

Rolling Bearings and Housing Components for Converters and their Monitoring

FAG



Converter trunnion bearing arrangement

thyssenkrupp Steel Europe AG, Duisburg-Bruckhausen, Oxygen Steelworks 1

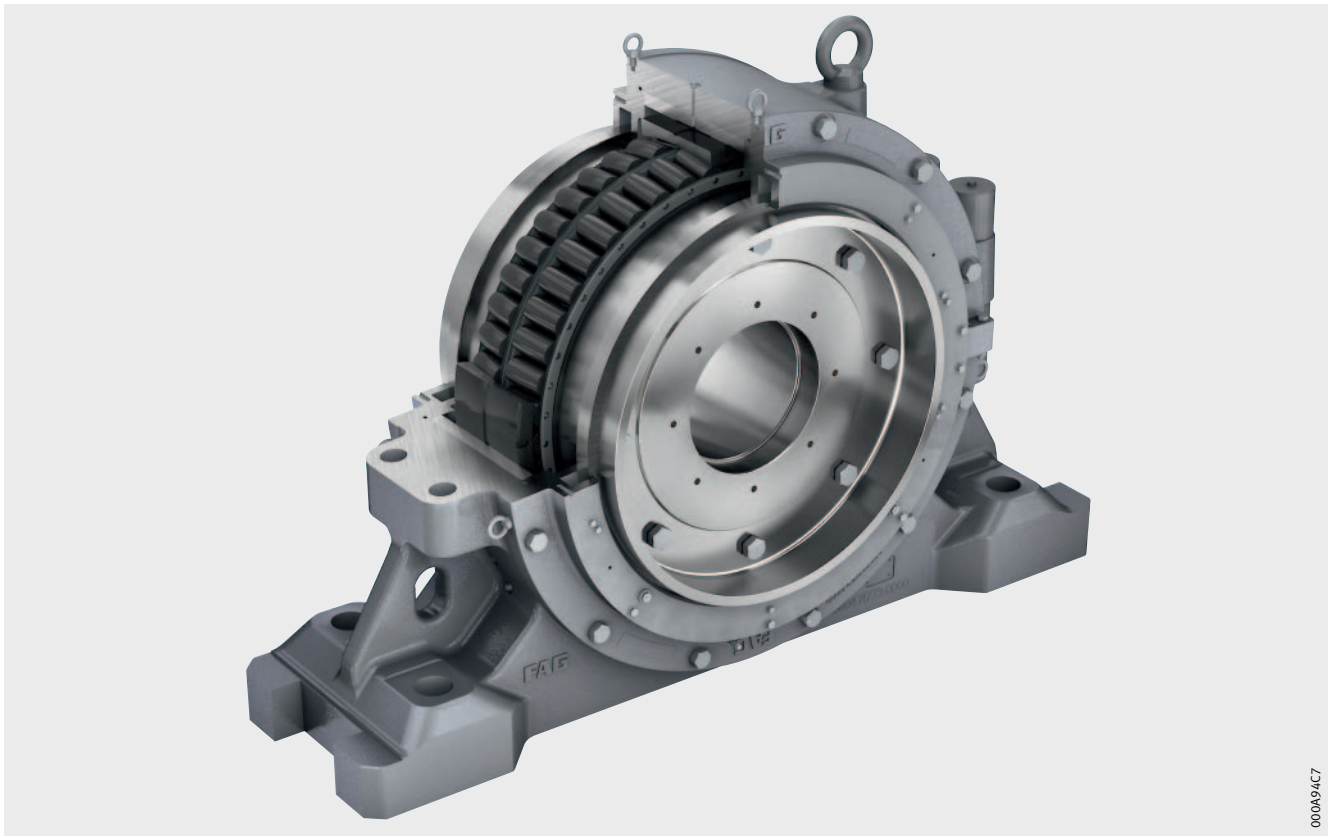
With an annual production volume of approximately 12 million tonnes, the Duisburg plants of leading steel-maker thyssenkrupp Steel Europe produce high quality flat steel.

In 2013 and 2014, the two converters in Bruckhausen were modernised.

The engineering work on the bearing arrangement was carried out by Schaeffler.

The scope of the project encompassed the housings for the locating and non-locating bearing sides, the two special spherical roller bearings and the sensor technology for condition monitoring of the bearing arrangement.

SCHAEFFLER



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Split plummer block housing KPGZ

Technical details of the converter

- Blowing process: BOF/TBM
- Heat weight: 380 t/400 t
- Capacity: 271 m³
- Trunnion diameter: 1 120 mm.

Housings

FAG plummer block housings of series KPGZ were specially adapted in line with customer requirements for these converters.

The housings are designed for an unsplit spherical roller bearing and for the use at a later stage of a split spherical roller bearing on the locating bearing side.

Trunnion bearings

Spherical roller bearings specially designed for the converter trunnion bearing arrangement are used as locating and non-locating bearings.

Special spherical roller bearings for converters

- Bore diameter: 1 120 mm
- Outside diameter: 1 460 mm
- Width: 335 mm
- Mass: 1 530 kg.

Split spherical roller bearing for converters (as replacement part)

- Bore diameter: 1 120 mm
- Outside diameter: 1 460 mm
- Width: 475 mm
- Mass: 1 930 kg.

Condition Monitoring

The solution includes Condition Monitoring of:

- the trunnion bearings by means of acoustic emission analysis
- the transmission of forces into the non-locating bearing housing by means of strain gauges
- the axial displacement of the non-locating bearing
- the vertical misalignment of the trunnions
- the gearboxes by means of oil particle analysis.

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