



## Customer Success Story

We pioneer motion

# Integrated service and bearing solution for a converter

With its comprehensive service and bearing solution, Schaeffler increased the availability and service life of a converter, which is the heart of any oxygen steel plant.

### The comprehensive solution included:

- Developing a new and extremely long-lasting cast iron housing
- Use of split spherical roller bearings for faster bearing replacement
- A comprehensive condition monitoring solution to avoid unscheduled downtime

**Customer/Industry**  
Leading European  
steel producer

**Annual production volume  
of the customer**  
approx. 10 million metric tons

**Technical information  
about the converter**

**Converter capacity**  
400 metric tons

**Annual production volume**  
approx. 5 million metric tons

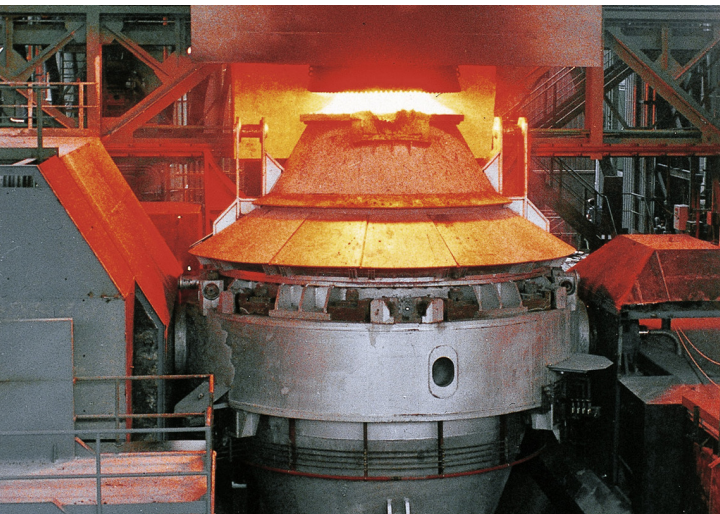
# What motivates our customer ...

## Challenge

The oxygen steel plant has two converters. The customer wanted to replace both and use this opportunity to also increase their capacity to 400 metric tons. This application required a highly complex solution for the journal bearings as well as the newly constructed cast iron housing. Since the converter represents a highly critical bottleneck to the downstream production processes, the customer decided to have the bearing monitored. However, the process made it impossible to use a standard vibration monitoring solution. A combination of several monitoring approaches therefore had to be developed.



Simplified bearing replacement, thanks to a split spherical roller bearing



Converter housing made from cast iron

Technical information for the converter	
Converter capacity	
400 metric tons	
Annual production volume	
approx. 5 million metric tons	
Operating temperature	
max. 1,750 °C	
Year of manufacture	
2013/2014	

## Customer

The customer is a leading European steel producer with multiple production facilities. He produces more than 10 million metric tons of crude steel per year.

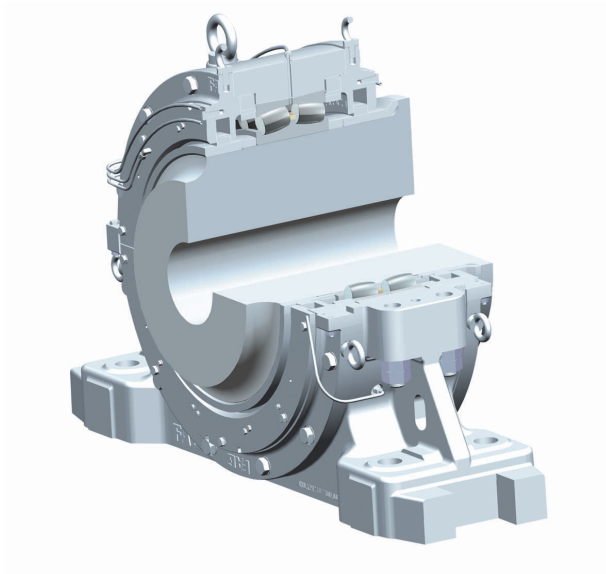


Slab transport

# What Schaeffler offers ...

## Solution

Schaeffler developed a customized solution consisting of a cast iron housing in collaboration with the converter manufacturer. Split spherical roller bearings as spare parts make it possible to very quickly replace the bearings and thus significantly reduce downtime costs. The associated condition monitoring solution combines several processes. For example, the trunnion bearings are monitored by means of acoustic emission, vibration and grease analysis. Force transmission into the bearing housings is recorded by strain gauges. In addition, the axial displacement of the floating bearing and vertical deflection of the fixed and floating bearings are documented as well. The mounting of the trunnion bearings by our fitters and continuous remote condition monitoring by Schaeffler complete the package of solutions.



A standard KPGZ plummer block housing was modified according to the requirements of this application.

### Technical information for the solution

#### Converter movable bearing

Split spherical roller bearing Z-537284.PRL

#### Fixed bearing

Spherical roller bearing Z-541835.249/1120-B

#### Housing

- KPGZ49/1120-F-D
- KPGZ49/1120-L-D

#### Condition monitoring

- Acoustic emissions
- Online grease analysis
- Vibration measurement
- Transmission of force to the housing
- Trunnion and bearing displacement

#### Schaeffler services

- Mounting
- Remote monitoring

### CONDITION MONITORING



ProLink CMS

### GREASE MONITORING



GreaseCheck

### BEARING SOLUTION



Split spherical roller bearing

# What our customer saves ...

Comprehensive monitoring of a converter is no easy task, if only because it must operate at a temperature of 1,750 °C. Due to their experience with monitoring solutions from Schaeffler in the past, the steel plant operator turned to us once again. And they were not disappointed. Whenever damage is avoided, the savings potential is enormous.

Savings potential	
Cost of crude steel	€ 250 per ton
Volume of one batch	400 tons
Price of one batch	€ 100 000
Production volume per day	20 batches
Unplanned shutdown due to bearing damage	5-7 days

€ 10-14 million  
in lost production

## The measured data was analyzed by the Schaeffler Online Monitoring Center

Schaeffler’s service engineers can analyze and evaluate the measured data via remote access. They provide the results to the customer in the form of recommendations actions to be taken.



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