SKF

FOR A LIFE WITH LESS FRICTION

SKF Lubrication Lifetime Solutions

LINCOLN

Have you ever thought about how much energy is needed to keep things moving?

This is SKF Lubrication

There's a lot we all take for granted. Trams, subway trains and buses take us through our cities. Wind farms power our homes and offices. Water treatment facilities supply us with fresh water. An entire network of industries, millions of things in motion, making our everyday lives work.

But, with all this movement comes a big challenge—it requires a lot of energy. Because wherever there's movement, there is friction. And today, around 20% of all energy we produce is used to overcome friction.

The importance of lubrication

Lubrication can make a difference, making movement possible with the least amount of energy consumed and the lowest amount of friction. But we see an imbalance. In a typical machine, lubricants account for 2–3% of running costs, but 40–60% of maintenance costs come from poor lubrication. These numbers indicate the importance of reliable lubrication and appropriate lubrication practices.

That's why we talk not only about lubrication but also about lubrication management as an essential part of machine operation and vehicle maintenance.

Towards a life with less friction

With a strategic focus on clean technology, we're developing solutions to help make industries more energy-efficient and sustainable—while remaining competitive.

However, our most significant impact comes when we work together—with our customers, suppliers, and the wider society. Through our collaborative efforts, we can take on significant challenges. By joining forces, we can pave the way towards a more energy-efficient industry and a life with less friction.

1907 1916 1929 2004 2010 2024 Today

Innovation is our foundation and our future

For a life with less friction

The beginning of the 20th century was filled with innovations, all solutions for routine, daily tasks. These innovations led to improved machinery efficiency, reduced friction and cost, saved energy and time, and improved safety.

In 1907, SKF patented the double row self-aligning ball bearing. In 1916, Helios patented the first automatic lubrication device in Germany. In the same year, the Alemite High-Pressure Lubricating System, a “pin-type” fitting and “screw-type” grease pump, was invented in the US.

In 1918, Lincoln awarded its first patent for the design of a roller bearing for coal car wheels. In the twenties, Lincoln started to develop and manufacture handheld grease guns and fittings.

In 1929, Willy Vogel founded in Berlin a company to produce a variety of accessories for the growing automotive market and quickly supplied almost every German passenger car with a footpump lubrication system—one kick on the plunger, and all the lubrication points of the chassis are lubricated. This is the basic idea of a centralized lubrication system.

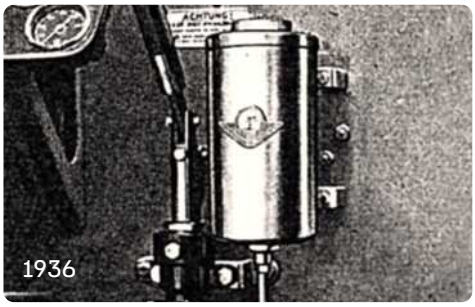
Today, the spirit of these early innovations is combined in one company.

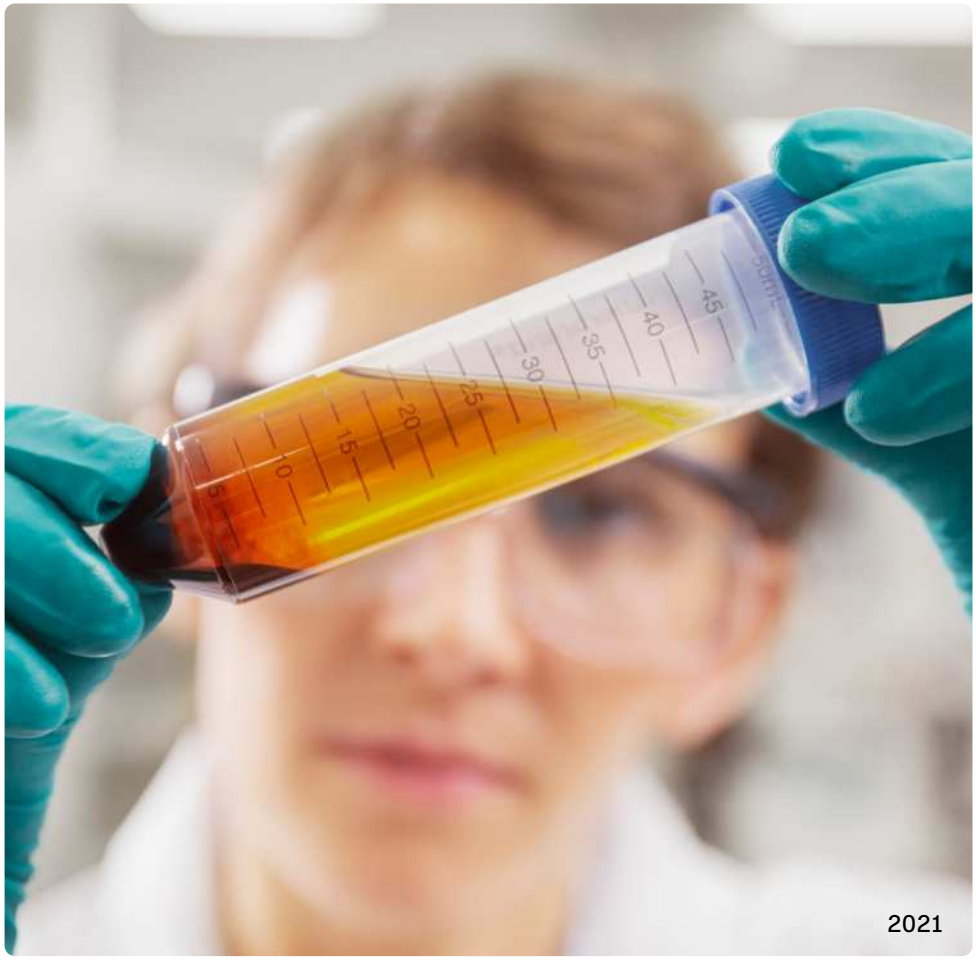
Together for a responsible use of resources

Using innovation, we improve the way we responsibly use resources and safeguard effectiveness and reliability, supporting asset health and sustainability.

For instance, SKF RecondOil’s Double Separation Technology removes nanosized contaminants from oil allowing it to be cleaned to such high levels that it can be used again and again and again. We call this the circular use of oil. This enables businesses to minimize the CO_2 footprint from oil usage and turn their oil into a circular and sustainable asset.

