



## Customer Success Story

We pioneer motion

# Online vibration monitoring of tube mills – cement industry

An unplanned downtime occurred in a Spenner tube mill. The plant was at a standstill for three weeks. After repairing the cost-intensive damage, an Schaeffler online monitoring system was installed. In use, the system detected gear damage on the gearbox during operation. It was possible to replace the gearbox during a planned shutdown.

**Savings:** Around 27,000 euro.

### Customer benefits

- Less unplanned downtime and consequential damage.
- Lower repair costs
- Multiple benefits – The solution can be applied to all tube mills and coal mills in fossil-fuel power plants.

**spenner**

#### Customer

Spenner GmbH & Co. KG,  
Germany

#### Sector

Cement

#### Application

Tube mills

#### Solution

Online vibration monitoring

# What drives our customer ...

## Challenge

The customer operates several cement mills (tube mills) at the Erwitte site and, despite the difficult market position in the industry, produces at full capacity. Despite using a temperature sensor to carry out monitoring, a three-week plant stoppage occurred as a result of gearbox damage. The gearbox, which had already been severely damaged, had to undergo a full and expensive repair.



The Spenner site in Erwitte produces cement, lime, and dry mortar

### Technical information about the plant

Tube mill (tube milling)

#### Power

1 MW via triple-shaft spur gear

#### Length

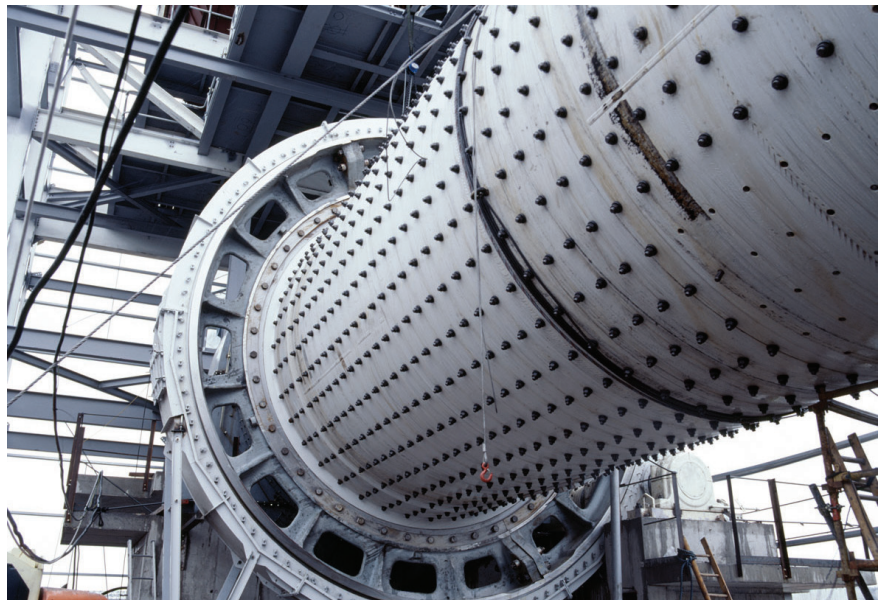
8 m

#### Diameter

3 m

#### Speed

15 U/min



Tube mill

# What Schaeffler has to offer ...

## Solution

Schaeffler employees from the Service area installed an online monitoring system with a total of five sensors on the gearbox and layshaft. Following three months of support from Schaeffler experts in data evaluation, the customer's Schaeffler-trained employees operated the system unaided. After just a short period of use, the online measuring system detected tooth damage on the gearbox, which was confirmed by the customer following a visual inspection. The gearbox was replaced during a planned shutdown. Wear to the tooth system on the layshaft gear pinion was also detected and remedied during this period.

## What's special

Monitoring a tooth set on a slowly rotating assembly is an extremely demanding process in diagnostic terms. Following its proven success, Spenner has expanded the monitoring system further and confirmed the diagnostic success to the technical journal "Automation & Drives". This application can be transferred to almost all tube mills for raw material processing and coal mills in fossil-fuel power plants worldwide.



Detected gearbox damage in the ball mill

## Advanced development

The solution was implemented at the time using the online monitoring system FAG DTECT X1. Today, Schaeffler would use the current ProLink CMS.



### Technical information on ProLink CMS

Data exchange with customer infrastructure, for example system visualizations and cloud service	via OPC/UA
Interface to maintenance planning systems such as SAP/PM and IBM Maximo	via OPC/UA
Cyclical transmission of the report or in case of alarm	Email
Exchange of measurement data	Via fieldbus. In planning: Profinet and CC-Link IE Field



Detected bearing damage

# What our customer saves ...

## Parent plant Erwitte

In the event of severe gearbox damage, Spenner would be faced with repair costs of between 50,000 and 100,000 euro. Production losses amounting to 10,000 euro or more would also have to be included.

**Following the introduction of an online monitoring system**  
The investment in the condition monitoring solution amounted to approx. 18,000 euro. Consequential damage that was detectable at an early stage cost the cement works approx. 5,000 euro in repairs. For the first damage case, savings of at least 27,000 euro are achieved, based on damage occurring without the use of an online monitoring system to the amount of 50,000 euro.

<b>Repair costs for gearbox damage without online monitoring system</b>	<b>€ 50,000</b>
Project costs for monitoring system, incl. service	- € 18,000
Actual repair costs in the event of early detection	- € 5,000

**> € 27,000**

**Saving achieved by avoiding consequential damage**

## Customer

Spenner offers its customers a wide range of products and services in the fields of cement, lime, and dry mortar. In addition, Spenner develops disposal concepts for numerous industrial sectors, whose waste products can be reused as substitute fuels and raw materials. The company's headquarters are in Erwitte.

Spenner encompasses subsidiary companies Spenner Herkules, Spenner Syston, and the Spenner Cement Works in Berlin.



„Spenner Forum“ office building