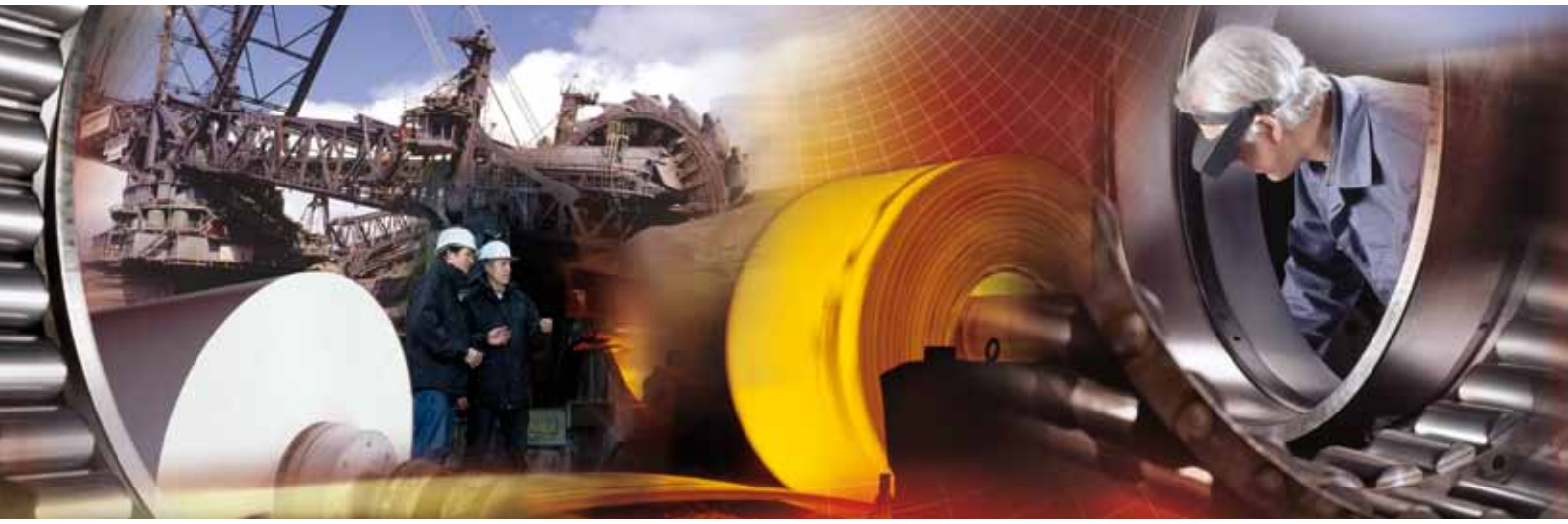
Smart Performance Program



Vibration Troubleshooting Ensures Reliable Raw Mill Fan's Operation

Industry: Raw material extraction and processing

Customer

The customer is a leading cement manufacturer in Saudi Arabia and the Gulf Region that always strives to expand its product diversity. To enter the Jordanian market he made a big investment of 400 million dollars in 2007 to build up a new cement plant there. This plant was expected to start operation in the second quarter of 2010 with a production capacity of 5,000 tons daily.

Challenge for Schaeffler

The cement plant's raw mill fan circulates gas which supports the production process and is driven by a 2.8 MW motor. During the plant comissioning phase the customer made a performance test of the raw mill fan. Extremely high fan vibrations – that even exceeded the maximum set value in the protection system – became obvious. The fan tripped several times. Due to this result the fan could not be commissioned and the customer suspected unbalance as reason. Thus, he looked for a third party that could provide an accurate diagnosis and a solution for the problem. Their local distributor advised them to get in contact with Schaeffler Middle East.

Technical information about the Plant

Production capacity:	5,000 t/day
Capacity of own power generating station:	49 MW

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Schaeffler Solution

The Field Service Engineers (FSE) of Schaeffler Middle East travelled to Jordan and made measurements on-site using the condtition monitoring device FAG Detector III. These investigations revealed that the high vibration values could be traced back to loosen bolts of the fan pedestal and an excessive foundation flexibility. The conclusions were summed up in an analysis report including clear instructions. Following these reommendations the cement producer thightened the holding down bolts of the bearing pedestal and increased the pedestal foundation by 110 tons. Finally, to reduce the fan‘s vibration, balancing was done using the FAG Detector III Balanding Kit. Thanks to these measures the vibrations decreased from 42 mm/s to 4.5 mm/s when the fan operated with closed dampers and an operating temperature of 74 °C. But when the customer and Schaeffler made another test with open dampers the vibrations of the fan increased exponentially within a few minutes and the fan started tripping again. A detailed analysis of the vibration data showed that this failure based on a problem in the duct system. The customer fixed this and since then the fan is operating in normal condition.

Customer Benefit

Thanks to the condition monitoring measurements of Schaeffler, the customer had been able to run the raw mill fan and the whole production system in order to complete the commisioning phase. Thereby production could start as scheduled in the second quarter of 2010. This was essential for the customer in order to meet his sales orders. Any time lag would have caused considerable loss of production and profit:

Costs for one ton cement:	45 Euro
Average production capacity :	**5,000 tons/day**
Production sales volume:	**225,000 Euro /day**

What‘s special

Convinced by the efficiency of the FAG Detector III vibration measuring device and the Balancing Kit the customer bought both devices and asked Schaeffler Middle East already two weeks after the first visit on-site to train his employees in using them.

Technical Information about the Solution

Monitoring System

- FAG Detector III vibration measuring device and Balancing Kit

Characteristics

- Parallel monitoring of vibration and temperature
- Static and dynamic balancing on-site
- Wide range of analysis and presentation options
- Easy and comfortable to use

Contact details for worldwide contact persons as well as further ***Smart Performance Solutions*** can be found on our homepage

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