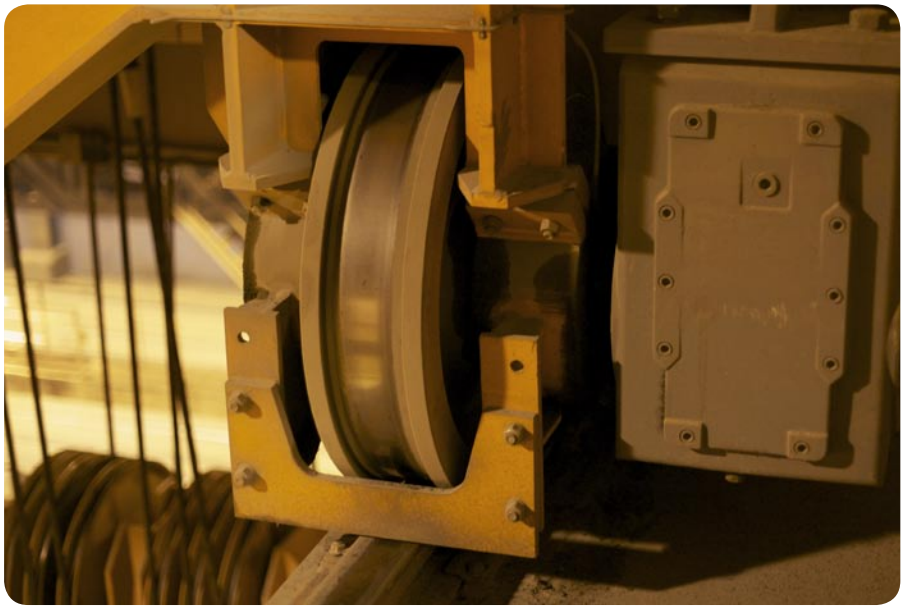
Steel industry
(iron and steelmaking plant)

Charge crane / traveling wheels

Engineering and feasibility study

Re-lubrication free solution
for traveling wheels



SKF re-lubrication free solution for traveling wheels increases safety and reliability of charge cranes

In a leading European steelmaking plant, excessive lubrication of the traveling wheels of a charge crane created safety issues and reliability problems. SKF engineering services and Solid Oil bearings provided a re-lubrication free solution.

The steel mill produces raw steel, black coils, wire rod, concrete reinforcing steel, rolled bars and billets, quarto plates, welded pipes and hollow sections.

The challenge

Excessive grease leakage

In the hot, abrasive environment of the steelmaking furnace plant, the traveling wheels of a charge crane needed to be continually lubricated to provide smooth operation. However, the frequent lubrication resulted in grease leaking onto the crane rails, thus affecting braking performance and creating safety issues when maintenance staff had to clean the dirt and excess grease from the rails. Wheel wear was an additional related problem. Aggressive particles from production became embedded in the excess grease, causing grinding between the rail and wheel. Frequent maintenance was required to address both the safety and wheel wear issues. In addition, the excess grease consumption and the need for disposal, presented environmental concerns.

Solid Oil bearing in traveling wheel

Operating data

- Speed: 0 to 50 rpm
- Operating temp: 40 °C on average, peak 95 °C
- Expected bearing service life: Minimum 10 years with new solution
- Environment: Heavily contaminated, metal particles
- Solution:
  - Solid Oil bearings. W64H
  - Solid graphite lubricator
  - Fan

Benefits

- Extended service life
- Improved efficiency
- Improved safety
- Less maintenance
- Reduced grease consumption

The solution

SKF re-lubrication free solid oil bearings.

In cooperation with plant maintenance engineers, SKF conducted a thermal analysis of the crane while in operation. Results showed that the heat exposure of the wheel bearing positions was acceptable for Solid Oil bearings, a solution that requires no re-lubrication. The Solid Oil bearings were completely interchangeable with the existing bearings, so installation was easily accomplished.

The gap between the Solid Oil bearing and the shield was filled with high-viscosity grease to provide a protective barrier against the ingress of dirt, water and other contaminants.

To minimize the wheel flange wear between the flange and the rail, a solid graphite lubricator was applied to the flange and rail interface of the crane wheels. SKF also included a fan to clean the excess graphite off the rail/wheel interfaces so that the braking was not affected.

The result

Enhanced safety, reduced maintenance and reduced grease consumption

The Solid Oil bearings have eliminated the problem of grease leaking from the bearings, and the time and cost related to re-lubrication and maintenance. The safety risks caused by excess lubrication leakage are no longer an issue.

By preventing grease leakage onto the rails, the crane has become more reliable. It brakes better and runs straighter. Longer bearing service life has also been achieved, with the Solid Oil bearings expected to perform for a minimum of 10 years, compared to the 6 to 10 year life of the previous solution. Additionally, the environmental impact of excess grease leakage has been eliminated.

To find out how an SKF re-lubrication free solution can benefit your application, contact your local SKF representative.

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