SCHAEFFLER

Schaeffler Global Technology Solutions

Raw material extraction and processing

TAKRAF GmbH Leipzig, Germany

Development and Mounting of a Split Cylindrical Roller Bearing

TAKRAF GmbH can look back on nearly 200 years of experience in the fields of open cast mining equipment and bulk materials handling equipment. In the late nineties, TAKRAF developed a new generation of large gearboxes for bucket wheel excavators; currently more than 20 of them are in operation in mines all over the world.

Challenge for Schaeffler

One of the output shaft bearings in a bucket wheel gearbox was to be replaced without dismounting and opening the gearbox. The whole work had to be carried out, in an extremely confined space, within a few days during a scheduled shut-down of the bucket wheel excavator.

Schaeffler Solution

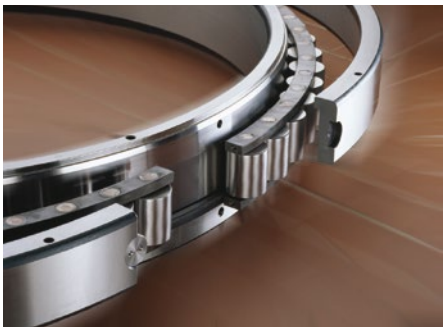
Schaeffler developed a bearing that is based on the split FAG cylindrical roller bearing FAG Z-531338.ZL. The bearing, which was made especially for this customer, consists of one regular (two-piece) split outer ring and roller/cage assembly each, but with a triple split inner ring. The segments of the inner and outer rings are made of through-hardened steel.

Technical Information about the Plant
Bucket wheel gearbox of a bucket wheel excavator
Capacity:
14,000 m3/h overburden
Drive power:
2 x 1250 kW
Output torque:
6 600 kNm
Weight:
80 000 kg
Speed:
990 / 3,61 min-1

LuK INA FAG

Professional mounting increases bearing life and equipment availability

To remove the inner ring segments of the old bearing special tools were made



FAG split cylindrical roller bearing simplify mounting process

Customer Benefit

Due to the solution developed by Schaeffler, the gearbox did not have to be dismounted completely and taken to a workshop. The bearing was replaced without quality losses on site during a scheduled shutdown. In this way, the amount of work and cost of the bearing replacement were reduced significantly.

What‘s special

To ensure that the bearing replacement would be carried out successfully, Schaeffler and TAKRAF worked closely together from the planning stage on. The preparations for every step of the dismounting and mounting procedures were made very carefully. Special tools for removing the inner ring segments of the old bearing from the housing and for removing the locking ring bolts on the inside of the bearing were made and then tested jointly by Schaeffler and TAKRAF experts at the workshop under simulated conditions.

Technical Information about the Solution
Bearing:
FAG cylindrical roller bearing Z-531338.ZL
Bore diameter:
1400 mm
Outside diameter:
1700 mm
Width:
225 mm
Mass:
910 kg
Dynamic load rating:
5 400 kN

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