began to detect a condition that went against the running parameters set for the equipment. Consequently, Emerson was consulted by the plant team and the team was advised to stop the mill for inspection, which revealed that they had a complete failure of the bearing cage. Accordingly the mill was stopped for repair in order to prevent any further failure or damage. The repair was carried out and the mill was back in steady operation with full capacity in January 2015.

Orban commented, “We are very satisfied with the solution. By improving equipment reliability and detecting failure early, you can depend not only on portable devices, but also on a permanently installed online system. With the Emerson Online Machinery Health Monitor, we can now determine the right time to order spare parts and effectively plan for overhauling and stoppages.”



*Emerson’s Online Machinery Health Monitoring solution monitored the condition of a fracture in the gearbox’s bearings’ cage allowing safe production for 17 days.*

*“With the Emerson Online Machinery Health Monitor, we can determine the right time to order spare parts and effectively plan for overhauling and stoppages.”*

**Ahmed Orban**  
Mechanical Manager

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