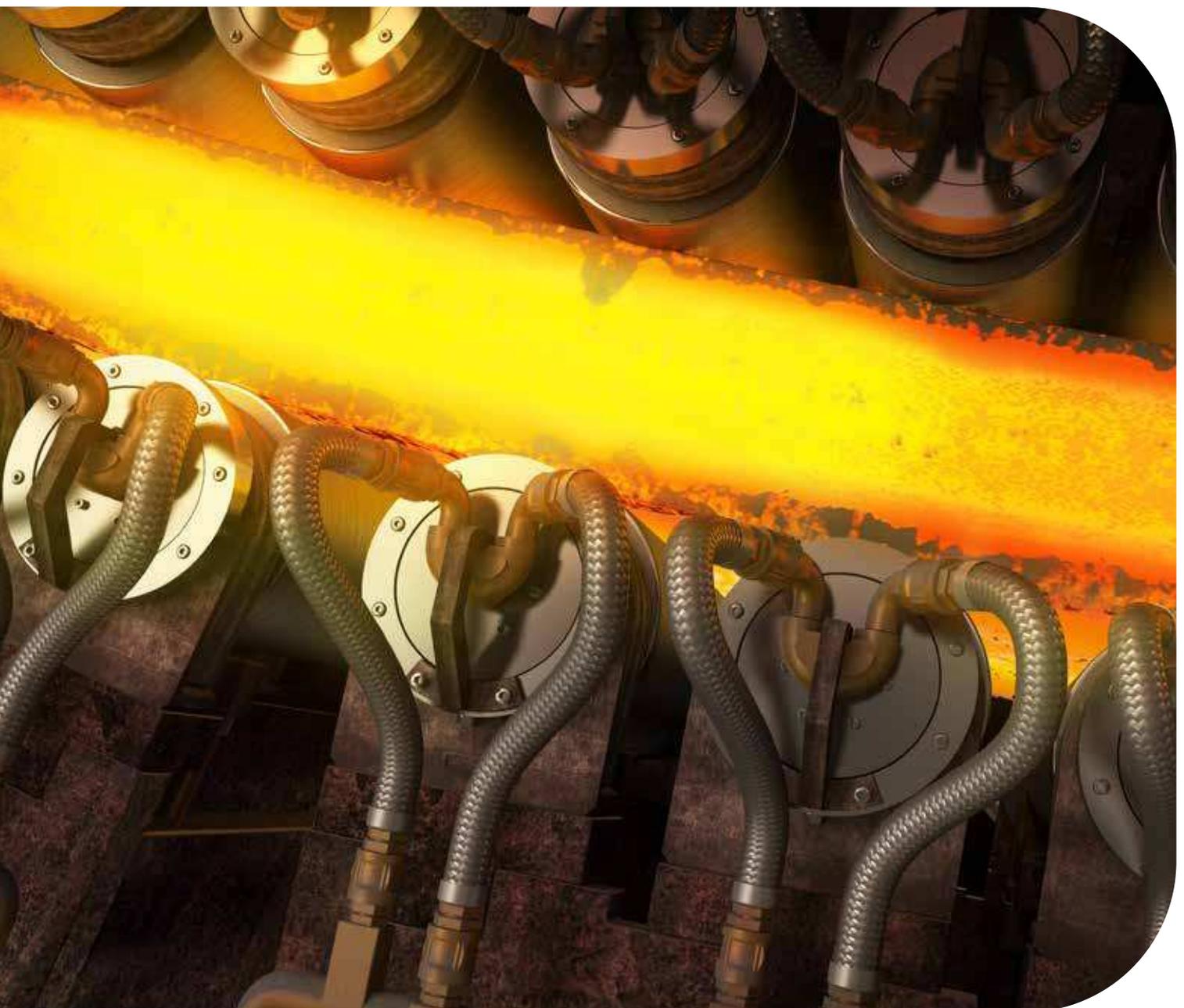




SKF ConRo

A proven solution for reducing downtime, costs and the environmental impact of slab caster operations



The Power of Knowledge Engineering

Combining knowledge, technology and service



Slab casting operating conditions are extreme

High temperatures and highly abrasive scale. Leaking grease, spraying water and steam. Slab casting operating conditions put roll lines at constant risk of failure, making roll line operations costly.