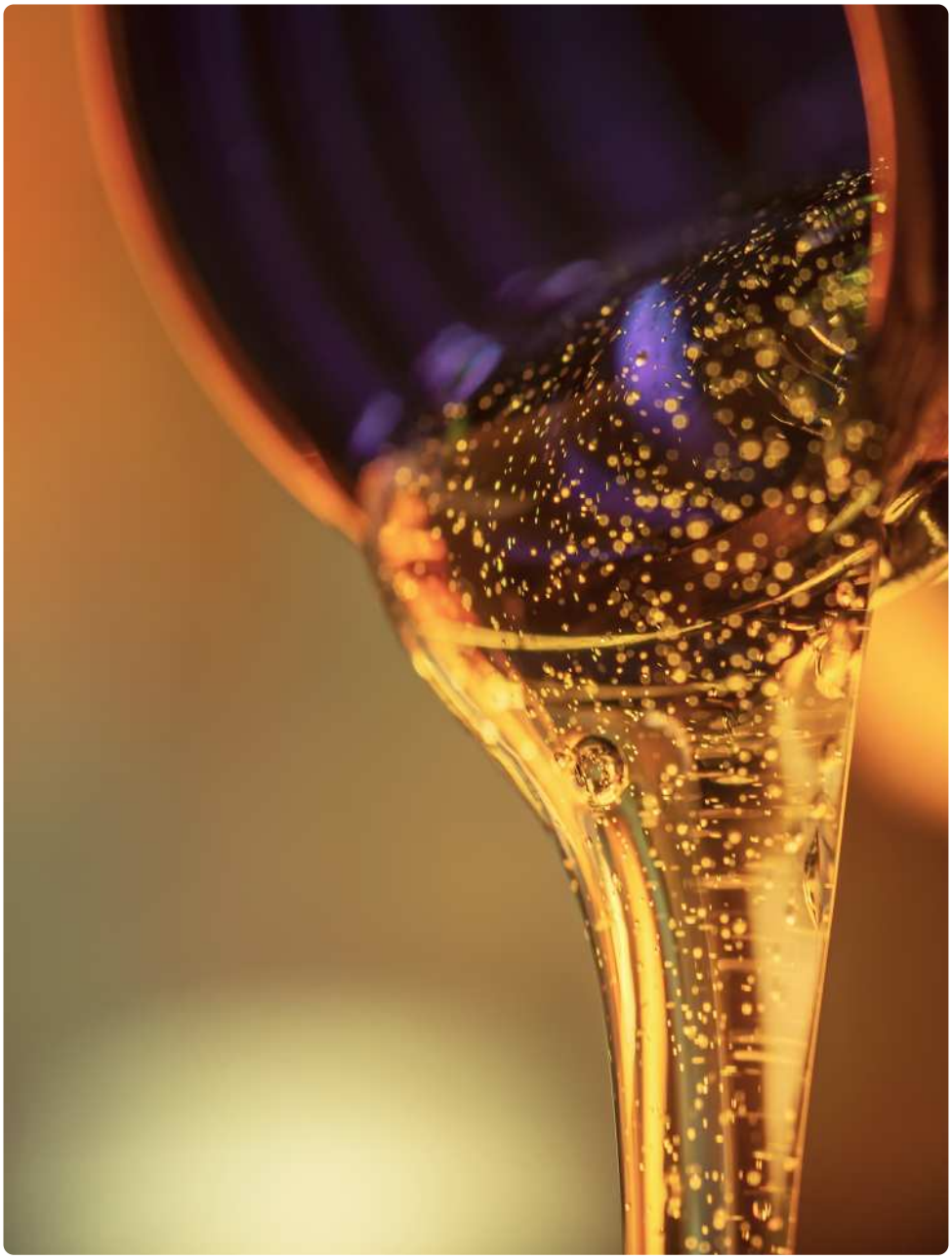
360 years of
cumulated experience


1936


2021

1922

1907



Our offering and presence

SKF has hands-on experience in over 40 industries with a vast product portfolio and knowledge across the SKF technology platforms: bearings and units, seals, lubrication solutions, condition monitoring, and services.

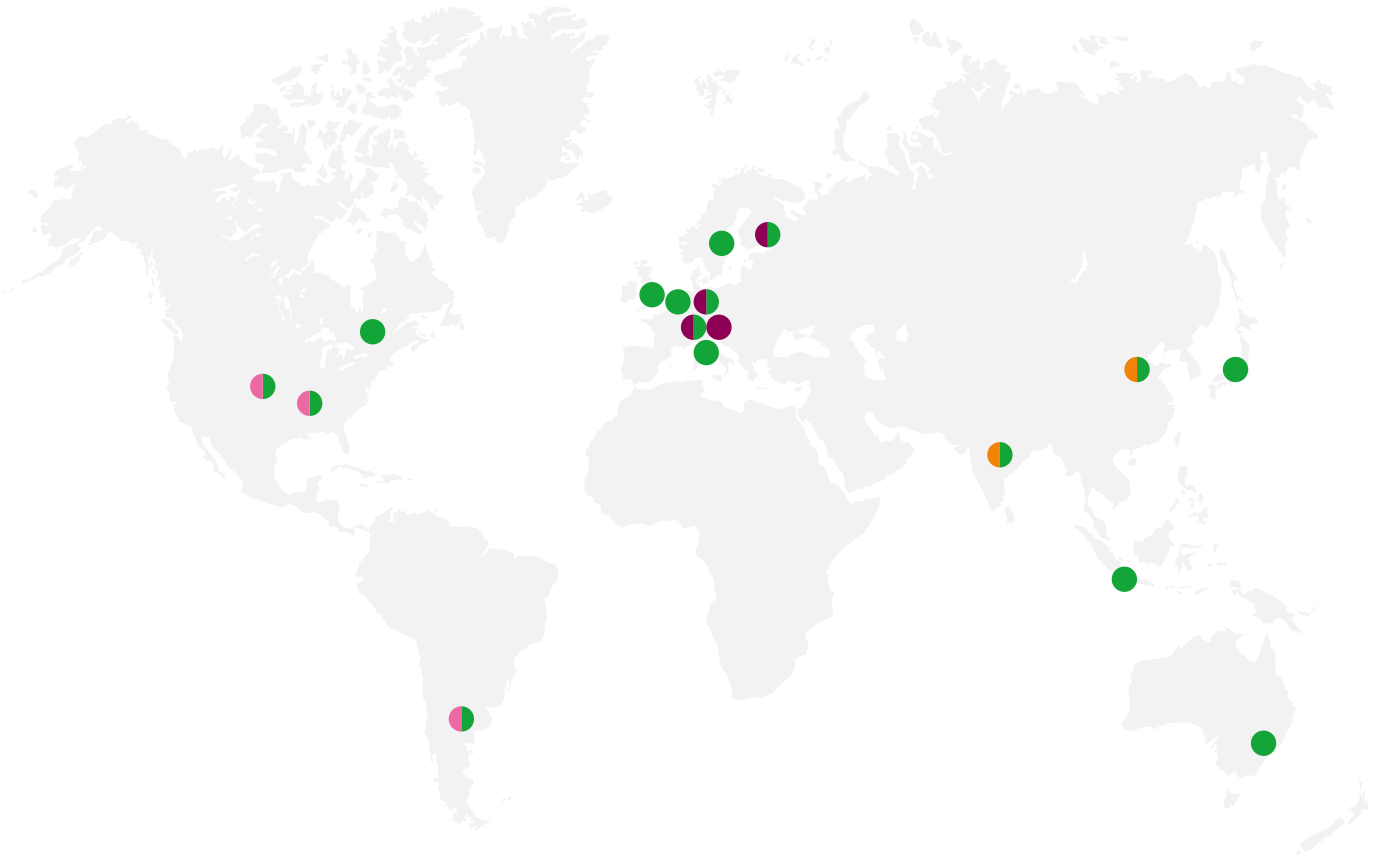
By combining our different platforms, we can offer our customers tailored partnerships where our products, technologies and services are integrated with flexible new business models to meet their unique requirements.

