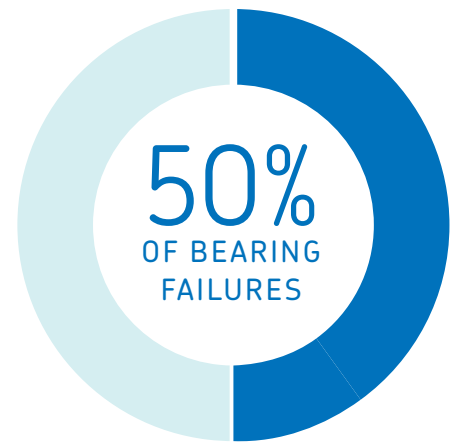


Improve plant maintenance

With SKF and Lincoln automatic lubrication systems for the food and beverage industry



Poor manual lubrication causes up to 50% of all bearing failures



Consider your current costs for manual lubrication:

- Production value per hour?
- Number of lubrication-related repairs?
- Downtime and loss-of-production cost per hour?
- Average parts cost per repair?
- Average man hours per repair?
- Average man-hour cost?
- Lubrication frequency per week?
- Time required lubricating equipment with Lock-out /Tag-out procedures?
- Cost of lubricants and lubricant management?
- Number of accidents caused by manual lubrication tasks?



Consistent lubrication is vital to the life of bearings, gears and chains

Impacts of improper lubrication

Like any mechanical system, moving parts in a food and beverage plant need proper lubrication to function optimally.

Contamination, moisture, high temperatures and humidity are all threats to bearing, chain and gear service life.

Most time contamination is related to how the bearing is lubricated or to the integrity of the seal, which are linked to poor manual lubrication practices.

Failure to properly lubricate each lubrication point on every machine can have a negative impact on schedules, maintenance costs and machine performance. But with the right lubrication solution you can create new opportunities to increase uptime and productivity.

The right lubrication solution for your needs

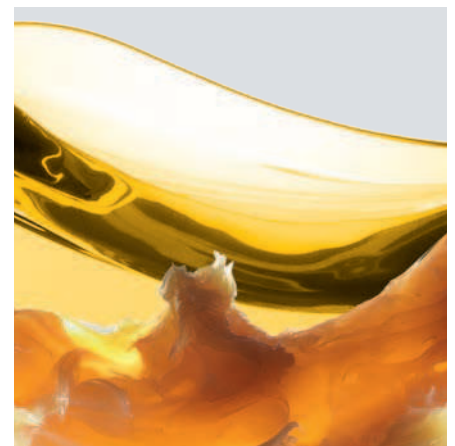
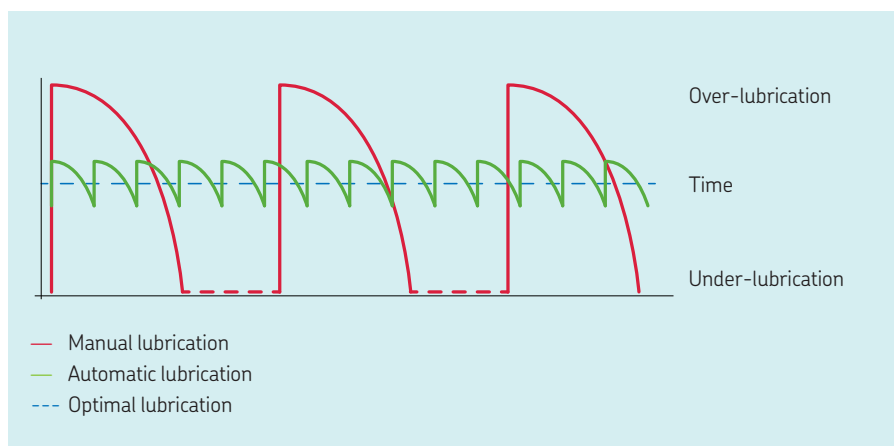
Lubrication system components help to ensure that processing operations run properly. Using the right lubricant is just as important as having a reliable lubrication system. SKF provides lubrication solutions that are tailored to the specific characteristics of each job.

