

Bearing Maintenance and the right tools

SKF Maintenance Products

by Julien Meunier and Jens Kammann, support from Alain Noordover, 11th October 2017



Agenda

I. Introduction

- a) Maintenance Strategies
- b) Impact of maintenance on company KPIs
- c) The Bearing Life Cycle

II. Maintenance practices and their effect on bearings

III. Lubrication management – A proactive approach for lubrication

IV. Summary

Introduction

Jens Kammann



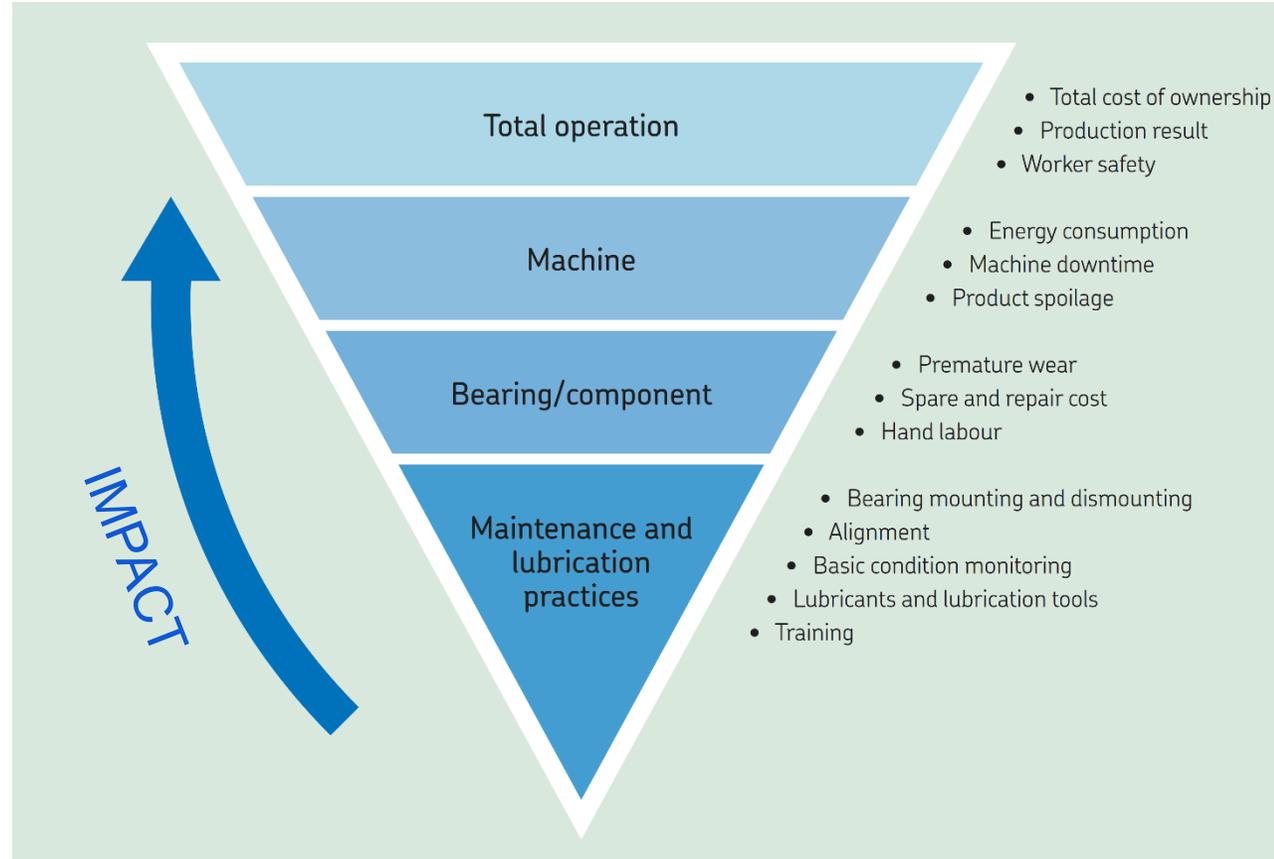
Product Marketing