SKF is a trusted and leading global industrial brand with a presence in 130 countries. We operate in four regions to serve customers quickly and responsively.

Around 2 300 employees work in eight lubrication manufacturing sites and more than ten application centers in all regions. A network of skilled and knowledgable lubrication distributors are close to our customers and their daily needs.

Our combined product offering

- Bearings and units
- Seals
- Lubrication lifetime solutions
- Maintenance products
- Power transmission products
- Condition monitoring
- Services



SKF lubrication footprint

2 300 employees

9 lubrication manufacturing sites

St. Louis, MO US
Johnson City, TN US
Rosario, AR

Berlin, DE
Walldorf, DE
Muurame, FI
Chodov, CZ

Bangalore, IN
Taicang CN

16 local application centers

St. Louis, MO US
Johnson City, TN US
Rosario, AR
Montreal, QC CA

Banbury, UK
Cormano, IT
Houten, NL
Linköping, SE
Berlin, DE
Walldorf, DE
Muurame, FI

Bangalore, IN
Taicang, CN
Chino, JP
Milperra, AU
Jakarta, IDN

Proper lubrication is essential for a life with less friction

Overall, lubrication is crucial for maintaining mechanical systems' performance, efficiency, and longevity across various industries.

Correct lubrication directly and profoundly impacts key performance indicators like production output, labour and component costs, health, safety, and environmental compliance. Reduced friction and wear result in smoother operation, which often translates to improved energy efficiency and lower operating costs.

Benefits of proper lubrication

- Reduced friction
- Prevented wear
- Dissipated heat
- Prevented corrosion
- Prevented leakage
- Reduced noise
- Reduced energy consumption
- Improved efficiency
- Improved safety

That is why lubrication is essential in the journey towards a more sustainable way of working and living.

56% of premature bearing failures are related to lubrication

Inappropriate lubrication leads to poor performance and waste

Lubrication is critical to manufacturing, yet it is often treated as an afterthought—something so basic that it seems unworthy of anybody's time. This is despite knowing that without lubrication, machinery can quite literally grind to a halt.

Studies show that around 36% of bearing failures result from poor lubrication practices. If we add contamination it is around 56%, and even more if we consider equipment such as industrial chains.

If particles, dirt, and water are allowed to enter critical machine components, they will form a "grinding compound" that substantially reduces the components' life.

Maintaining a proper lubricant film is vital to reducing wear and downtime. Frequent lubrication effectively reduces friction and virtually keeps bushings and bearings free of penetrating contaminants.

Inappropriate lubrication can lead to huge waste, in terms of both capital and resources and humans and the environment, at a time when environmental concerns (such as CO_2 emissions) are at the core of everything.

“Most things that move within our society, from trains to vacuum cleaners, only operate thanks to a micron-thick lubricant film between bearings, chains and other machine components.”

Alain Nordoover
SKF Lubrication Management Specialist

Scan to join Alain
discussing lubrication management

What is lubrication and how does it work?

In simple terms, lubrication reduces friction and wear of surfaces by avoiding metal-to-metal contact by placing lubricant between the surfaces.

A lubricant can be solid (such as graphite), liquid (oil), semi-solid (grease) or gas (air). Each has a specific viscosity (resistance to flow) that, combined with the relative speed of the mating surfaces, the load and the wedge created by the geometry of the components, will create a thin lubricant film. The lubricant film is typically in the order of microns or sub-microns that the human eye cannot usually detect.

Oils and greases are the most important lubricants used today. Additives can be incorporated into them to add, or remove, certain properties, such as extreme pressure, anti-wear and anti-oxidant.
For greases, a thickening agent holds the oil together and gives the lubricant a consistency that enables it to stay in place.

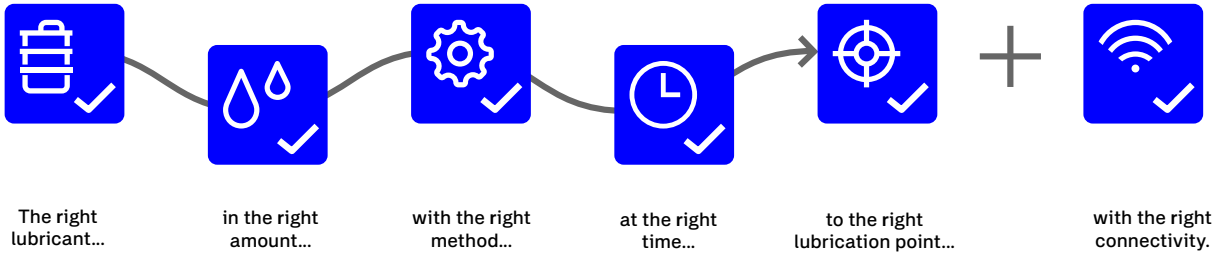
Definition of lubrication:

Reduces friction and wear of surfaces by avoiding metal-to-metal contact by placing lubricant between the surfaces.