Centralized lubrication systems combat excessive contamination by keeping bearing positions constantly supplied with grease. It requires a large quantity of grease, and constant maintenance. The slow speeds and massive loads placed on the roll line create challenging operating conditions for bearings.

In addition, the mix of grease, mould powder and contaminants that gets baked onto bearing housings can cause slab surface imperfections, block roll lines and lead to quality problems.

The substantial costs of bearing replacements, unplanned shutdowns, grease disposal, grease lubrication and water cleaning systems all reduce profitability. By combining a customized, relubrication-free roll line unit with SKF services and support, SKF ConRo can help maximize your mill's productivity and increase profitability.

Services to optimize roll line performance

Improve slab caster uptime and save with SKF ConRo

Developed to improve critical aspects of roll line reliability, SKF ConRo enables a cycle of continuous improvement for continuous slab casters. The SKF ConRo solution features three key elements:

High performance relubrication-free roll line – this robust, modular roll line unit eliminates the need for relubrication while improving reliability and decreasing environmental impact.

Continuous engineering optimization – SKF ConRo includes an initial engineering optimization study, and throughout the equipment's life cycle SKF is further optimizing the performance.

Remanufacturing service – even the most robust roll lines eventually require refurbishment, so SKF ConRo includes remanufacturing services to return your roll line to the same condition so it can deliver the same performance as a new one.

At work in slab casting operations worldwide, SKF ConRo allows mills to cut costs per tonne and reduce environmental impact

Operational savings (based on field experience)

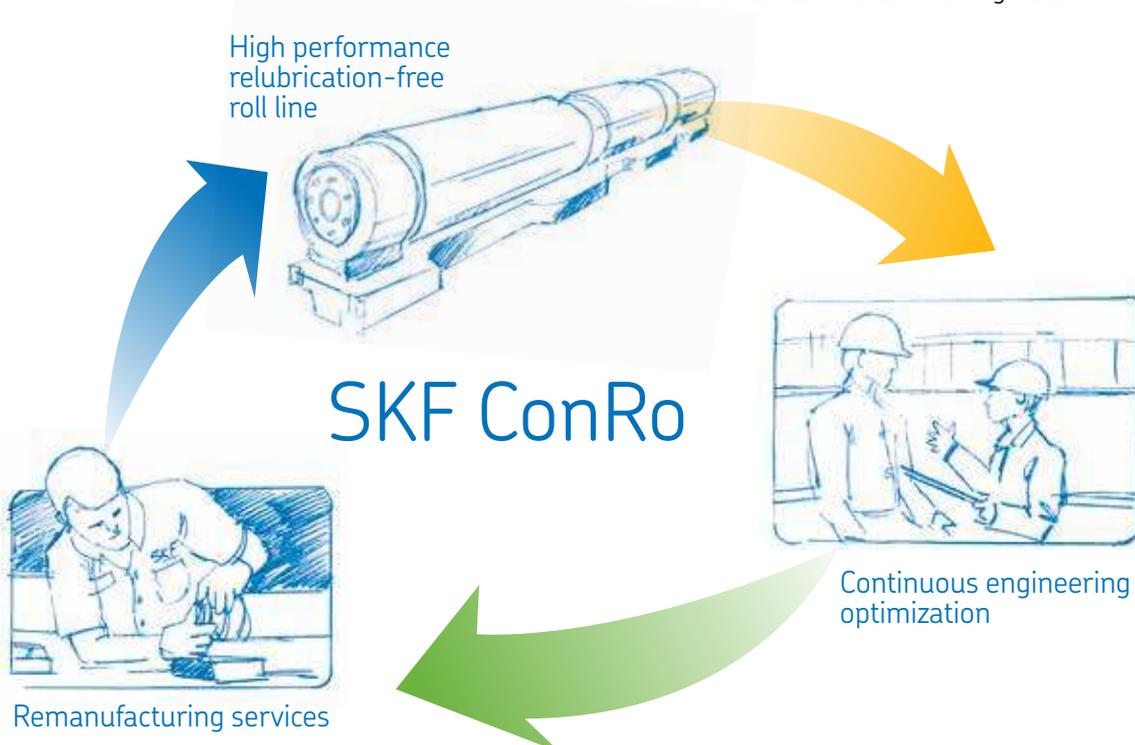
- Cut roll line operating costs by up to 50%
- Reduce unplanned stops by as many as two per year
- Significantly increase roll line service life
- Replacement of roll lines up to 30% faster during maintenance stops
- Reduce planned and unplanned downtime

