




SKF solutions for container cranes

Increasing uptime, safety and productivity



The Power of Knowledge Engineering



Need to optimize container crane performance?

Leave the heavy lifting to SKF.

Drawing on decades of material handling experience, SKF is helping port operators deal successfully with many of the factors impacting their business. In addition to environmental realities – salt, moisture and contaminants – these include increased demand on port capacity, resulting in a higher number of moves and added strain on equipment.

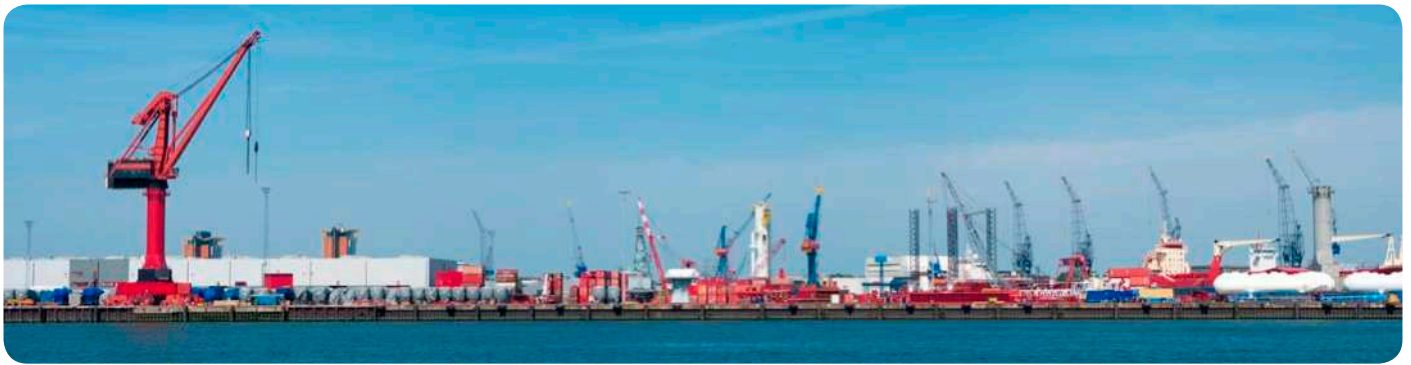
Driven by the need to reduce costs, operators are looking at energy efficiency, loading and offloading speeds and cycles, and automation trends that can reduce maintenance staff costs but require new levels of asset status knowledge. Increasingly, operators are focused on optimizing equipment life cycles and limiting capital investment. And, for ports in close proximity to populated areas, there is increased pressure to reduce noise, emissions and water pollution – all while maintaining even higher levels of safety.

SKF can help. From high quality components and automatic lubrication systems to advanced condition monitoring technologies, SKF solutions enable operators to optimize equipment use by addressing the reliability issues common with trolley and hoist drive lines, including hoist motors, reducer drums and sheaves. These solutions, proven in port facilities around the world, can help operators eliminate costly unplanned downtime and make optimum use of manpower resources.

A partner to port equipment manufacturers

In addition, SKF is working closely with manufacturers to develop the next generation of automated container handling equipment. From design engineering studios to crane control rooms, SKF offers advanced solutions for every stage of the container crane life cycle, helping manufacturers, operators and service providers:

- **Reduce unplanned downtime**
- **Increase productivity and availability**
- **Reduce manual maintenance costs**
- **Extend equipment life cycles**
- **Enhance worker safety**
- **Reduce life cycle operating costs**
- **Reduce environmental impact**



SKF port crane performance solutions – implemented successfully by leading manufacturers and port operators worldwide

SKF condition monitoring for container cranes



Since 2006, SKF has been performing periodic inspections of critical container crane components at one of Australia's largest ports. During scheduled downtime every three months, SKF performs vibration monitoring and analysis on the main hoist, trolley drive, and boom hoist motors and gearboxes of several cranes.

In one instance, SKF detected a drive end bearing problem on a cross travel motor. In another, SKF identified a critical defect on a bearing in the main hoist gearbox. Both times, the faulty bearing was replaced before causing any unplanned downtime.

SKF continuous online monitoring for gear shaft support bearings

SKF recently completed a three-year pilot program at the Yantian International Container Terminal (YICT), in Shenzhen, Southern China.

Providing continuous online monitoring on workhouse gearboxes on two cranes, SKF worked with YICT engineers, training them how to interpret the vibration signals correctly. Having detected no problems during the three-year period, YICT operators are pleased with the program and looking to expand it to other cranes in the port.