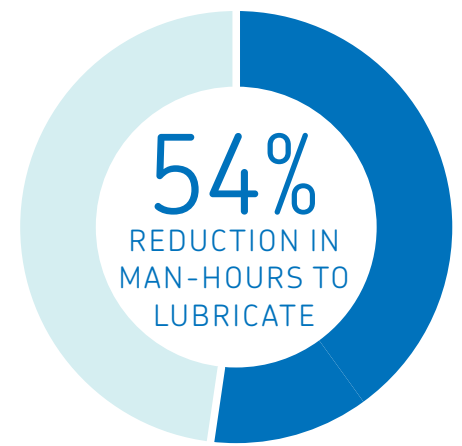
Our advanced tools and technologies include SKF Life Cycle Management – a proven approach to reduce total cost of ownership for machinery at every stage, from specification and design to operation and maintenance.

How it works

SKF and Lincoln automatic lubrication systems supply the correct amount of lubricant at the best time – while the asset is in motion.

The SKF Lubrication Management programme helps prevent the most frequent failure modes occurring in an industrial plant related to lubricant contamination, chemical degradation or cross contamination.





Improve productivity and profitability by:

- reducing unplanned downtime and production interruptions
- reducing labour costs
- extending repair and maintenance intervals
- reducing parts replacement and spare parts inventory



Minimize environmental impact by:

- eliminating over-lubrication
- reducing energy consumption
- reducing lubricant consumption
- reducing waste



Improve worker health and safety by:

- eliminating manual lubrication of difficult-to-access points or of points in demanding areas
- fewer accidents

Realize the true potential of lubrication for your application

Friction and wear occur across the entire delivery chain. Efficient lubrication is critical for each rotating machine component, and chains and conveyors need special treatment. Independent from your final product, SKF lubrication solutions support all moving parts in your machines.

Breweries and bottling plants

The beverage industry is becoming more competitive. Growing consumption demands 24-hour production that leaves little time for maintenance stops, so maintenance tasks must be done while equipment is operating. Targeted at above 80 percent, Overall Equipment Effectiveness (OEE) often is around 60 percent, and machinery breakdowns dramatically affect availability. However, automating essential tasks like lubrication eliminates human mistakes, simplifies lubrication management, reduces lubricant consumption and enhances line efficiency.

Dairy industry

The dairy industry is one of the most demanding food and beverage segments. The risk of bacterial growth spoiling the milk requires complex processing, filling and packaging techniques. Lines must be kept moving although lubricating the complex machinery can be difficult or dangerous. Regular exposure to moisture and cleaning agents lead to lubricant loss in the bearing and chains. Automatic lubrication systems help to ensure continuous and precise supply of lubricant and avoid internal corrosion.

