

# SKF sealed spherical roller bearings increase service life by 100%

## SKF sealed spherical roller bearing

A lignite mine operator achieves over 100% increase in bearing service life with SKF sealed spherical roller bearings.

An open-cast mine operator in Germany mines lignite (coal) estimated to be 30 million years old. The mine runs around the clock, 365 days a year, extracting 600 million tons of material from the mine annually. 500 million tons of non-lignite material is returned to the extraction site to rebuild the mine. Every day, the company extracts approximately 240 000 m<sup>3</sup> of coal. Each level of the mine is 40 metres deep and 8 levels must be dug through before reaching the coal.

Lignite and other materials are transferred to and from the mine on conveyors. The company operates 250 km of conveyors with the longest conveyor section being 5.6 km. Each conveyor section includes approximately 40 bearing positions in the head and tail pulleys, and the bend rolls. The mine operator was using open spherical roller bearings, and experiencing continual problems with premature bearing failure due to the ingress of grit and contaminants into the bearing. To keep the bearings operating, large amounts of grease were being used, presenting additional concerns related to grease disposal, and German environmental regulations.



The mine operator's goals were to reduce operating costs by 3% per year, and to keep the bearings operating at least until the time when lagging rework was needed on the pulleys. SKF application specialists suggested a test of SKF sealed spherical roller bearings on the bend rolls.

The open spherical roller bearings on the bend rolls were replaced with SKF sealed spherical roller bearings (23228-2CS5/VT143). The housings were filled with grease, and a labyrinth seal was added at the end of the roller.

While the previous open bearings typically lasted an average of 730 days, the SKF sealed solution lasted more than 4 full years, resulting in a 100% increase in service life, and enabling the mine operator to achieve its goal of performing bearing maintenance at the same time as lagging (drum coating) rework. Additional benefits included the cost savings to dispose of used grease; and with SKF sealed spherical roller bearings, maintenance personnel were able to decrease mounting time. Mounting time was reduced from 4 hours with the previous open bearing, to just 2 hours with the SKF sealed solution.

| Performance comparison      | Previous solution<br>Open spherical roller bearing | SKF solution<br>Sealed spherical roller bearing, 23228-2CS5/VT143   |
|-----------------------------|--|---|
| <b>Bearing service life</b> | Approx. 2 years                                    | 4 years   |
| <b>Grease</b>               | Costs incurred for grease purchase and disposal    | Greased for life. No additional relubrication costs for things such as purchase or disposal of used grease. |
|                             | Maintenance time required for regular re-greasing  | Maintenance staff can now focus on more critical mine applications  |
| <b>Mounting</b>             | 4 hours  | 2 hours   |