SKF Multilube automatic lubrication for straddle carriers



Sweden's Port of Gothenburg was experiencing frequent, unplanned downtime on its straddle carriers. A semi-automatic, semi-manual lubrication system was found to be providing inadequate

lubrication for many vehicle points, eventually leading to failed bearings and costly productivity losses.

The solution? SKF Multilube – an automatic, centralized lubrication system for equipment with multiple lubrication points. By providing proper lubrication for bearings as well as for sliding motion, SKF Multilube increased straddle carrier reliability and availability, allowing a corresponding reduction in unplanned downtime and maintenance demands.

SKF spherical plain bearings

In 1988, SKF worked with a major German material handling OEM on an electrically driven, mobile, full gantry jib crane. Put into service in Germany's Lübeck harbour, this 45-tonne crane was the world's first to be equipped with SKF spherical plain bearings with PTFE-coated sliding surfaces. Fitted to all the articulated joints of the jibs, the SKF bearings have been operating successfully in this application for over two decades and counting.



SKF container crane capabilities

1 Main hoist drive line needs and solutions

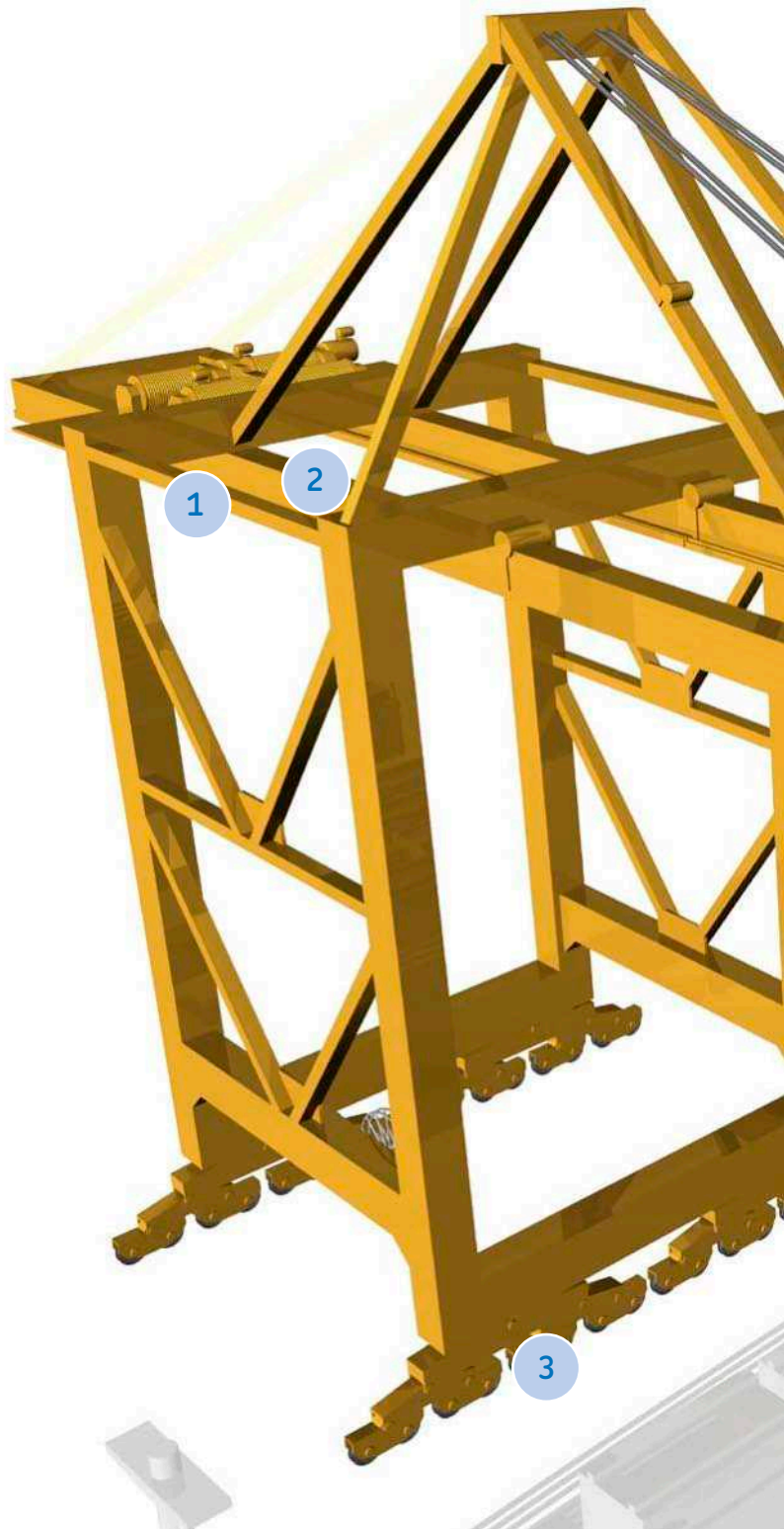
SKF can help improve performance and reduce downtime in main hoist drive lines through condition monitoring technologies, alignment services for motors and gearboxes, lubrication systems and lubrication analysis.