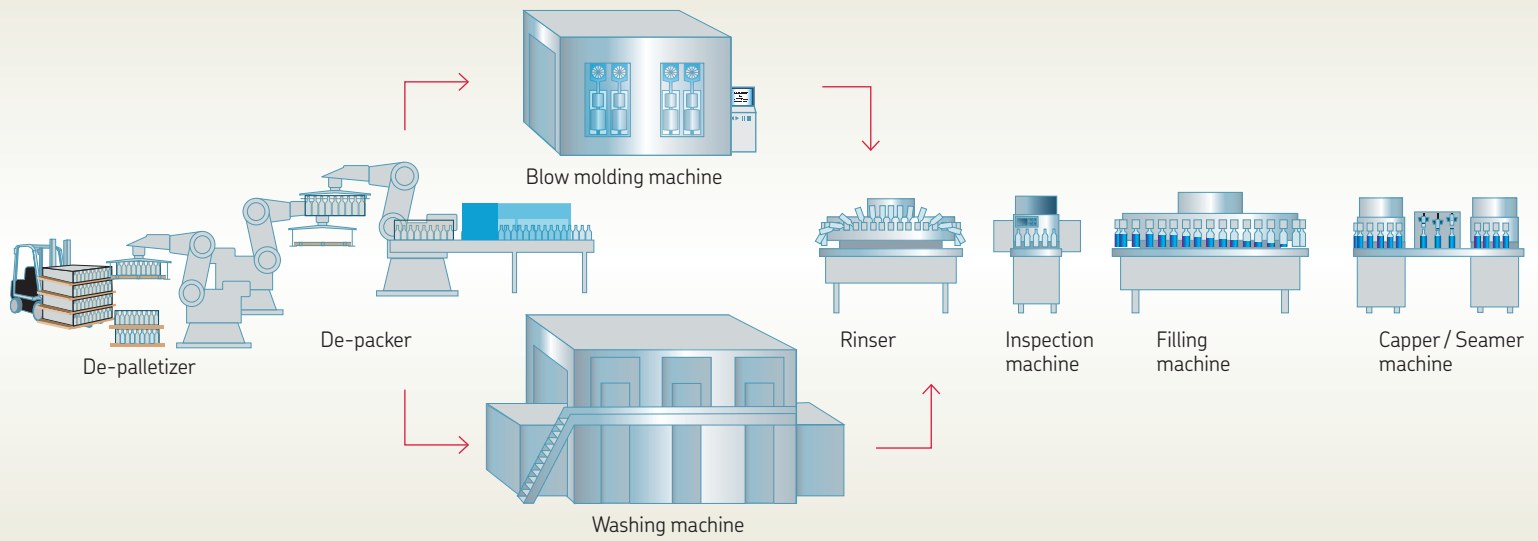
Bakery and confectionery

Bakery and confectionery production lines comprise mass-production machinery, which breakdown represent high product losses and long time for re-startup. Bearings, chains and guides are exposed to extreme temperatures and moisture. Conditions that accentuate the need of first-class lubrication.

Fish, meat, fruit and vegetable processing

Meat, fish, fruit and vegetable industry offer a wide range of different processing possibilities as for example sorting, cleaning or separating. An increasing global consumption, higher consumer expectations as well as a more efficient production lead to new processes and modern technologies demanding best maintenance practices. The SKF portfolio ranges from the most accurate lubrication, that avoid product contamination, to the most robust greasing systems that help to reduce unplanned production interruptions.

... and many more



Breweries and bottling plants



Blow molding machines

Challenges:

- Complex machine with different types of moving components (bearings, gears, cams, etc.)
- High number of lubrication points with different grease demands in transfer carousels, blowing wheels, sorting screws, etc.
- High temperatures and rotating speeds
- Difficult-to-access lubrication points with some inaccessible while machine is running

Solutions:

- Progressive lubrication systems for grease



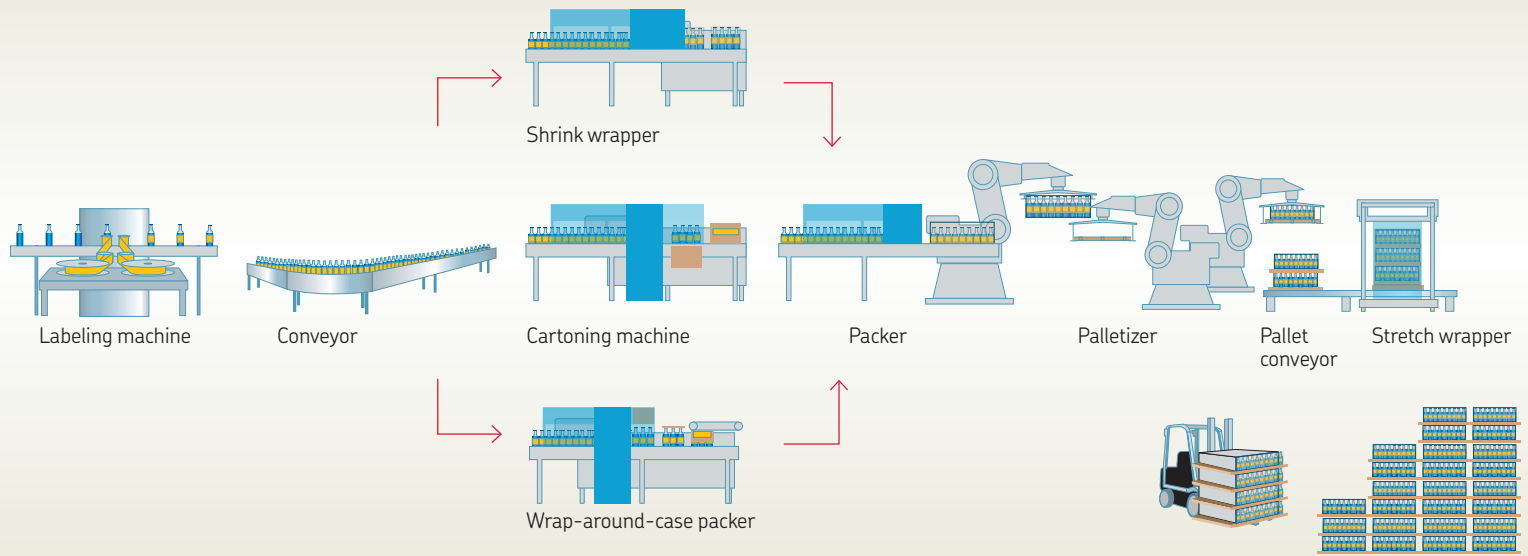
Washing machines

Challenges:

- Humidity, machine vibration and poor lubrication point access make manual lubrication difficult
- Lubrication points of moving parts located in the in-feed and discharge areas require regular greasing
- 24-hour operations need automatic lubrication for lubrication points in difficult-to-access locations or in moving parts for safety reasons
- Water and contaminants inside the bearing increase corrosion

Solutions:

- Progressive lubrication systems for grease enhance sealing to prevent ingress of moisture and contaminants into the bearing



Filling machines

Challenges:

- Numerous gear wheels, bearings and sorting screws cannot be lubricated manually due to difficult access or safety reasons
- Up to 50 lubrication points; many of which are in rotating mechanical parts
- Presence of water and regular washings reduce lubricant inside the bearing, increasing the potential for contamination

Solutions:

- Single-line or progressive lubrication systems for grease provide accurate lubrication and can create a sealing effect to prevent water, detergents and contaminants from entering the bearing
- Stainless steel progressive metering devices



Conveyors

Challenges:

- Manual lubrication of hundreds of bearings is time consuming
- Routine washings reduce the amount of lubricant in the bearings
- Flat-top chains demand high volumes of water; inadequate lubrication of chain surfaces generates friction, wear, higher electrical consumption and unplanned downtime, as well as increased costs for spare parts

Solutions:

- Progressive or sectional grease systems with stainless steel metering devices provide accurate lubrication and improve the sealing effect to prevent humidity and contaminants from entering the bearing
- Single-line systems for dry lubrication of flat-top chain surfaces and guides



Shrink and stretch wrappers

Challenges:

- Shrink wrappers require precise lubrication to avoid product contamination; different dosing requirements for diverse mechanical parts often results in lack of lubrication due to omission
- Moving parts in ovens require special care because of high temperatures
- Stretch wrapper drive gears are difficult to access and challenging to lubricate due to 24-hour operation

Solutions:

- Progressive lubrication systems for grease applications
- Oil lubrication for oven chains

Dairy industry



Milk carton-filling machines

Challenges:

- Regular exposure to moisture and cleaning agents during wash-downs leads to lubricant loss in the bearings
- Complex machine with difficult-to-access lubrication points and moving parts (i.e. sealing and cutting area or final folding module)
- Precision machine requires accurate lubrication to avoid lubricant leakage and product contamination, as well as to preserve bearing life

Solutions:

- Single-line oil lubrication systems



Forming / Filling / Sealing machines

Challenges:

- Numerous chains and alternative movements of guides must be lubricated
- Lubrication points located in areas with poor accessibility and fast moving parts
- Low-cost maintenance requirements

Solutions:

- Progressive lubrication systems for grease
- Single-line oil or fluid grease lubrication systems for bearings and guides
- Oil lubrication systems for chains



Freezers / Accumulators

Challenges:

- Friction between chains and guides causes wear and leads to downtime for part replacement

Solutions:

- Dry lubrication systems

Bakery and confectionery



Ovens, proofers and cooling tunnels

Challenges:

- Humid operating conditions and hygienic wash-downs cause premature chain and bearing failure due to corrosion and contaminants entering the bearing
- Difficult-to-access chains experience inadequate and irregular lubrication cycles via time-consuming manual lubrication
- Accurate lubrication is required to avoid product contamination
- Extreme temperatures in ovens require special and expensive lubricants

Solutions:

- Airless chain lubrication systems for slow chains
- Spray or brush systems for fast chains
- Progressive systems for grease improve the sealing effect in bearings and provide stable and accurate feeding to avoid oil bleeding and separation from grease