How to ensure lubrication reliability?

Correct lubrication can already be difficult for individual points. The challenge is to do it right for all points. A common description of a reliable lubrication approach is the “5-R-Method”:

The right lubricant needs to be applied in the right amount and with the right method at the right time to the right lubrication point. By adding a sixth “R”, we highlight the right connectivity method.



Definition of lubrication management:

The proper organization of resources to effectively and efficiently improve reliability, reduce inefficiencies and costs and increase safety and environmental compliance. placing lubricant between the surfaces

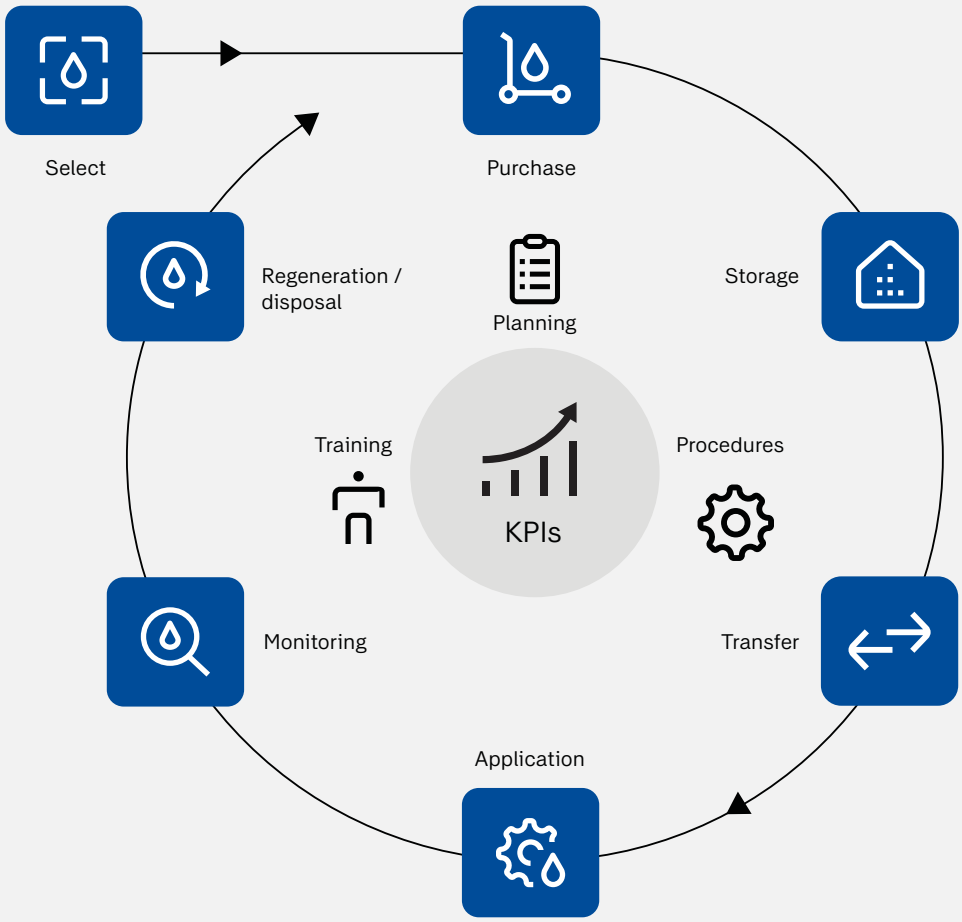
Lubrication Management: The way to improve performance

Lubrication should not be seen as a setof dissociated tasks but as a skilled job, and it should be treated as such. If we can make repetitive tasks easier and replace routine, mundane tasks with proactive, problem-solving work, we make lubrication more effective and, what is even more important, safer.

Managing lubrication means making the most of our systems and preserving resources by making certain that parts function as intended—and for as long as possible.

We at SKF understand lubrication management as a comprehensive approach that goes beyond topping up oils in machines. For us, it encompasses the entire lifecycle of lubricants, from their selection and arrival on-site to the processes and practices for how to maintain lubricants in use to their safe disposal after use. Evenly crucial is the careful planning, scheduling, and measuring of lubrication tasks, not to mention appropriate education.

Effective lubrication management contributes to machine uptime, productivity, and overall equipment reliability. It is essential for industrial companies to achieve their operational, financial, and strategic objectives and comply with regulatory requirements.



The SKF lubricant life-cycle model

The SKF lubricant life-cycle model can be used to visualize the seven parts of lubrication management:

1. **Select** the right lubricant
2. **Purchase** it by selecting suitable vendors
3. **Store** the lubricant clean, dry and safe
4. **Transfer** it to lubrication tools or systems without contamination
5. **Apply** the lubricant to the lubrication points with the right method
6. **Monitor** if the lubricant performs as intended
7. **Collect** it when used, and look for ways to reuse the lubricant

After this, the loop is closed and restarts with lubricant selection.

This describes the lubricant life cycle, but the full lubrication management model has four more crucial parts.

- **Plan** and schedule all tasks
- **Develop** procedures to be consistent and use best practices
- **Train** the people involved in lubrication activities
- **Set KPI's** to measure the achievements

Putting these together provides a fuller picture of lubrication management.

“Comparing machines with the human body, we can see bearings as the heart of the machine and consider lubricants as the blood. That is why lubricants should be considered assets.”

Gustavo Sabogal
SKF Product Development Manager Lubricants

Scan to join Gustavo
discussing machine health

Select the right lubricant for the application

Factors to consider

Before choosing the right lubricantfor specific operating conditions, more aspects must be considered such as the operating environment and temperature.

Close to the sea, the risk of corrosion is high and greases whose additive package and/or thickener are specially designed to withstand water or chemical substances are a perfect choice.

On the ocean, operators have to avoid any water pollution, and lubricants must be biodegradable, environmentally acceptable, and certified.

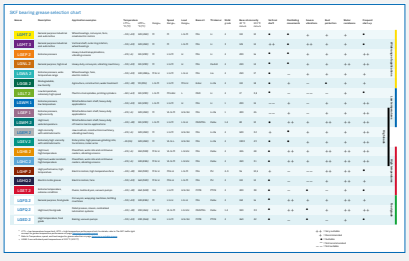
The same attention is needed in the food and beverage industry, where even NSF H1-approved machinery lubricants are only allowed to get into incidental contact with the food whenever that cannot be avoided.