2 Boom hoist needs and solutions

Like main hoist drive lines, boom hoist reliability can be improved in a variety of ways, from gearbox and motor alignment products, couplings and bearings to upgrading of stator and rotor windings in electric motors.

3 Crane wheel needs and solutions

Whether flanged or flangeless, cross-traveling wheel arrangements subjected to friction, heavy loads and slow rotation can be improved with heavy duty bearing solutions and point lubrication.



4 Crane trolley needs and solutions

Optimizing the performance of wires and gears driving the crane trolley is critical to port productivity and safety, as operators sit under the trolley. SKF offers a range of solutions for this application, from gearbox lubrication systems and trolley wheel arrangements reducing wear on the rail to condition monitoring.

Bearings and units for reduced maintenance

- Sealed spherical roller bearings
- Solid Oil
- CARB bearings
- Deep groove ball bearings
- Full complement cylindrical roller bearings
- SNL housings
- Couplings

Services for increased crane reliability

- SKF Crane Asset Management
- Motor performance monitoring
- Motor insulation testing
- Lubrication analysis
- Vibration analysis
- Alignment services
- Engineering Consultancy Services

Maintenance products for easier and faster interventions

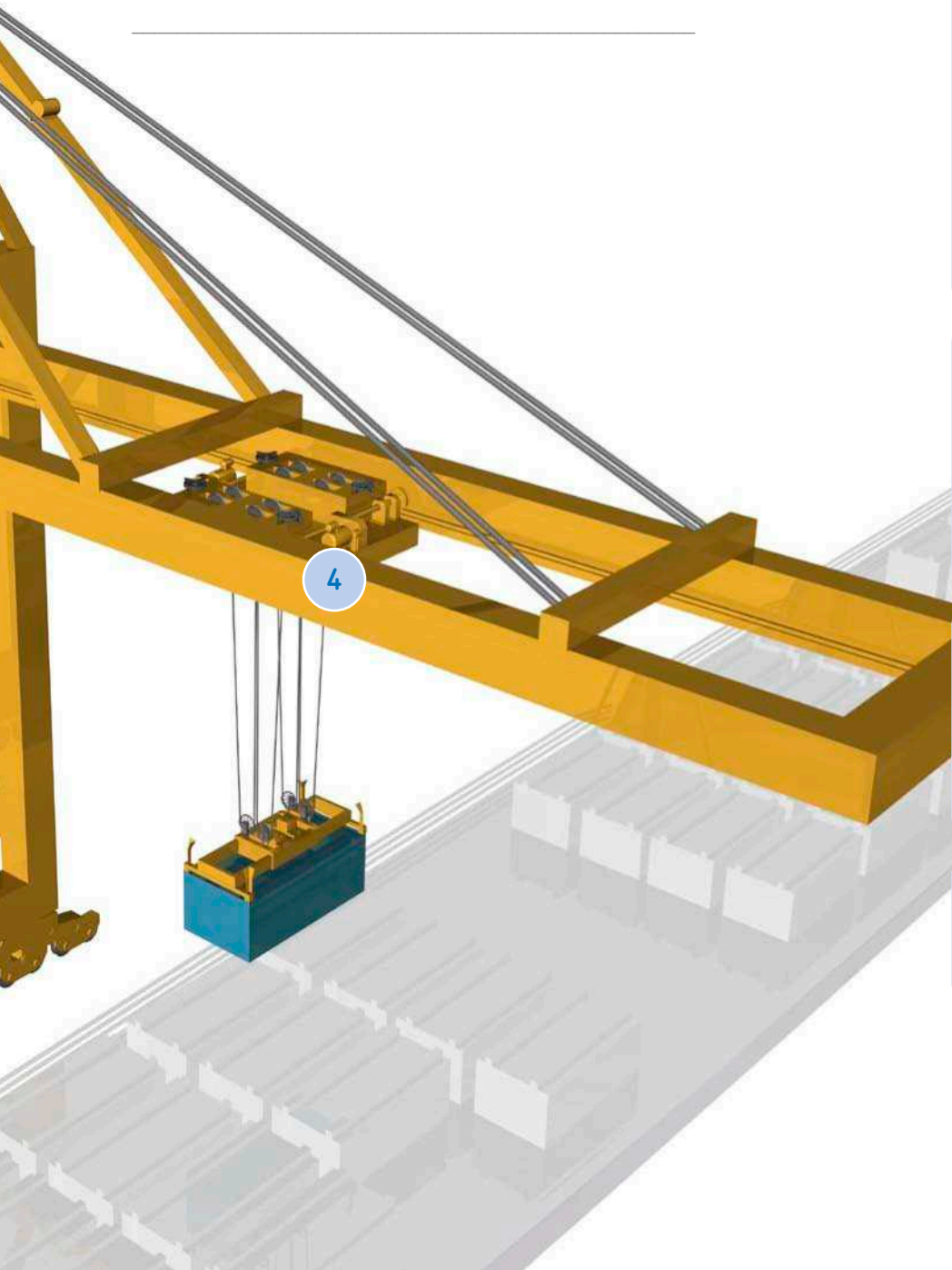
- SKF Drive-up Method
- Oil injection equipment
- Induction heaters
- SKF Vibracon
- SKF SPEEDI-SLEEVE