Chocolate molding lines

Challenges:

- Different temperatures, dust and product resting on moving parts
- From the time perspective, linear movements have to be in parallel with the chocolate depositors to guarantee an error-free cavity filling
- Hygienic wash-downs cause premature chain and bearing failure due to corrosion and contaminants entering the bearing
- Long, difficult-to-access chains experience inadequate and irregular lubrication cycles via time-consuming manual lubrication

Solutions:

- Airless chain lubrication systems for slow chains
- Progressive systems for grease



Cartoning machines

Challenges:

- Complex and continuous movement of different mechanical components such as chains, bearings and linear guides
- Poor accessibility to mechanical parts requiring lubrication

Solutions:

- Single-line systems for oil
- Progressive systems for grease



Fold wrapping machines

Challenges:

- Lubricating many mechanical parts with alternating movements like cam discs is challenging due to uneven distribution of lubricant when machine is not in operation
- Lubrication points are located in moving parts

Solutions:

- Single-line systems for fluid grease

Fish, meat, fruit and vegetable processing



Slaughtering house

Challenges:

- Dirt, water and extreme temperatures
- Engineered chains transporting uneven loads
- Accessing the many lubrication points in overhead conveyors is time consuming with manual lubrication
- Risk of product contamination if lubrication is not executed accurately

Solutions:

- Airless or grease lubrication for overhead conveyors
- Progressive systems for machinery



Sterilizers, retorts and cookers

Challenges:

- Manual lubrication of chains within hydrostatic sterilizers is time consuming due to significant number of chain links and represents a safety risk when chains are moving
- Operating chains experience temperature extremes resulting in lubricant washout; dirty product can cause labeling issues or reworking

Solutions:

- Automatic grease injection systems enable lubrication of each chain link without stopping the chain
- Progressive grease systems for rotary retorts and bearing lubrication in the hydrostatic sterilizer



Seamers

Challenges:

- Due to its high-speed processing, the gearbox is stressed and requires lubrication and cooling
- Typical oil circulation systems generate a top-down oil flow that can cause product contamination

Solutions:

- Oil circulation systems for gear drives
- Progressive or single-line grease lubrication systems for guides



Thermoforming / Filling / Sealing

Challenges:

- Lubrication of chains carrying plastic film requires precision to avoid product contamination

Solutions:

- Oil and air lubrication systems

Grain processing



Milling machines

Challenges:

Milling machines:

- Milling machines are critical in the flour mill as they define the plant's yield and efficiency
- Bearings require precision lubrication and have high energy consumption
- Tough competitive situation requires short return on investment

Pellet mills:

- These machines are widely used in feed pellet production but also in grain or oil processing
- Roll and main bearings must be lubricated regularly in order to achieve expected bearing life
- Grease consumption can be optimised by equipping the machine with the appropriate lubrication system

Grain port loaders:

- Exposure to open air agents by the sea challenges manual lubrication
- Numerous, difficult-to-reach lubrication points
- Due to machinery size, high lubricant dosages may be required

Solutions:

- Progressive grease lubrication systems for milling machines
- Dual-line or sectional lubrication systems for port grain loaders

Sugar industry



Milling trains

Challenges:

- Because processing sugarcane is a seasonal industry, every stop during the production season represents loss of income
- Harsh working conditions, including dirt, moisture, high temperatures, high loads and soil rests
- Poor accessibility and extensive distribution of lubrication points across the mill
- High number of lubrication points demanding varying dosages and lubricants makes lubrication management complex; special lubricants often are applied

Solutions:

- Dual-line grease lubrication systems for milling trains
- Progressive grease lubrication systems, chain lubrication systems, oil circulation systems and single-point lubricators for other machinery (shredders, screeners and rotary dryers, etc.)