Manager

Julien Meunier



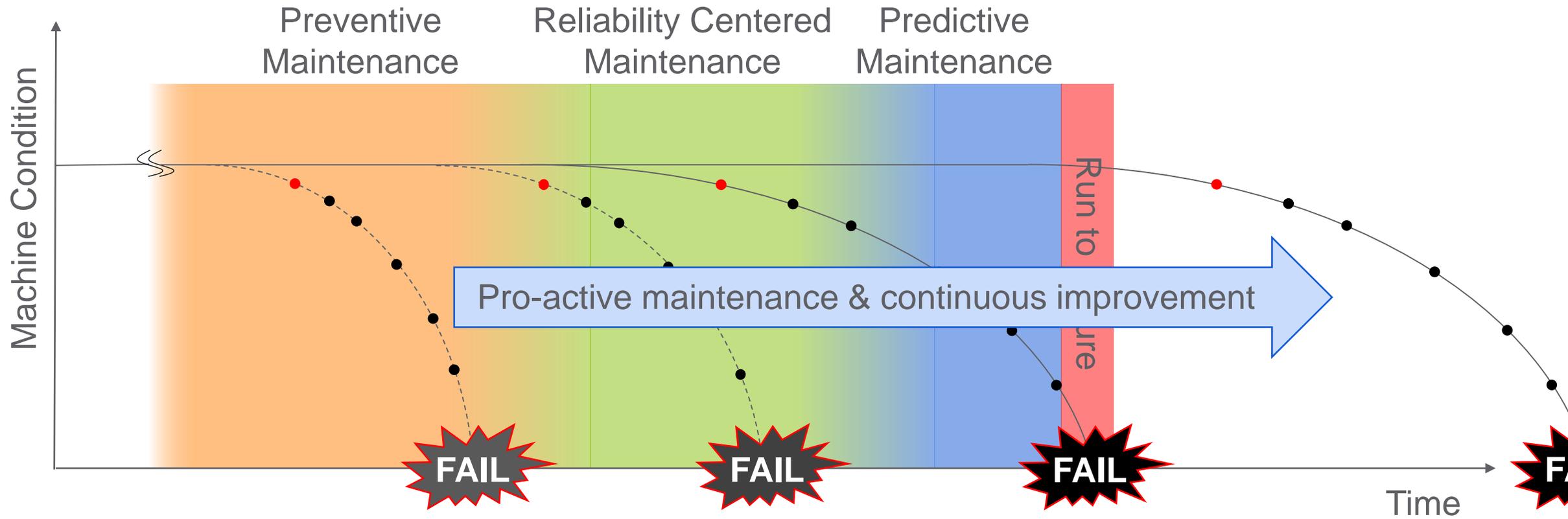
Business and Product
Development Manager

The impact of maintenance and lubrication



- Bearings are important components for rotating equipment performance
- Bearings and tools are only a small share of the maintenance budget, ...
- but they often have a significant impact on the machine performance and company KPIs!

PF-Curve and Maintenance Strategies



Rotating Equipment Performance

What is the difference between these two bearing?