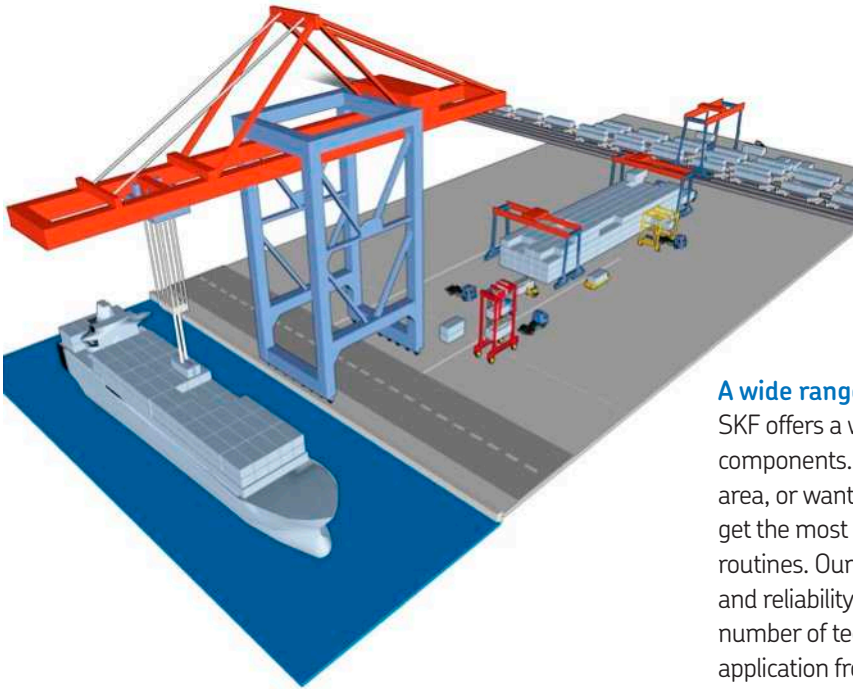
Lubrication systems for grease optimization

- SKF Multilube
- SKF Pro Flex
- Point lubricators
- Lube select

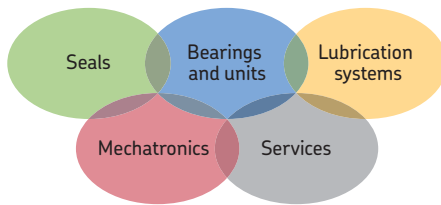
Seals

- Radial shaft seals
- Hydraulic seals





A wide range of solutions for container handling equipment
 SKF offers a wide range of products and services for critical crane components. Whether you need to address a specific problem area, or want to improve overall crane operation, SKF can help you get the most out of your port equipment and maintenance routines. Our contribution to your facility's or product's efficiency and reliability benefits from industry-leading expertise in a number of technical areas (see below), enabling us to view your application from a systems perspective to achieve asset efficiency optimization.



The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

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