Food and beverage industry



Centrifuges, belt presses and decanters

Challenges:

- Due to accessibility, this equipment often is lubricated manually but bearing failures occur because importance of lubrication is underestimated
- Cyclic speed and load peaks
- Expensive spare parts due to need for accurate, large bearings

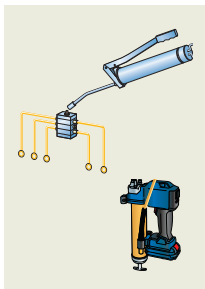
Solutions:

- Depending on the criticality of the asset, solutions can vary from a small, simple progressive grease system on individual machines to a dual-line lubrication system for entire centrifuge batches

A complete portfolio of lubrication solutions to improve system reliability

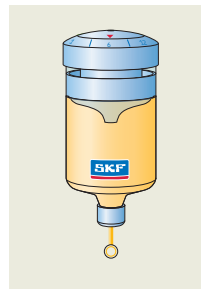
SKF offers a comprehensive range of both oil and grease lubrication systems utilizing different working models. In addition, our portfolio includes a broad variety of solutions to lubricate chains and conveyors. Complete plant lubrication supply systems provide lubricant to an entire network of systems from a single source. In these lubrication networks, container or booster pumps supply secondary pump stations.

Health concerns are rising regarding the use of lubricants in the manufacturing of various food-type products. It is very important to use the right food grade lubricants in food production facilities to avoid potential product contamination and unnecessary costs related to it.



Hand-held lubrication tools

The first step to upgrade manual lubrication is to upgrade the lubrication tool. SKF offers a wide range of hand-held lubrication tools to help simplify your lubrication task. Lincoln's PowerLuber family provides the most extensive offering of battery-operated lubrication tools.



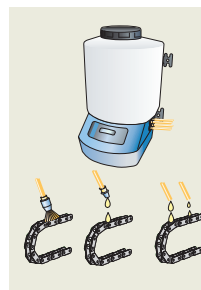
Single-point automatic lubricators

The SKF SYSTEM 24 LAGD consists of a transparent container filled with a specified lubricant and a cartridge containing an electrochemical gas cell. Once activated, the internal batteries are electrically connected and gas production can begin building up the pressure until the piston moves, pushing the lubricant into the application.



Food grade lubricants

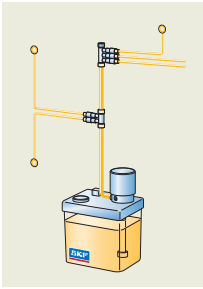
SKF Food Grade Lubricants are NSF H1¹ registered and Kosher² and Halal³ certified. Additionally, they rely on the ISO 21469 standard, which helps ensure that they are produced and delivered according to the highest hygienic requirements. These lubricants are available in different pack sizes.



Chain lubrication systems

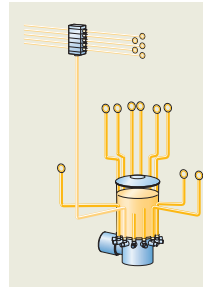
Chains are exposed to high load and wear due to permanent movement. The surface between the pin and bushing is the primary wear point on a chain, and the roller and bushing also need attention. Both can be lubricated continuously using SKF chain lubrication systems. In addition, our portfolio includes a broad variety of both oil and grease solutions for chain lubrication.

1) NSF: U.S. National Sanitation Foundation, H1: Incidental contact with food
2) Kosher: Food prepared in accordance with Jewish dietary laws
3) Halal: Food prepared in accordance with Islamic dietary laws



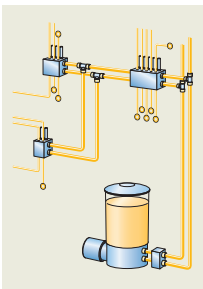
Single-line lubrication systems

In SKF MonoFlex and Lincoln Centro-Matic single-line lubrication systems, a pump feeds the lubricant via the main line to the lubricant metering devices, where it is metered and fed to the lubrication points. The individual lubricant requirements for each lubrication point can be adjusted.



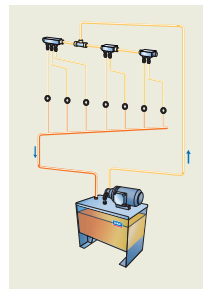
Progressive and multi-line lubrication systems

In SKF ProFlex and MultiFlex or Lincoln Quicklub progressive automatic lubrication systems, a piston pump supplies a defined amount of lubricant through the main line to the metering device that serves each outlet.