Lubrication savings

- Cut roll line grease use by 99%
- Eliminate roll line lubrication systems and costs
- Reduce cost of grease disposal

Environmental savings

- Reduce CO₂e – 600 tonnes less per year per continuous caster based on SKF calculations
- Reduce hazardous waste
- Grease use nearly eliminated in roll line units
- Fewer contaminants in cooling water





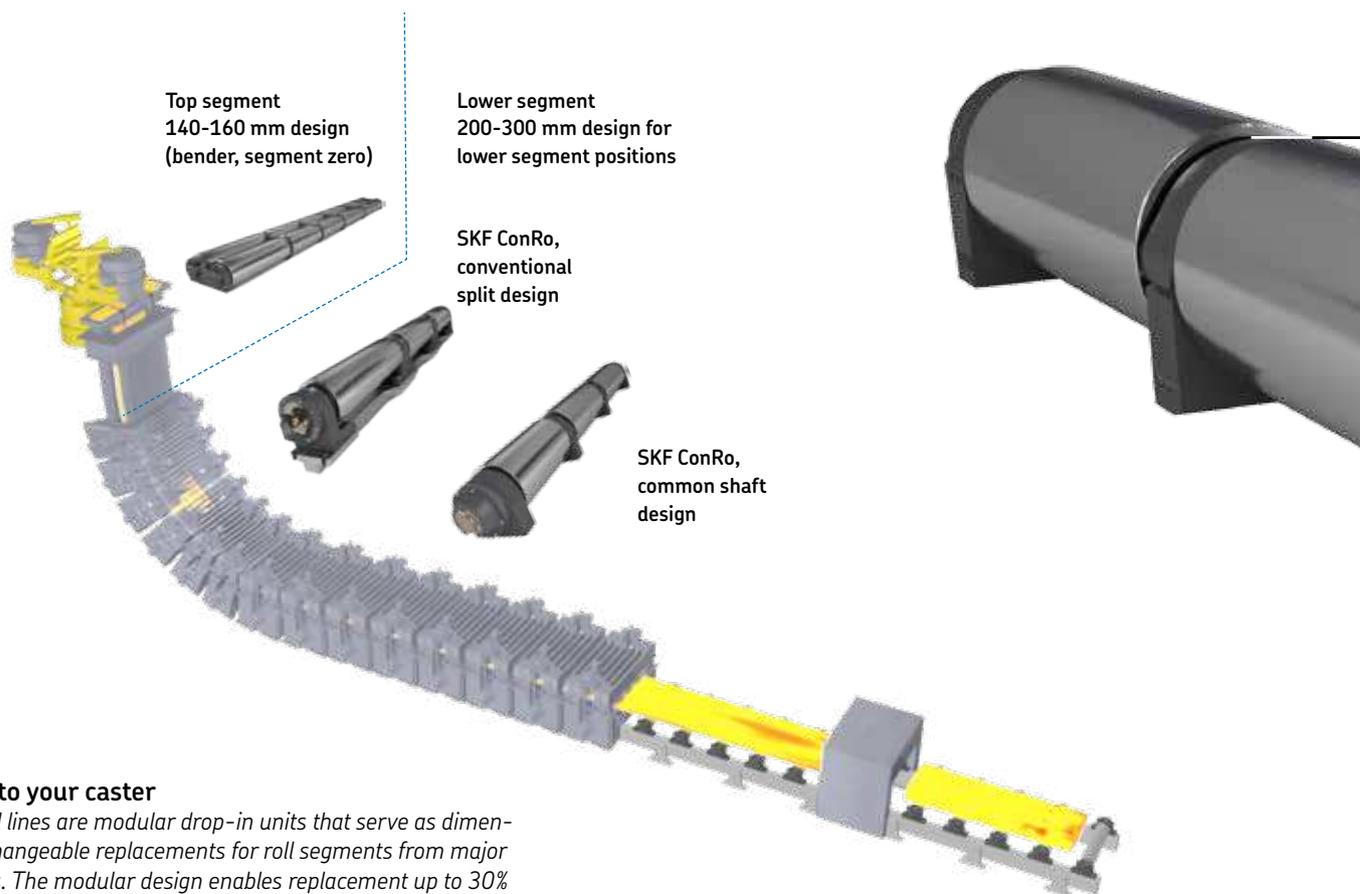
SKF ConRo: an integrated solution for

High performance relubrication-free roll line

Combining SKF competences in bearings, seals, lubrication, process control and application engineering, the SKF ConRo solution is a unique modular roll line unit for slab casters.

To help compensate for misalignment, SKF ConRo units are equipped with the sealed SKF self-aligning bearing system. The bearings are factory-lubricated with a high quality, high-temperature grease. Once in operation, they require no additional lubrication.

By eliminating the need to relubricate the bearings, SKF ConRo saves all the costs of installing, operating and maintaining a centralized relubrication system as well as the costs of replacement grease. Scale build-up on the outside of the bearing housing is reduced, as is the impact of waste grease on the cooling water system.



