SKF self-aligning solutions for continuous casters

Another SKF approach to improved roll line service life

SKF spherical roller bearing | CARB bearing

In continuous casters, thermal variations in the roll can induce internal thrust loads on the bearings, eventually resulting in bearing failure. To fight these stresses and extend service life, SKF offers two different self-aligning bearing system solutions:

- A combination of two spherical roller bearings
- A combination of a spherical roller bearing and a CARB toroidal roller bearing

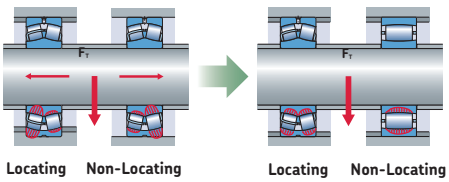
A combination of two spherical roller bearings

SKF spherical roller bearings are inherently robust and self-aligning. One spherical roller bearing acts as a locating bearing and the other as a non-locating bearing. The locating bearing is secured in the housing and on the shaft. The non-locating bearing moves axially on its seating in the housing when the roll expands or contracts.

A combination of a spherical roller bearing and a CARB toroidal roller bearing

The CARB toroidal roller bearing features a compact design combining the self-aligning capability of a spherical roller bearing with the axial displaceability of a cylindrical roller bearing. The spherical roller bearing is the locating bearing and the CARB toroidal roller bearing is the non-locating one.

Contrary to the conventional arrangement with two spherical roller bearings, the combination with a CARB toroidal roller bearing virtually eliminates sliding friction between bearing rings and seatings. This minimizes the risk of fretting corrosion, common with traditional bearing arrangements. The results are improved reliability and increased bearing and lubrication life.



Sealed variants

Both SKF spherical roller bearings and CARB toroidal roller bearings are available in sealed-for-life alternatives. The integral seals keep the lubricant inside the bearing and protect it from contaminants even under very tough operating conditions.

SKF self-aligning bearing systems: Comparative benefits

	Arrangement[1]	Arrangement[2]
Extended bearing life	X	X X
Reduced maintenance costs	X	X X
Reduced downtime	X	X X
Increased productivity	X	X X
Reduced operating costs	X	X X
Reduced axial loads	–	X
Reduced hazardous waste	X (sealed)	X (sealed)
Reduced lubricant consumption	X (sealed)	X (sealed)

[1] Combination of two spherical roller bearings
[2] Combination of a spherical roller bearing and a CARB toroidal roller bearing

For more information about SKF products and solutions for the metals industry, contact your SKF representative.

Applying SKF knowledge engineering to improve machine reliability and efficiency in the metals industry

Few environments can match the demands placed on equipment used in the metals industry, from continuous casters and vessels to travelling cranes and ventilation systems. SKF engineers work closely with steel mills to meet application challenges and deliver benefits they need to stay competitive.

These benefits include increased machine reliability, extended maintenance intervals and reduced costs, increased productivity, reduced energy consumption and optimized life cycle costing. Below is just one example of how SKF knowledge engineering helped a metals industry customer improve efficiency and profitability.

SKF saves Australian steel producer half a million Euro annually

In an ongoing technical partnership spanning 15+ years, SKF has been helping BlueScope Steel Australia (formerly known as BHP Steel), forge ongoing improvements to its continuous casters.

From triple ring to spherical roller bearings

Initially, the company asked SKF for help with segment rolls in two continuous casters. SKF replaced triple ring bearings with spherical roller bearings in the locating and non-locating positions. The redesign improved roll performance and increased bearing service life, so the company converted all roll positions in the segment. The result: an annual reduction in bearing purchases of €510 000.

The CARB solution for heavy loads

Over the next several years, SKF identified improvement opportunities in the lower segments. Overloading was the typical failure mode, due partly to internal axial loads on the bearings. SKF installed CARB bearings on one segment for a ten-month trial. The results proved so successful that some 500 CARB bearings were subsequently installed. In the three years after the initial trial, not one bearing failed.

Today, improvements like better heat treatment of the rolls, rotary joint improvements, together with ongoing SKF support, is helping the mill enhance machine reliability, maximize productivity and reduce costs.

SKF 360° Solution ROI calculations are from the SKF Documented Solutions Programme. Ask your SKF Authorized Distributor for more details.

*All numbers are rounded off and based on customer estimates. Your particular cost savings may vary.

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