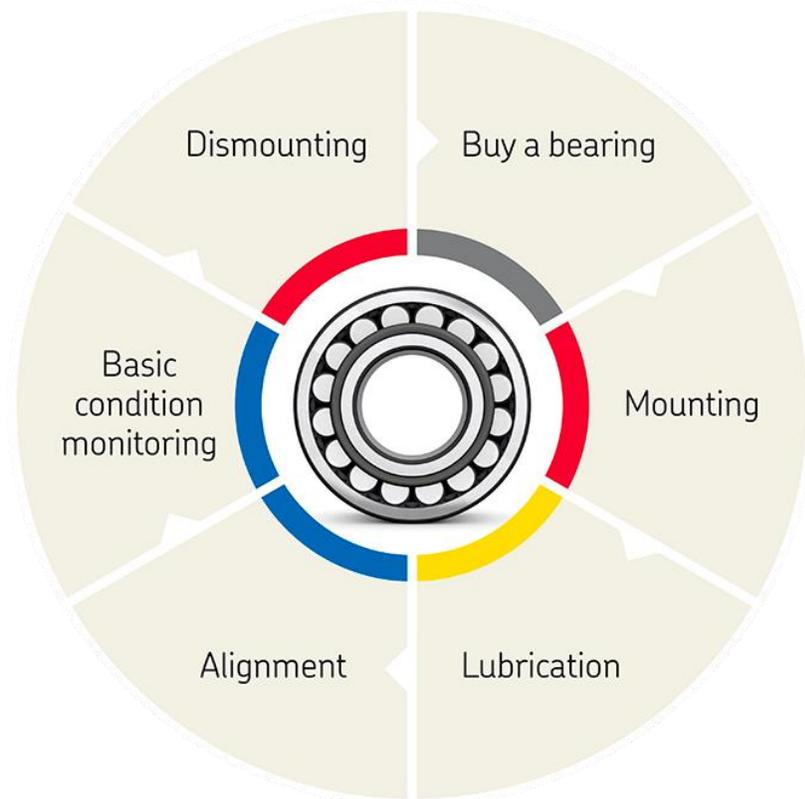
800 hours of operation



10 000 hours of operation

Good Maintenance Practices

The SKF Bearing Life Cycle



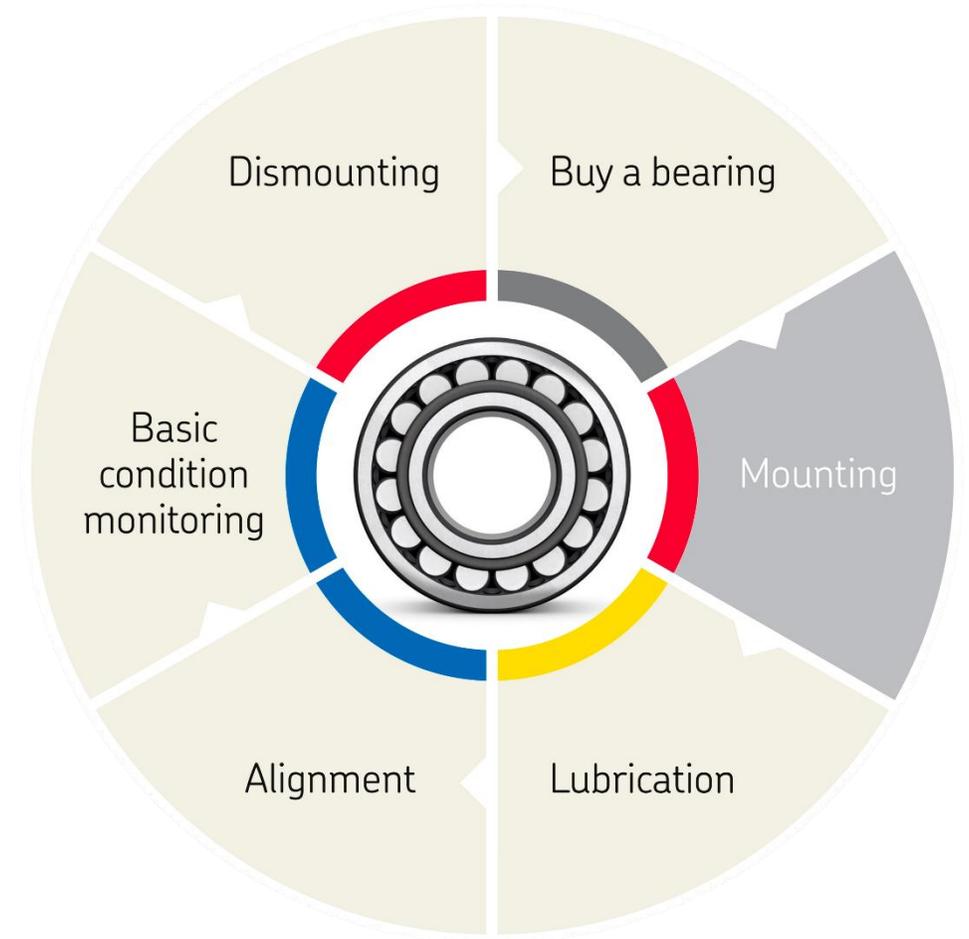
The **SKF Bearing Life Cycle** shows important phases in the life of a bearing.

Each phase influences the bearing performance and service life.