Morning temperatures can be very low in the mountains or even in some deserts, so the lubricant should be highly thermal and mechanically stable when a machine operates in these environments.

Another aspect is the method of applying the lubricant—manually or automatically. When using a centralized lubrication system, the lubricant must have very good pumpability properties to avoid piping obstruction, oil separation, and subsequent leakage, blockage, or stalling.

Extend relubrication intervals

Critical applications, such as electrical motors, benefit from using specialized lubricants. For instance, using SKF LGHP 2 or LGHQ 2 greases instead of general-purpose ones can easily extend the relubrication interval four times and even further by controlling contamination, temperature, vibrations, etc.



SKF grease selection tools

SKF has developed several tools to facilitate the selection of the most suitable lubricant, such as easy-to-use application-driven tables and general guidelines for typical greases for different applications.

→SKF Grease selection charts

SKF LubeSelect for greases

The user-friendly online tool for selecting the right grease and suggesting lubrication frequency and quantity, considers the application's particular conditions.

→SKF LubeSelect for greases

Lubricant purchase

It is essential to choose suitable vendors to acquire the selected lubricants. The partners should deliver on time and with consistent product quality and offer lubricant consolidation and services, such as training, tools and equipment, and software.

Our experience with bearings, lubricants and applications helps us to offer the right lubricants for our customer's applications and improve theiroverall lubrication scheme.

Testing and validating each production batch is our way to offer excellent lubricant quality around the globe. Specialized lubricant tests and continuous research in the field of lubrication allows us to further optimize our knowledge and support our customers.

SKF Lubricants are designed for your needs and tested for performance in real applications.

→SKF Lubricants

Lubricant storage

Lubricants will not be used immediately, so proper storage for a certain period of time is vital. Experience shows that lubricants could degrade during storage if not performed correctly. The right temperature, humidity, and possible exposure to contaminants via the wrong tools and equipment are mandatory points to consider.

Even when drums and pails are still sealed, lubricants can degrade even before they are supplied to the assets. Often, it is necessary to rework the storage room layout and its different main components, like oil and grease storage and dispensing and the related tools and equipment.

SKF offers lubricant storage solutions under the Alemite brand.

Lubricant transfer from the pack to the tool

Lubricants come in different pack sizes, from totes and drums to cartridges. They must be transferred to various lubrication tools, equipment, and systems—without contamination and lubricant cross-mixing.

Proper and identified tools and equipment are of prime importance, including oil pre-filtration equipment, for instance, or simpler devices, like grease gun filler pumps, which create a closed environment where the lubricant is hardly exposed to the environment, limiting contamination ingress during this process.

SKF offers a **wide range of tools to identify and transfer lubricants.** Below are some examples.

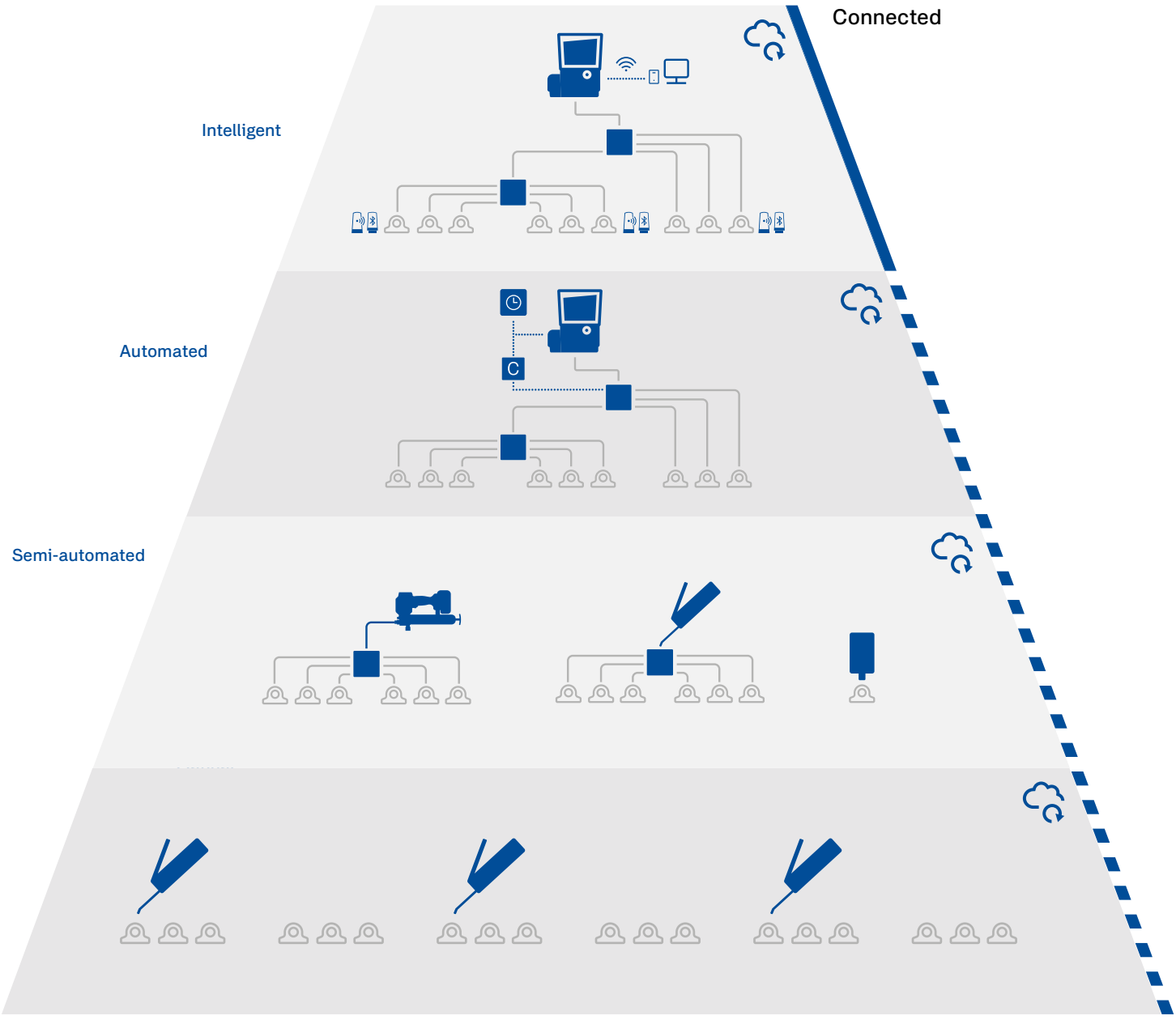
→SKF Grease filler pumps

→Alemite Oil trolley package

→SKF Grease fitting caps and tags

Lubricant application with the right method

SKF's lubrication solutions adhere to a performance-based approach.
Our portfolio falls into four broad categories from manual, point-by-point lubrication to fully automatic lubrication systems with remote monitoring. Between the two are lubrication solutions that increase in automation.
All groups can be connected to cloud-based solutions for improved monitoring and datalogging options.



