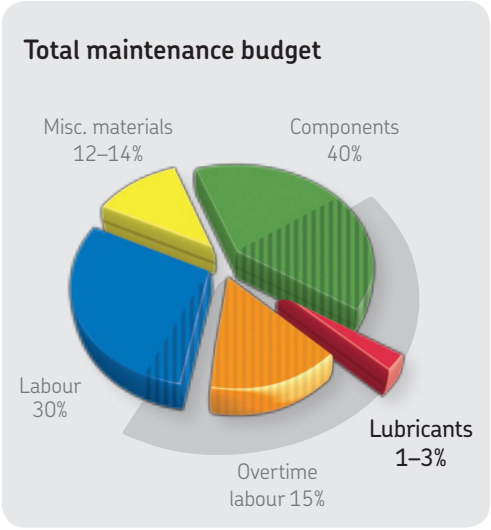
SKF Lubrication Management

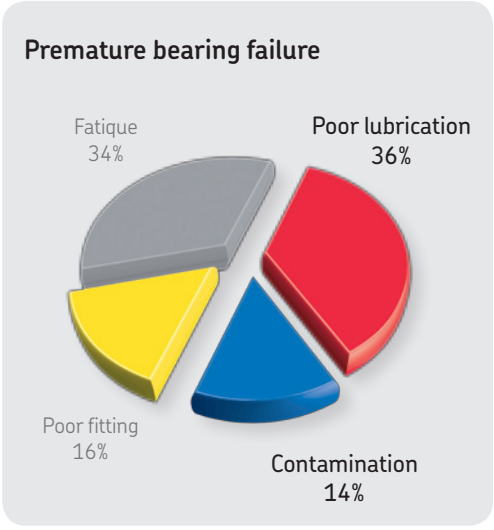
Lead your path towards a world-class lubrication programme

The Power of Knowledge Engineering

Why is lubrication so important?

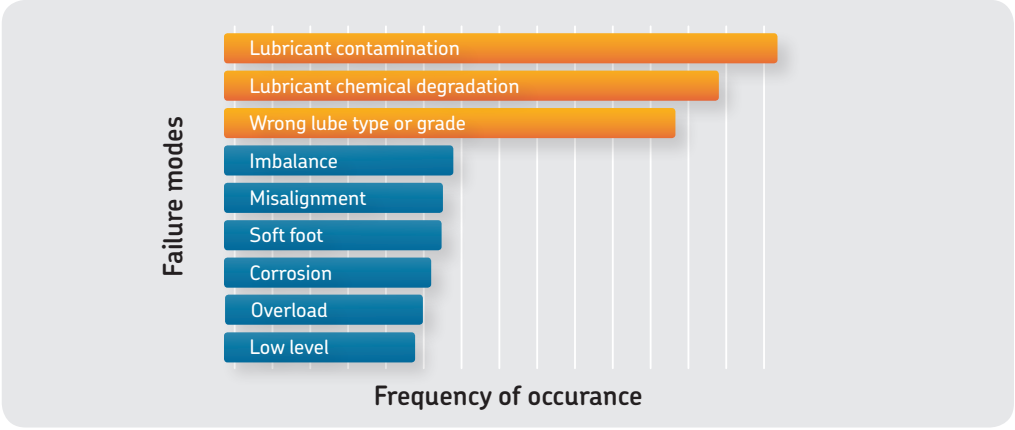
It is hard to imagine a production facility that doesn't need to perform any lubrication task. Lubrication though is often understated and many required activities are overlooked.





The reason for such an oversight may be the limited impact that lubricant purchases normally have on the total maintenance budget. On average, lubricant purchases amount to a mere 3%. Circa 40% of the total maintenance cost, however, is influenced by lubrication activities: In addition to the lubricant costs, half of the acquired components require relubrication (20%); overtime labour is mostly a result of machine failures typically caused by inadequate lubrication (15%); and about 5% of labour costs can be attributed to lubrication activities (1.5%).

