

Schaeffler Global Technology Solutions

Steel and non-ferrous metals

FAG ProCheck Increased Availability of Stretch Reducing Mill

The customer is a world leading manufacturer of seamless pipes. He offers a wide range of products for different industrial areas, e.g. the oil, automotive and mechanical construction industry as well as the energy sector and the overall construction industry.

Challenge for Schaeffler

Thanks to a service contract with Schaeffler based on offline vibration analysis some chronic damage had been detected in the tandem motor bearings of the customer's hot strip mill. Schaeffler had determined that these damages were caused by current passage. Since this problem had been solved no further downtime caused by this reason had happened. Satisfied with this result the customer wanted to extend the monitoring to the whole plant in order to increase the overall availability. Thus, he extended the service contract for one more year. In the next step he intended the introduction of online condition monitoring to his mill.

Schaeffler Solution

In order to monitor the stretch reducing mill permanently, the experts of Schaeffler Iberia recommended the customer to install two FAG ProCheck monitoring systems with eight measuring channels and 8 analog input signals each. FAG ProCheck allows permanent monitoring of critical components, damage detection in an early stage as well as in-depth failure analysis.



Technical Information about the Plant

Stretch reducing mill:

30 stands with 3 rolls each to 120°;
with independent movements

Motors:

8 motors with a total power of
approx. 5 200 kW

Motor speed:

Variable, from 700 to 2 000 RPM

Gearbox:

Three gearboxes with 30 output shafts

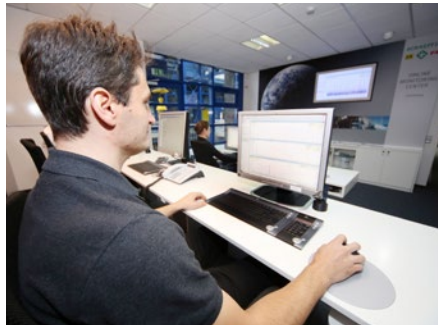
Mill parameter:

- Input speed: 0.8-1.5 m/sec
- Max. output speed: 11 m/sec
- Max. input diameter: 180 mm
- Min. output diameter: 25 mm
- Max. input thickness: 18 mm
- Min. output thickness: 2.3 mm





FAG ProCheck – modular and flexible



Analysis of measured data



Due to its extremely robust and compact design, this system is ideally suited for use in almost all industrial segments

Customer Benefit

With the online condition monitoring systems the customer has enlarged the service lives of the recorded machines and has become able to avoid unscheduled downtimes. Today bearing replacements take only place if a failure has been indicated by the monitoring systems. Further savings arise, if the production loss of only one unscheduled shutdown of the stretch reducing mill is considered:

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| Production loss costs (estimated 12 hours downtime): | € 144 000 |
| Annual costs for Schaeffler's service package: | € 28 000 |
| One-time costs for two FAG ProCheck systems including installation and start-up: | € 37 000 |
| Cost savings by avoiding the first unscheduled shutdown: | € 79 000 |
| from the second avoided shutdown on: | € 116 000 |

Additionally, the customer annually saves about 12 000 Euro that were spent for preventive bearing replacements in the past.

What's special

The project shows how customers benefit from a long-term partnership with Schaeffler. Thanks to the comprehensive condition-based maintenance measures and the close cooperation with Schaeffler experts, the customer is now able to realise enormous cost reductions and to ensure plant availability. Following this good experience, the customer extended the monitoring to 60 other critical machines.

Technical Information about the Solution

Monitoring system:

8 channel FAG ProCheck: 2 pieces

Sensors:

ICP acceleration sensors: 16 pieces

Kommunikation:

- External: Remote server
- Internal: TCP/IP

Additional signals:

- Speed
- Load

Monitored components:

Stretch mill motors: 8 units