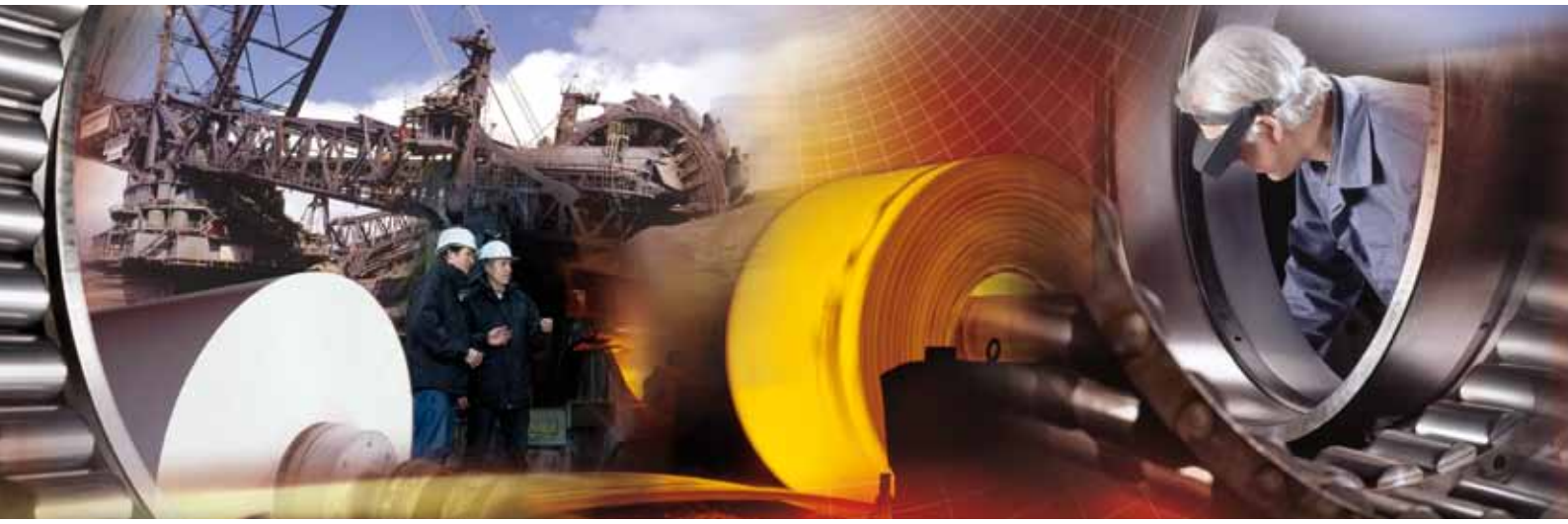
Smart Performance Program



Service Contract Increases Plant Availability at Zinc Smelter Plant

Industry: Raw material extraction and processing

Customer: Hindustan Zinc Limited, Debari Site, Udaipur (India)

Hindustan Zinc Limited (HZL) belongs to the Vedanta Group and is India's only integrated producer of zinc and lead. With a metal production capacity of currently 754,000 tons per annum the company is among the world leaders. The smelters are situated at Chanderiya, Debari and Visakhapatnam and the mines at Zawar, Dariba and Rampura Agucha. HZL has about 6,400 employees.

Challenge for Schaeffler

Schaeffler had already several machines under surveillance at Debari site, when HZL decided in 2008 to expand the condition-based maintenance to all plant components. The goal was to further increase the plant availability. An initial plant check revealed that 310 out of 355 machines need to be monitored monthly whereas 45 machines require weekly monitoring. The reason is that those 45 components are non-redundant and critical for the production process. This means an unforeseen failure might cause an immediate shutdown of the whole plant.

Technical Information about the Plant

Production capacity:
888,000 metric tons/year

Process Type:
Hydrometallurgical process for zinc production

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Schaeffler Solution

HZL signed a service contract with the Schaeffler Group: Two Schaeffler Field Service Engineers (FSE) support HZL's maintenance team permanently on site for a period of three years. As first measure, the FSE set up a schedule for the first month including a weekly control of all critical and a monthly control of all non-critical machines.
When the FSE detect a failure, the following procedure was agreed: The FSE immediately inform the customer's maintenance team, which takes care of the problem. Afterwards the FSE control the machine's condition again and send a final report to the maintenance staff.
To ensure transparent communication of all maintenance steps, a customer-specific documentation tool was designed by the Schaeffler Group. This contains the complete overview of all maintenance activities as well as all status reports.

Customer Benefit

Three months after implementation, the plant-wide condition-based maintenance showed first results: The FSE identified extremely high vibrations at the gearbox of the non-redundant table feeder of roaster 2. Deeper analysis showed that the machine was misaligned and the worm gear bearings were damaged. Thanks to the early detection, a complete gearbox breakdown was avoided and HZL had the chance to carry out the repair within a planned shutdown in the subsequent week.

Savings:	
Costs of production for 2 shifts:	€ 32,660
Costs of new gearbox:	€ 1,535
Total savings due to early detection	**€ 31,125**

Monthly costs for service contract: 2,100 Euro

What's special

The monitoring costs are low compared to the direct and indirect savings that can be realized due to early failure detection in such plants. The achievements gained at Debari plant were only possible due to joint efforts of the HZL maintenance team and the Schaeffler FSE.

Technical Information about the Solution:

Monitoring system:
- FAG Detector III

Monitored components:
- Electrical motors
- Gearbox bearings input shafts
- Gearbox bearings output shafts

Technical details of the monitored components:
- Motor speed: 1480 RPM
- Gearbox bearing output speed: 56 RPM
- Motor power: 10 HP

Monitoring functions:
- Characteristic value and FFT
- Vibration velocity
- Vibration acceleration
- Demodulation

Monitoring frequency:
- Weekly rather monthly

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

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