Intelligent lubrication

Connected or intelligent lubrication systems mean users are aware of all machinery lubrication-related data in real-time. They have access to lubrication-related statistics such as lubricant consumption or lubrication cycles e.g. and can align smartly with all collected machinery data to optimize machine performance and availability.

Automated lubrication

Automatic lubrication means a 100% reduction of manual lubrication activities. It is realized by connecting all lubrication points via a system consisting of metering devices and lubrication lines and fittings with a central pump unit including a lubricant reservoir. This system can become also connected to an internal or external controller that enables precise and reliable, automatic machine lubrication. You will become pre-warned about low reservoir filling levels.

Semi-automated lubrication

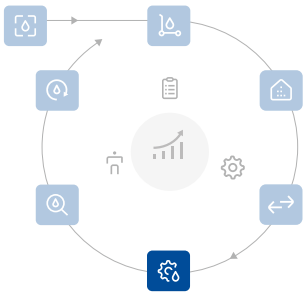
A centralized approach can be realized by connecting several lubrication points to lubricant metering devices with only one manual lubrication point at the metering device inlet left for manual lubrication tools. This represents an advanced, time-saving approach of realizing machinery lubrication while allowing at the same time to set the precise dosages for each lubrication point.

Manual lubrication

When discussed alongside automatic lubrication, manual can seem somehow outdated or old fashioned. But this isn't always the case. In fact, in many areas, manual lubrication is a legitimate option. Manual lubrication tools using grease meters will help to control the right amount of lubricant supplied to the bearing. Even these tools have the option of connectivity.

→SKF lubrication portfolio

The most comprehensive portfolio to apply lubricants to lubrication points



Manual lubrication

Characteristics

- Low investment costs
- Very limited number of parts needed
- No installation complexity
- Low lubrication reliability
- Big maintenance effort

SKF offer

- Grease nipples
- Standard manual grease guns
- One-hand-operated grease guns
- Battery-driven grease guns

Semi-automated lubrication

Characteristics

- Medium investment costs
- Limited number of parts needed
- Limited installation complexity
- Medium lubrication reliability
- Limited maintenance effort

SKF offer

- All kind of grease guns
- Progressive metering devices
- Fittings and accessories
- Lubricant hoses and tubes

→Lincoln Lubrication tools & equipment

→Alemite Lubrication tools

→SKF Maintenance lubricators and manual lubrication tools

Customer case:

Steady flow in the brewery

Erdinger Weissbräu brewery in Germany decided to modernize the production process. SKF's sectional lubrication system increases system availability, reduces the use of lubricant and minimizes wear and tear on the equipment.

- 1000+ Lubrication points
- Reduced lubricant consumption
- Minimized wear
- Increased safety

Fully automated lubrication systems

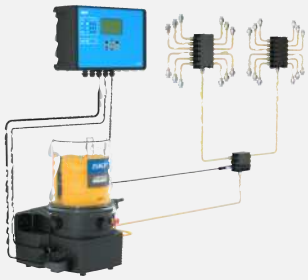
Characteristics

- Virtually maintenance free
- Higher lubrication reliability—lubrication while machine is running
- Adjustable lubrication cycles
- Monitoring possibilities—automatic control of the reservoir filling level incl. low level alarm

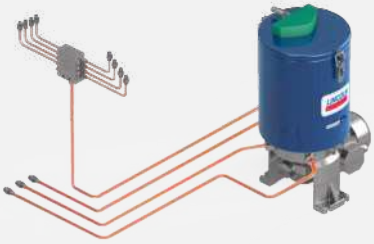
Components:

- Electrically, pneumatically or hydraulically driven lubrication pumps
- Control and monitoring devices
- Lubricant metering devices
- Lubricant lines and fittings

→Single-line lubrication systems for oil and grease

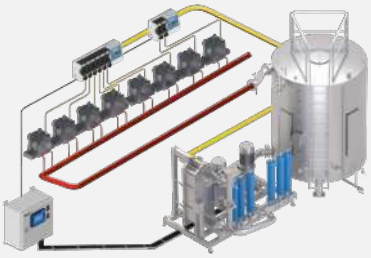


→Progressive lubrication systems for oil and grease



→Multi-line lubrication systems for oil and grease

→Dual-line lubrication systems for grease



→Oil circulation lubrication systems

Automated lubrication systems for special applications

- Chain lubrication
- Oil and air lubrication
- Minimal quantity lubrication
- Wire rope lubrication
- Lubrication for rails (onboard and wayside lubrication systems)
- Lubrication for open gears

→Full range of automated lubrication systems

Lubricant monitoring

Lubricant analysis is a vital part of a predictive maintenance strategy. When the lubricant is inside the machinery, it will hopefully lubricate as intended. The question now is, how can we know if it lubricates well enough? By monitoring the lubricant, we can be assured that it performs as it should. If not, corrective actions should be taken as early as possible. In addition, the monitoring step allows us to address leakages (unfortunately, they are way too common), overheating, vibrations, etc., all indicators that allow us to be proactive and properly care for our machines.

SKF offers oil and **grease test tools** to test and analyse lubricant samples in the field.

→SKF Lubricant test kits

Lubricant disposing or reconditioning

Extending lubricant life is the first goal under sustainability aspects, and that's only feasible if we control additional factors like contamination, where sealing technologies will be a key partner.

Extending grease life means using assets longer, but there will be a point when they will be used up and need to be replaced. The monitoring step allows us to better know when this change should occur. This raises questions about what we do with this used lubricant, how we collect it properly and avoid it being released into nature, and whether we can find a way to reuse it instead of just burning it.

After an environmentally friendly and compliant disposal, we return to the purchasing step and complete the circle of the lubricant life cycle.