Top segment
140-160 mm design
(bender, segment zero)

Lower segment
200-300 mm design for
lower segment positions

SKF ConRo,
conventional
split design

SKF ConRo,
common shaft
design

Customized to your caster

SKF ConRo roll lines are modular drop-in units that serve as dimensionally interchangeable replacements for roll segments from major manufacturers. The modular design enables replacement up to 30% faster than those with conventional rolls, allowing maintenance teams to spend more time on other tasks.



continuous slab casters

Continuous engineering optimization

The SKF ConRo solution begins with a comprehensive client needs analysis that focuses on your mill's specific application requirements.

The analysis allows SKF to fully customize the roll lines to your specific continuous casting machine variant and provide a service life estimate. It also lays the groundwork for the continuous engineering improvements that can increase roll line service life and improve product quality.

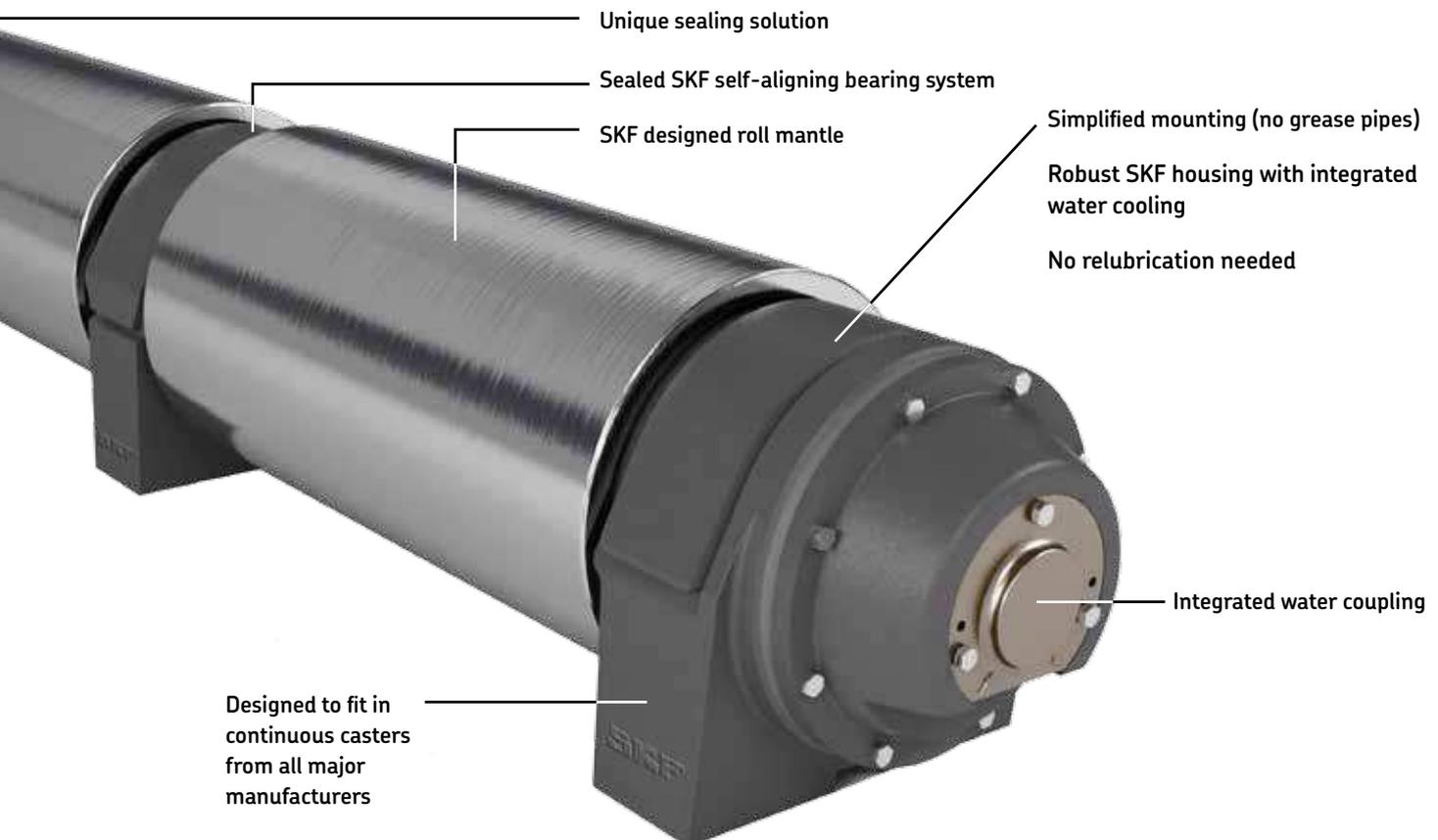
Once operational, SKF ConRo roll line units are re-evaluated during scheduled remanufacturing services to assess performance and uncover more opportunities for continuous engineering optimization.