The influence of lubrication activities on machine reliability is even larger than that though.
It is generally accepted that up to 50% of premature bearing failures are due to either incorrect lubrication practices or contamination. This is closely related to the type of lubricant and the manner in which it is used.



According to the Tribology Action Handbook from IMechE, the UK Institution of Mechanical Engineers, investing in a good lubrication programme yields a return on investment up to 400%.

A sound lubrication programme will help prevent the most frequent failure modes occurring in an industrial plant related to lubricant contamination, chemical degradation or cross contamination.

What the right lubrication programme can do for you

Increase

- Productivity
- Reliability
- Availability and durability
- Machine uptime
- Service intervals
- Safety
- Health
- Sustainability

Reduce

- Energy consumption due to friction
- Heat generation due to friction
- Wear due to friction
- Noise due to friction
- Downtime
- Operating expenses
- Product contamination
- Maintenance and repair costs
- Lubricant consumption
- Corrosion

From lubrication to lubrication management

A good lubrication programme can be defined by applying the 5R approach:

"The right lubricant, in the right amount, reaches the right point at the right time using the right method"

This simple and logical approach, however, requires a detailed action plan that must include aspects as varied as:

- Logistics and supply chain
- Lubricant selection
- Lubricant storage and handling
- Lubrication tasks planning and scheduling
- Lubricant application procedures
- Lubricant analysis and condition monitoring
- Lubricant waste handling
- Training

What can SKF Lubrication Management do for you?

SKF Lubrication Management process

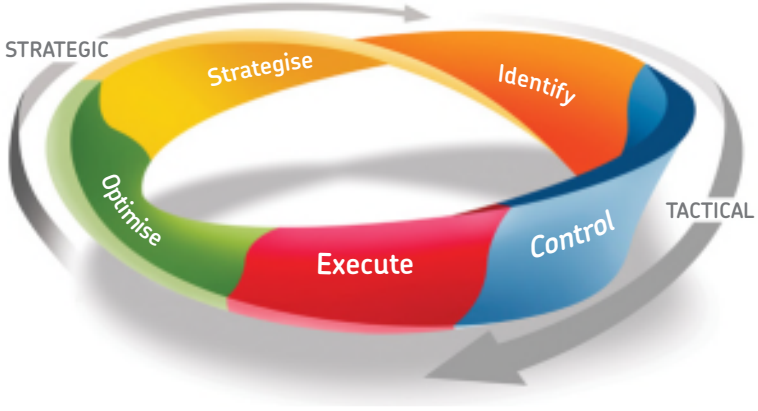
As a specialist in this field, SKF has defined a structured process to help our customers build a strong lubrication programme.

SKF Client Needs Analysis Lubrication Management

SKF Client Needs Analysis Lubrication Management

The starting point is to perform a first assessment to ascertain your main goals and concerns. It will also provide an indication of the maturity level of the existing lubrication programme.

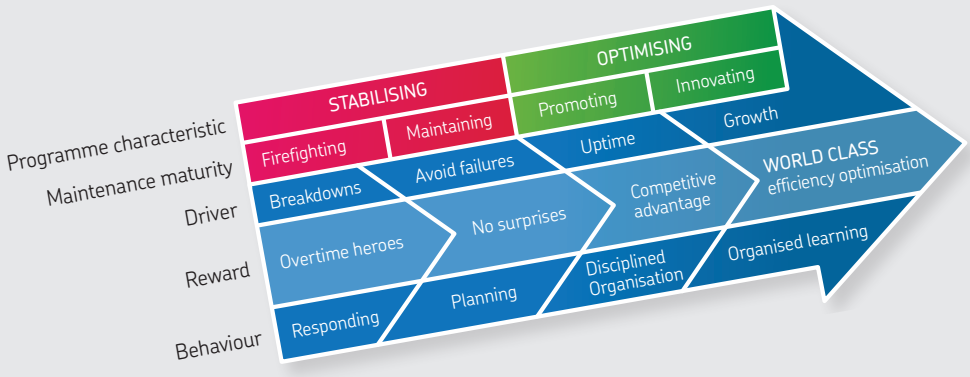
This structured benchmarking process consists of 40 questions covered during an interview with the maintenance team responsible for lubrication. The interview is usually accompanied by a tour of the facility to help visualise current practices and is typically completed in a one-day session.