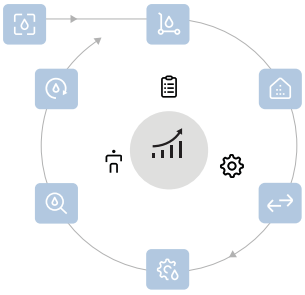
When it comes to oil, SKF's latest technology goes one step further: SKF RecondOil, which is about making it last virtually forever. You clean it, recondition and use it again. And so, it goes on and on and on. With SKF RecondOil, we can extend its life even indefinitely.

A perfect match for oil circulating lubrication systems is the SKF RecondOil Box, an enhanced depth filtration system that incorporates RecondOil's patented Double Separation Technology.

The RecondOil Box, a compact and versatile offline oil cleaning system, was launched onto the market in April 2022 and is developing rapidly. RecondOil Box removes nanosized contaminants and impurities from the oil, preventing the oxidisation process that leads to oil degradation and varnish formation.

The **RecondOil Box system** is an enhanced depth filtration system that incorporates RecondOil's patented Double Separation Technology.

→SKF RecondOil Box



Get the full picture

Additionally to the lubricant life cycle, the full lubrication management model has four more crucial parts:

Planning & scheduling

Many tasks must be accomplished in a plant. First it must be ascertained whether the right tasks are designed: is it the right lubricant, in the right amount, using the right method, at the right time, to the right lubrication point? If not, could they be removed or replaced? Second, task should be scheduled so the workload stays manageable. Dedicated lubrication management software can help here.

Procedures

To ensure job consistency, procedures must be developed and made available to all. Digital documentation is easy to update and is accessible remotely. Usually, technicians carry out activities based on their own knowledge, whether this is good or bad. Another issue is loss of information when skilled technicians retire or leave.

Training & personal development

The earlier points mean little without looking at the people who carry out lubrication. It should be seen as a skilled job and treated as such, with training and development plans. Replacing routine, mundane tasks with proactive, problem-solving work makes a job more stimulating. Sometimes, outsourcing lubrication tasks can be appropriate.

Management & KPIs

To know we are heading in the right direction, we must set up thoughtful and pragmatic KPIs. Lubrication management software can help monitor and visualize critical information. Typical goals might be to improve efficiency of lubrication execution, to reduce the number of unplanned tasks or to cut oil consumption without hurting the machine. All of these can be tracked and measured.

How to get started

Lubrication management comprises many elements, encompassing tribology, filtration, oil analysis and management, and it may appear overwhelming. However, significant improvements can be made in small steps with simple, pragmatic actions.

Assess the situation

How does your plant measure up? If action is required, a lubrication audit can help by employing tools, such as the SKF Client Needs Analysis, that evaluate and set benchmarks for effective lubrication management. Alternatively, individuals can use online self-assessment tools, such as the SKF QLR (Quick Lubrication Review), to evaluate their own lubrication practices.

Build a business case

Use known issues and try to put a price tag on them. Use literature or the results from a lubrication audit to estimate the positive impact of proper lubrication.

Develop people's skills

Move people away from "pushing grease" and towards proactive, problem-solving tasks. If relubrication is automated, technicians can spend more time inspecting machines.

Follow best practice

Apply this in all parts of lubricant management and devise a pragmatic activity plan. It sounds daunting, but think of it like cooking a family meal. The aim is to end up with a meal on the table, having made various selections, purchases and other decisions.

Set targets

One possible target might be to cut lubrication-related bearing failures by a set amount. Clever lubrication management can also have knock-on effects: Lubricants are often 2 to 3 percent of a maintenance budget, but lubrication errors can influence 40 percent of the budget (such as spare parts and labour).

→SKF Quick lubrication review

SKF Quick lubrication review (QLR) is an easy-to-use web-based self-assessment tool for technical and maintenance decision-makers at our end customers.

Users are only a few clicks away from benchmarking their lubrication practices against companies operating in the same industry. After completing the form, the user of the QLR will receive a report by email. This report includes a lubrication management maturity radar chart and an intuitive colour-coded lubrication management life cycle showing how the customer's lubrication program performs.

Lubrication management contributes to a better tomorrow by linking lubrication with sustainability and digitalization.

The future of lubrication

Change is happening, and it happens fast. We are on the front line when lubrication is evolving to the next level. To deliver on our intelligent and clean strategy, we are focusing on areas where our technological edge supports customers striving for a sustainable future.

With the development of new technologies, such as RecondOil's Double Separation Technology, SKF contributes to a truly circular economy.

Digitalization of our products and of the lubrication management process supports simplifying, modifying, and enhancing added-value tasks. It also provides better real-time visibility of the situation, leading to better decisions.

Moreover, to serve customers better, we are digitalizing the value chain and regionalizing our manufacturing and supply chain.

We design our products to be remanufacturable, reusable and, eventually, recyclable. Lubrication will be less damaging to the planet by reducing waste, minimizing the number of resources needed, and reusing them more and more.

At all the steps we take, we have you, our customers, and your specific needs and challenges in mind, enabling you to be more effective, efficient and sustainable.

Sustainability is what we do today to prepare for tomorrow

At SKF, we have a long history of working with industrial sustainability. It is an integral part of what we do every day —to move towards a clean, responsible, net-zero and fully circular society.

Sustainable responsibility starts in our lubrication factories. By switching to green energy, we have already reduced CO_2 emissions by 72% compared to 2022 globally. We continue our ambitions and will reduce scope 1 and 2 emissions by an impressive 95% by 2030 versus 2019 base year and will have net-zero emissions across our value chain by 2050.

Sustainability responsibility also involves the non-usage of hazardous substances that are unsafe for people and/or pollute the environment. SKF voluntarily goes beyond regulatory requirements, setting high expectations and standards that support responsible sourcing.

Our largest contribution lies in providing clean technology solutions for the industrial transformation, and in developing more and more of our products to become lighter, more efficient, longer lasting, repairable, and, ultimately, recyclable. This in turn helps our customers reach their goals for sustainability and growth.

For instance, 6.700 tons of CO_2e emissions were saved for all oil changes the RecondOil solution helped to avoid at our customers during 2023.

72% CO_2 reduction in lubrication factories 2023 vs 2022

“Clean and high-performing oil is not just nice to have but has a significant impact. Ten times cleaner oil can mean that the projected lifespan of the machine increases by 50 times.”

Lisa Gundel
SKF Marketing Manager Lubrication Manager and RecondOil

Customer case:

Turning oil into an asset for green energy production

SKF’s RecondOil helps Finnish Westenergy to refine waste into electricity and heat. Re-using oil has resulted in higher uptime and reduced emissions of CO_2 at the energy plant in Vaasa.