Remanufacturing service



Following the appropriate service interval for your mill, SKF ConRo roll line units are removed and refurbished, either on-site or at the nearest SKF remanufacturing facility.

SKF engineers evaluate the condition of each roll line after operation so the remanufactured unit will deliver at least the same service life as an all-new roll line. Evaluating all roll lines enables continuous process optimization improvements. The remanufacturing process itself is continuously improved by SKF global engineering knowledge.





Proven cost and environmental savings

Cut operating costs per tonne

A robust, relubrication-free solution, SKF ConRo extends bearing service life while enabling substantial reductions in grease purchase and disposal costs. Reduced maintenance demands also help reduce operating costs and increase productivity. The result: SKF ConRo cuts roll line operating costs by up to 50% versus conventional roll lines (→ fig. 1).

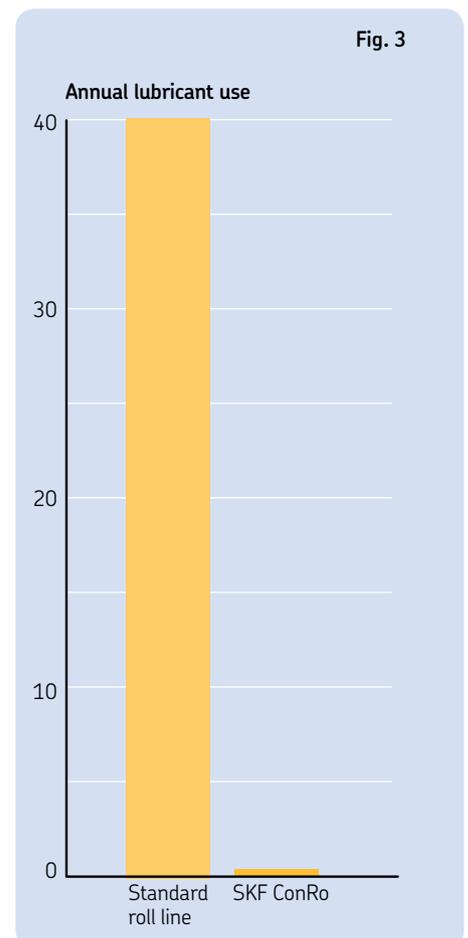
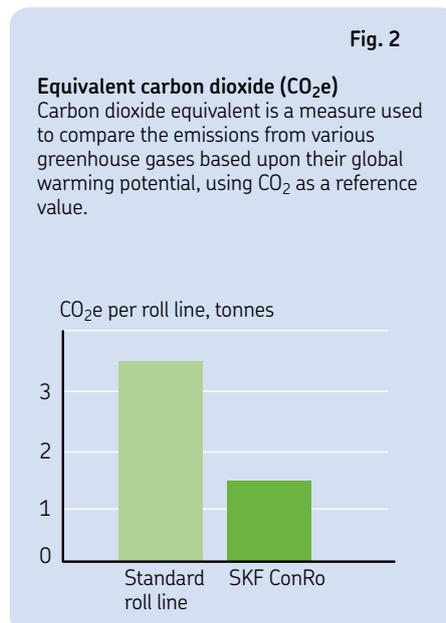
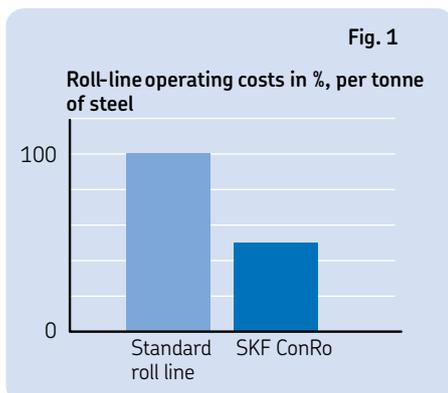
Reduce CO₂ emissions