The questions are based on the SKF Asset Efficiency Optimisation (AEO) model.

- **Strategise:** why & what
  Do you know why you do what you do?
- **Identify:** what & when
  Does it matter?
- **Control:** when & how
  Did you do what you should do well?
- **Execute:** how & who
  Do you know what it means?
- **Optimise:** why not
  Do you learn and improve?

The output of a CNA-LM is an appraisal of the maturity level of the customer's lubrication programme as well as an identification of the main strengths and the areas with major opportunities for improvement.

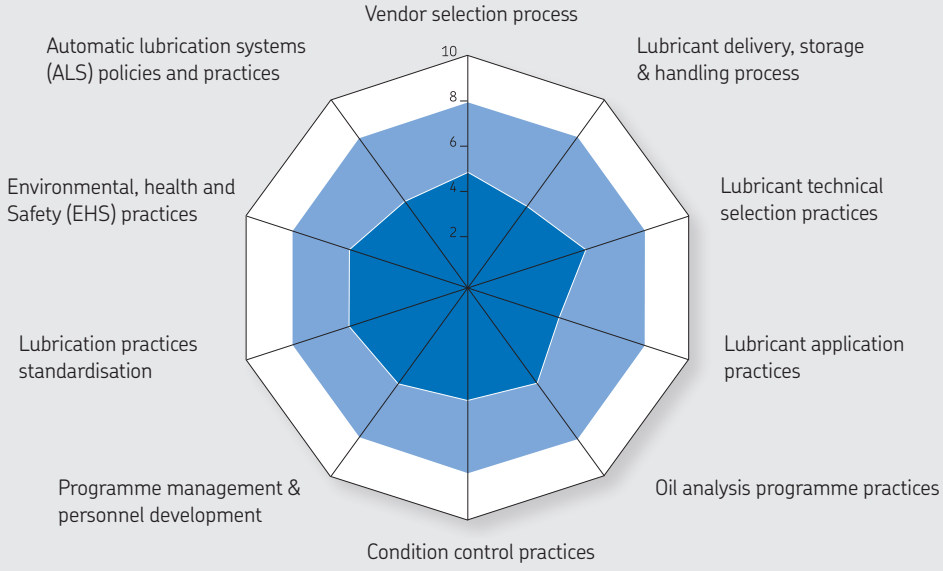


SKF Lubrication Audit

SKF Lubrication Audit

The second step is to evaluate the underlying weaknesses. This requires a detailed assessment of your practices and their fundamentals. An average SKF Lubrication Audit is conducted mostly on the plant floor and takes three to five days, requiring the involvement of the team in charge of lubrication in the given facility. The SKF Lubrication Audit questionnaire is structured to cover the different aspects of a lubrication programme. The results form the basis of the improvement plan.

- **Supplier selection:** Is there an objective process to select and assess the suppliers of lubrication products and services?
- **Lubricant delivery, storage and handling:** Does your lubrication storage room provide a clean and safe environment for your lubricants and personnel?
- **Lubricant selection:** Have you undergone a detailed selection and consolidation process to optimise both the lubricants for your application and the inventory?
- **Lubricant application:** How do you ensure that only the right lubricant is being supplied in the right way at the right point?
- **Lubricant analysis:** Do you have a formal lubricant analysis programme? Does it assess lubricant health, machine health and contaminant monitoring?
- **Lubricant contamination & condition control:** How do you monitor, remove and control lubricant contamination?
- **Lubrication programme management & personnel development:** Do you have a structured and consistent process to execute and follow up your lubrication tasks? Does it include key performance indicators, training and constant improvement goals?
- **Lubrication practices standardisation:** Are all your procedures properly documented, implemented and kept updated?
- **Environmental, health and Safety (EHS) practices:** Do you consider EHS regulations in your lubrication programme?
- **Automatic Lubrication Systems (ALS) policies and practices:** Are you taking full advantage of available technologies to optimise your machinery lubrication conditions?