- Reduced maitenance costs related to contaminated oil
- Reduced CO_2 emission

“By introducing digital tools in lubrication, we give work crews access to much more precise information, allowing them to step up their game.”

Rainer Deuerling
Manager Global Portfolio & Industry Management

Digitalization improves the way of working

Digital technologies allow real-time monitoring of lubricant performance and asset health, enabling maintenance teams to identify potential issues before they become problems. Digitalization helps aggregate data and make it accessible from any location, assisting maintenance teams in gaining an efficient and complete view of the condition of current equipment.

This is a major advance in improving device reliability and extending asset life.

With an intelligent lubrication management approach, companies can optimize their lubricant consumption, reduce waste, and ultimately reduce their ecological footprint and comply with environmental and safety regulations.

Digitalization is highly relevant and useful when developing lubrication further and adapting it to the customer’s maintenance maturity level.

Digitalization supports maintenance activities:

Monitoring and analyzing

We can optimise lubrication practices when we know how the lubricant or the equipment performs.

Tracking inventory

By knowing which lubricant is present and in what quantity, we avoid lubrication failures due to wrong, missing or aged lubricant.

Scheduling maintenance tasks

Digital tools make scheduling and tracking maintenance easier.

Customer case:

A cloud with a smooth lining

The Brazilian company Fibria, part of

the Suzano group, is the world's largest producer of eucalyptus pulp. It has some 15,000 employees and produces pulp and paper from eucalyptus trees specifically planted for the purpose. The annual production capacity is about 5.3 million tonnes from mills located in Aracruz, Jacareí and Três Lagoas, as well as from the Veracel joint venture with Finland's Stora Enso in Eunápolis.

At Fibria's mill in Aracruz, in the state of Espirito Santo, monitoring and lubricating the very large number of bearings was done manually for years. However, manual lubrication is often not the most suitable method, especially if the lubrication points are built in or located high up and are difficult to reach.

This can result in important safety risks to workers, as top-ups and greasing normally occur around moving equipment. Working in close proximity to machines that rotate or move, as happens in a paper mill, requires caution to avoid getting yourself or a tool caught in the nip points. It is easy to be hurt by coming into contact with a fast-rotating shaft or having a finger trapped between two meshing surfaces.

Life at the Aracruz plant has become much easier thanks to the recently installed wireless TLDD (tool lubricant digital dispenser) connected single-point lubricator system from SKF Maintenance Products, resulting in a safer and more sustainable production process.

The TLDD connected single-point lubricator system, which is part of the SKF SYSTEM 24 portfolio, is a solution for wireless monitoring of automatic single-point lubricators. The system uses a web-based dashboard and interface to monitor the status of each lubricator and control its settings. The visual representation of the machines and lubrication level of each bearing position includes a customizable alarm to indicate when a lubricant cartridge needs to be replaced or where lubrication tubes are blocked.

An innovative wireless-based lubrication technology from SKF means safer and smoother operations at Brazilian pulp and paper company Fibria.

Smart monitoring at its easiest

Our Smart line of pumps and lubrication devices can wirelessly be monitored, controlled, and set using the SKF eLube App. There is no need to stop the machine or physically access the pump to check lubricant levels, for instance.

This saves time and also reduces the risk of accidents. Wireless access to pump information helps quickly spot problems—such as a blocked line or low lubricant levels. Remedial action can then be taken immediately to avoid damage to the bearing. In the case of machine failure, an equipment owner can easily check whether malfunction warnings have been adhered to.

→CLP Smart

SKF eLube—Next generation lubrication systems

SKF eLube is a new generation of connected automatic lubrication solutions—a complete line of smart and user-friendly components that you combine in a system to fit your needs best.

SKF eLube can help you identify issues at a glance, track machine health data, get early warning of potential failures and take preventive action. Connect it to the lubrication cloud and receive machine performance insights based on data from both your lubrication system and your bearings.

SKF eLube products are compact, fit-for-purpose and easy to integrate into your equipment.

With SKF eLube you get the connectivity and performance you need for your application.

- Availability and flexibility
- Cut costs by keeping track of your data
- Easy to learn, quick to get started
- Safer operation
- Reduce environmental impact

→SKF eLube

Customer case:

Automatic lubrication systems make Gothenburg's trams quieter

Trams are a practical but also very loud means of transport. Squealing, especially on curves and in dry weather, can be reduced using special lubricant metering systems

SKF's onboard and stationary lubrication systems have proven successful on the Gothenburg tram network. The two systems complement one another, and this is a great advantage in dry weather and on very tight curves.

The operator has equipped 28 trams (of a total of 200) with SKF onboard systems and installed several stationary lubrication systems. The Göteborg tram network is due to be extended, and we expect the operator to procure further SKF systems.

Some trams have microphones and data-gathering systems onboard to monitor noise levels. The system sends an alarm to the route operator if a set noise limit is exceeded. Since installing the SKF metering systems, there have been 80% fewer alarms.

Although the lubricant is currently applied after a tram has passed through a set number of times, they are already considering switching to self-adjusting lubrication: this system monitors squealing and automatically adjusts lubricant output to cope with any changes in noise level.

Some trams have microphones and data-gathering systems onboard to monitor noise levels. The system sends an alarm if a set noise limit is exceeded. Since installing the SKF metering systems, there have been 80% fewer alarms.

“The big change comes when we move away from reactive behaviour to a preventive, predictive or even on-demand way of operating. The next step is to combine different processes into solutions that give operators and managers even more options to be proactive. This will mean a lot to lubrication.”

Erika Morichetto
Director Lubrication Sales EMEA

Lubrication matters.
But do you know how much?

Explore more customer cases, articles and reports on how lubrication management could help customers boosting their performance.

→Customer cases, articles and reports

skf.com | skf.com/lubrication

® SKF, RecondOil, Lincoln, SYSTEM 24 and eLube are registered trademarks of AB SKF (publ).

© SKF Group 2026. All rights reserved. Please note that this publication may not be copied or distributed, in whole or in part, unless prior written permission is granted.

Every care has been taken to ensure the accuracy of the information contained in this publication, but no liability can be accepted for any loss or damage whether direct, indirect or consequential arising out of the use of the information contained herein.

PUB LS/S2 19910 EN · August 2026
Certain image(s) used under license from shutterstock.com