By eliminating the need for relubrication and extending bearing and roll line service life, SKF ConRo can save an estimated average of 1,5 tonnes CO₂ emissions per roll line, per year. In an average-sized continuous casting machine with 400 roll lines, this savings means an annual reduction of approximately 600 tonnes of CO₂ emissions (→ fig. 2).

Cut grease use

SKF ConRo does not require relubrication while in service – grease is used only during the initial installation. For a typical two-strand slab caster using conventional rollers with grease-purged bearings, this translates to a 99% reduction (→ fig. 3), or a yearly reduction from about 40 tonnes to 400 kg!

The diagrams are based on the following typical operating conditions: Steel manufacturer with two-strand continuous caster machine of dimensions 1 900 x 220 mm and annual production of 2,8 M tonnes.





Real-world results

German steel mill boosts output and cuts downtime

A German steel mill needed to increase reliability in continuous slab casting and chose the SKF ConRo solution. The reliability targets were met and roll line operating costs were cut by 50%.

An additional benefit of the installation of SKF ConRo was that the interval between planned maintenance stops was increased from every 6 weeks to every 10 weeks resulting in increased production and reduced maintenance costs.

Unplanned stops occurred less frequently as well.

Read the full story at skf.com/ConRo



A German steel mill achieved 50% lower operating costs and almost doubled the time between planned maintenance after installing SKF ConRo.

Baosteel more than doubled roll line service life

Baosteel in China equipped a continuous slab caster with SKF ConRo and increased the service life of the roll lines by 250%. As a result, they have experienced increased quality as well as reduced costs.



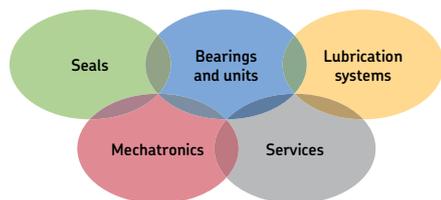
“I believe that the SKF ConRo solution will help Baosteel in maintaining production consistency, cost effectiveness and renewability”

Lao Zhaoli,
Deputy Manager,
Equipment Maintenance Department at Baosteel



Scan this QR-code to watch an SKF ConRo video on YouTube.





The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.



SKF BeyondZero is more than our climate strategy for a sustainable environment: it is our mantra; a way of thinking, innovating and acting.

For us, SKF BeyondZero means that we will reduce the negative environmental impact from our own operations and at the same time, increase the positive environmental contribution by offering

our customers the SKF BeyondZero portfolio of products and services with enhanced environmental performance characteristics.

For inclusion in the SKF BeyondZero portfolio, a product, service or solution must deliver significant environmental benefits without serious environmental trade-offs.

SKF ConRo is included in the SKF BeyondZero portfolio because they nearly eliminate grease consumption and significantly reduce CO₂ emissions.

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