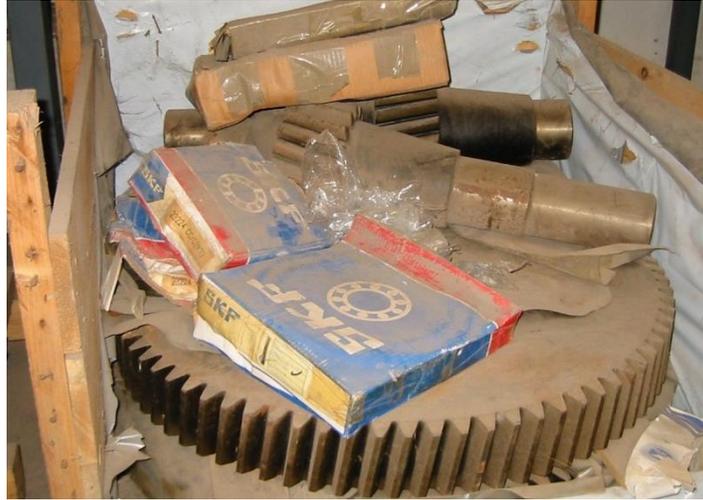
Let's have a closer look what happens in these stages...

SKF Bearing Life Cycle

Mounting



Impression of mounting practices



Best practices mounting

- Work in clean environment
- Prepare shaft and application for mounting
- Check bearing clearance before and after mounting
- Use mounting fluid for cold mounting techniques
- Safely transport bearing to mounting location and unpack only shortly before mounting
- Don't use open flames, oil baths, hammers or similar mounting techniques that can harm the bearing, environment or technician

An overview of recommended mounting techniques and procedures per bearing designation can be found on skf.com.