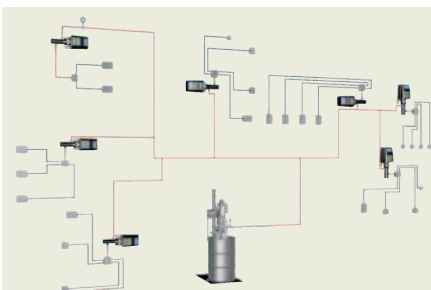
Dual-line lubrication systems

SKF dual-line systems, including SKF DuoFlex and Lincoln Helios, utilize two main lines that are supplied alternately with lubricant. These systems are ideal for applications with many lubrication points over long distances in harsh environmental conditions.



Oil circulation lubrication systems

SKF CircOil lubrication systems circulate oil to lubricate and cool bearings at the same time. They also efficiently remove dirt, water and air particles. An oil supply system delivers the lubricant to the metering devices with individual settings, and the feed rates can be controlled visually or electronically.



Sectional lubrication systems

In sectional lubrication systems, the lubricant is fed from a central lubricant reservoir and split into separate sections to serve machine parts with different lubrication requirements or located at varying distances.

Comprehensive range of lubrication components

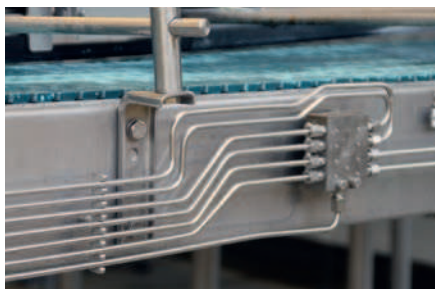
SKF offers a comprehensive range of high-quality lubrication pumps, metering devices, control and monitoring units and all necessary accessories for your specific lubrication solution. Individual components are coated for protection against corrosion and combined with stainless steel for durability.



Lubrication pumps

Certain criteria, such as ambient conditions, required delivery rates, lubricant used and service intervals, determine which lubrication pump should be selected. These pumps are available with varying control and monitoring options.

SKF's portfolio includes mechanically, electrically, hydraulically and pneumatically driven pumps. Operating efficiently in low or high working temperatures, these pumps are suitable for oil and standard greases up to NLGI Grade 2.



Lubricant metering devices

Depending on the type of lubrication system selected, specific metering devices are required. All metering devices feature high-precision components and are available in versions suitable for various pressures. System operation can be verified easily through electronic or visual monitoring.

The SKF offering is completed by additional system components including spray nozzles and brushes.



Monitoring

Monitoring and control are essential to the efficient operation of a lubrication system. When installed in conjunction with intelligent monitoring devices, an automatic lubrication system can facilitate economical and optimal lubrication.

With the instruments we provide, you have access to all values important for controlling your system – temperature, pressure, volumetric flow or fill level – whether through visual monitoring or by utilizing digital or analog signals.



Global experience, global support, local installation



Here for you, wherever you are

SKF- and Lincoln-branded products, systems and services are available through a global network of distributor partners, supported by one unified sales organization committed to your success. System house distributors around the world offer turnkey solutions and extensive aftermarket support.

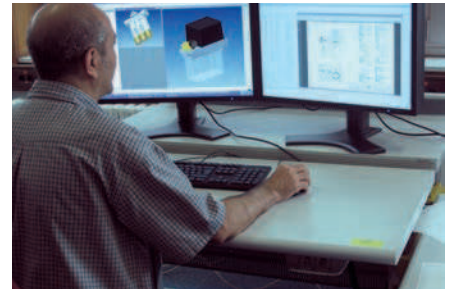
With lubrication application centres located on every continent and a worldwide distributor network, SKF has the people, products and support you need to optimize your lubrication management programme.



Retrofitting lubrication systems

Maintenance and repair costs during system downtime quickly can become unwieldy. That is why we offer on-site professional retrofitting of centralized lubrication systems at your location. We also can assume responsibility for maintenance and repair during ongoing operations.

In addition, our portfolio includes other solutions that can simplify maintenance for you, from electric refilling pumps to appropriate fittings and accessories.



Turnkey engineering

SKF works together with customers to develop tailor-made lubrication solutions to meet specific needs. Our 3D CAD data are available in native format in the online product catalogue and also as SKF LubCAD app for mobile devices.





skf.com | skf.com/lubrication | lincolnindustrial.com

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