

Rolling bearings in the world's largest vertical roller mill

FAG



MVR 6700 C-6: The largest vertical mill in the world, producing in Barroso, Brazil

Gebr. Pfeiffer is one of the technology leaders in the field of cement grinding and hard milling. Vertical roller mills are used to grind cement raw material, cement clinker, blast furnace slag and pozzolan.

Vertical roller mills are one of the core items in cement plants and are used in particular for high and very high throughput rates.

Up to six grinding rollers are suspended over a grinding plate.

They form a parallel grinding gap and reach throughput quantities of up to 1400 t/h.

The MVR mill is the latest variant in vertical mills and is thus state of the art.

As a development partner to Gebr. Pfeiffer, Schaeffler is decisively involved through the delivery of bearings as core components in the function of these installations.

The world's largest vertical roller mill in Barroso (Brazil) is thus equipped completely with Schaeffler rolling bearings, including the heart of the machine, the grinding rollers.

SCHAEFFLER

Structure of the mill MVR 6700 C-6

- Six grinding rollers of cylindrical geometry that can be individually swung in and out
- Flat grinding plate, driven by six autonomous drive modules that can be individually disengaged
- Gas-carrying housing with nozzle ring and classifier.

Bearing arrangement of grinding rollers

- Extreme requirements especially on the bearings of the grinding rollers due to very high loads, vibrations and shock loads
- Design as locating/non-locating bearing arrangement with double row tapered roller bearing F-584359.TR2 in X arrangement ① and single row cylindrical roller bearing F-573048.ZL ②
- Bearings are analysed in detail using the in-house calculation program BEARINX. The operating clearance for the bearing arrangement is defined taking account of manufacturing tolerances and operating modes of the installation
- Tailor-made design for maximum load carrying capacity of bearings in the specified adjacent construction of the customer
- The bearings achieve maximum load rating and performance by means of a pin type cage or X-life quality.

Fits

- Bearing outer rings with circumferential load, tight housing fit P7
- Bearing inner ring with point load, loose shaft fit f6.

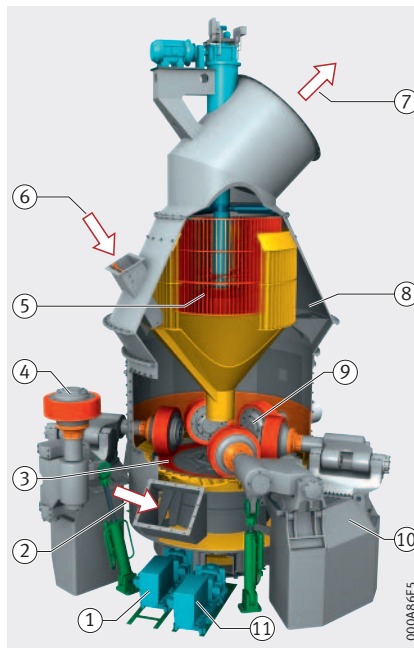


Illustration of a Pfeiffer MVR mill

Technical data

- Grinding roller diameter 2 500 mm
- Grinding roller speeds up to 45 min⁻¹
- Loads on individual grinding roller bearings:
 - Radial forces up to 2 800 kN
 - Axial forces up to 300 kN
- Basic rating life min. 80 000 h

Lubrication and sealing

- Grinding dust, process heat and heavy flow conditions in the equipment place extreme requirements on the sealing arrangements of the grinding rollers. The bearings are reliably sealed by means of air barriers and additional sealing rings.

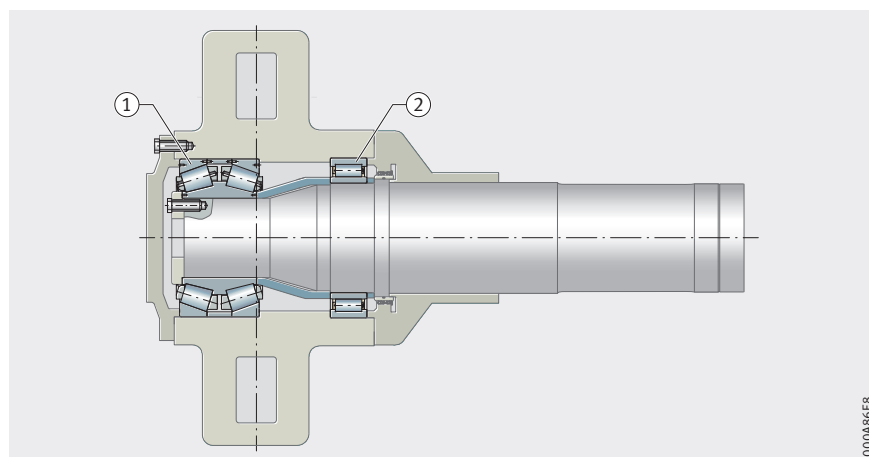
Legend for image of MVR mill:

- ① Up to six MultiDrive[®] modules as actively redundant drive system
- ② Hot gas
- ③ Parallel grinding gap
- ④ Rollers with individual swivel facility by means of hydraulic operating system for n-1 operation
- ⑤ SLS high performance classifier for high efficiency classification
- ⑥ Ground material
- ⑦ Fine particles
- ⑧ Optimised, free flow areas
- ⑨ Grinding rollers with lift-off facility
- ⑩ Space-saving twin support for largest possible maintenance corridors
- ⑪ Drive modules with individual replacement facility for n-1 operation

- Long bearing operating life requires good lubrication conditions and place high demands on the lubricant. The quality of bearing lubrication is ensured by filtration of lubrication and regular inspection.

Economical customer benefits

- The bearings are **ready to fit**; this means reduced mounting effort for the customer and end user
- Bearing dimensions specially matched to customer requirements
- Very high operational reliability
- Long operating life.



Bearing arrangement of a grinding roller

Schaeffler Technologies AG & Co. KG

Georg-Schäfer-Straße 30
97421 Schweinfurt
Germany

Internet www.schaeffler.de/en
E-mail faginfo@schaeffler.com

In Germany:
Phone 0180 5003872
Fax 0180 5003873

From other countries:
Phone +49 9721 91-0
Fax +49 9721 91-3435