The output of an SKF Lubrication Audit is a comprehensive report of your current lubrication programme and its efficiency. It includes a detailed list of strengths and improvement opportunities along with a series of recommendations to guide you in taking your lubrication programme to a world-class level. The report can also include a calculation of the potential financial benefits in improving your lubrication programme.

Improvement proposal

Once a complete diagnosis has been established and improvement opportunities have been identified, the third step is to create specific activities that can be undertaken to improve your lubrication programme. SKF can assist you in this process by providing tailor-made proposals in meeting your pre-defined goals.

Typical proposals might include but are not limited to:

- Lubricants selection and consolidation
- Lubrication routines design: Tasks, inspections, lubrication cards
- Storage room design
- Colour coding implementation: Tools and lubrication points
- Oil analysis programme design
- Contamination control programme
- Standard procedures generation
- Training
- Centralised lubrication systems
- Operator driven reliability programme
- CMMS data population: asset register, bill of materials, standardised job plans, etc.
- Outsourcing through performance-based service and supply agreements (SKF integrated maintenance solutions)

Design and implementation

The fourth step is to design and implement an action plan. SKF can support you in the implementation phase of the action plan by providing varied services ranging from consultancy to guiding the actual execution of a given activity.

Additional support is provided by means of virtual tools

- SKF @ptitude Exchange:
  SKF's knowledge source for asset maintenance and reliability expertise.
- SKF Reliability Maintenance Institute (RMI) Online:
  e-learning courses.
- SKF LubeSelect and SKF LubeSelect for SKF greases:
  These services allow you to access a knowledge base to help in the selection of an appropriate lubricant in a particular application. You can select a lubricant based on application conditions or application profiles.
- SKF DialSet:
  After selecting the criteria and grease appropriate for your application, the programme provides you with the correct settings for your SKF Automatic Lubricators. It also provides a quick and simple tool for relubrication intervals and quantity calculations.
- SKF Lubrication Planner:
  Developed to help in the administration of a lubrication plan, thereby bridging the gap between the need for a software platform vs. administration by a simple spreadsheet.

Optimisation

The fifth step concerns the evolution of the programme which is measured through the use of key performance indicators. It is important to determine any required adjustments and periodic reassessments which will provide insights into the overall evolution of the programme.

In most cases, required improvements cannot be implemented all at once which creates a pipeline for future projects and activities.

Reference cases

With over 100 years of experience, SKF can define tailor-made solutions based on your organisation's needs and goals. The following three cases are examples of ways in which SKF can help you build your lubrication programme:

Application: Copper smelter and refinery
Country: Peru
Scope: Lubrication engineering, tasks and oil analysis

Application: Pulp line
Country: Brazil
Scope: Lubrication engineering, training and bearing supply

Application: Rolling mill
Country: Colombia
Scope: Design and implementation of the lubrication programme

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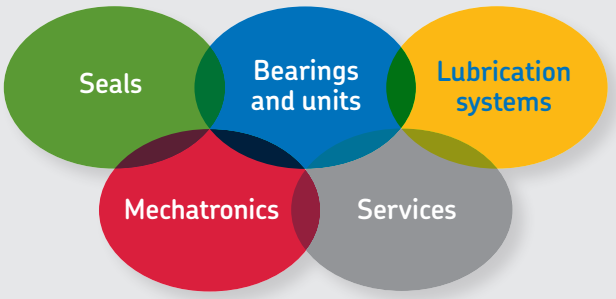

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (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 services. A global presence provides SKF customers uniform quality standards and worldwide product availability.

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