Tools for bearing mounting

SKF Drive-up Method



SKF
729124 DU
TMJL series

Induction Heater



SKF TIH series

Fitting Tools



SKF
TMFT
series



Spanners



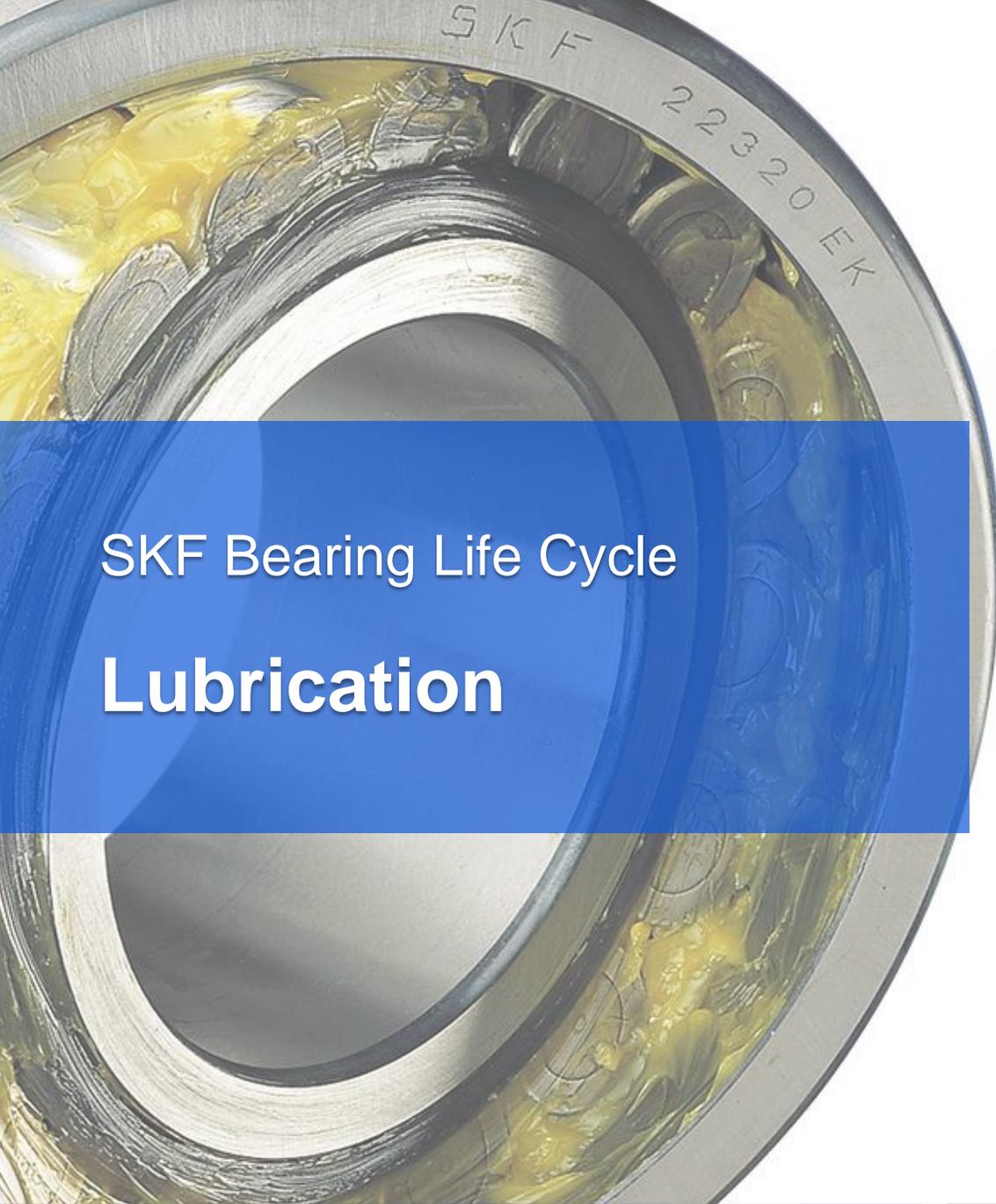
SKF TMFN series



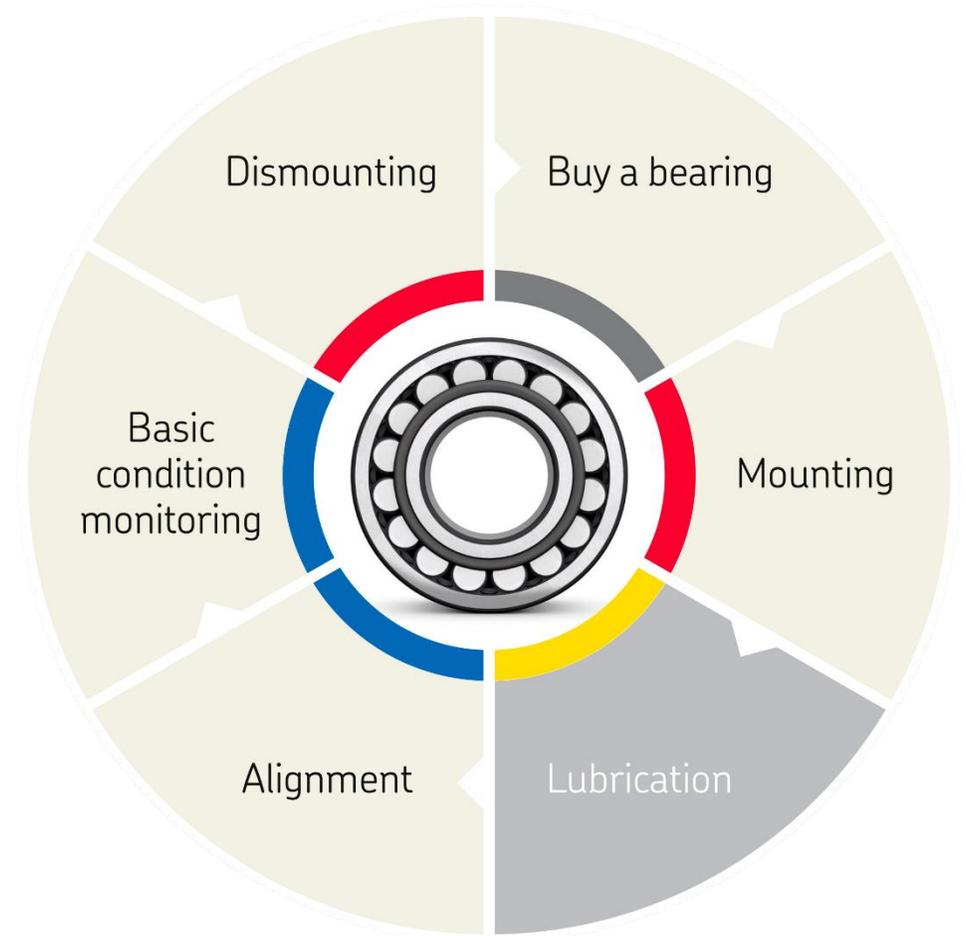
SKF HN series



SKF HMV series



SKF Bearing Life Cycle
Lubrication



State of the art practices



Common lubrication issues



Contamination ingress



Safety issues



Lubrication issue resulting in product losses & environmental impact



Inadequate lubrication tools



Leakages



Good practices

- The goal is to provide:
 - The right **lubricant**...
 - At the right **time**...
 - In the right **amount**...
 - With the right **cleanliness**...
 - With the right **method**...
 - And with the right **attitude**

- **And for numerous assets!**



Greases & tools

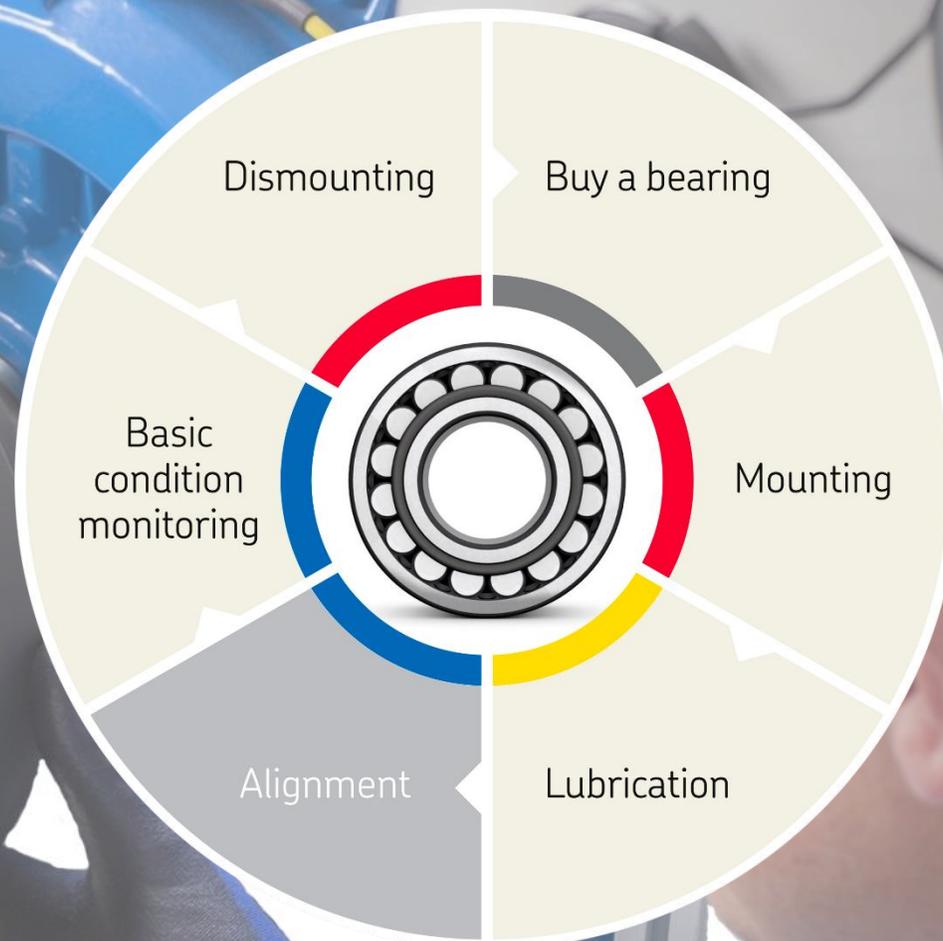
- 17 greases
 - High/Low temperature, high loads, generic, food compatible...
- Manual and electrical grease guns
 - Grease meter



BRCE
BEARING RELIABILITY CONFERENCE & EXPO

SKF Bearing Life Cycle

Alignment



Common alignment issues



Hammer trick



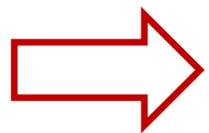
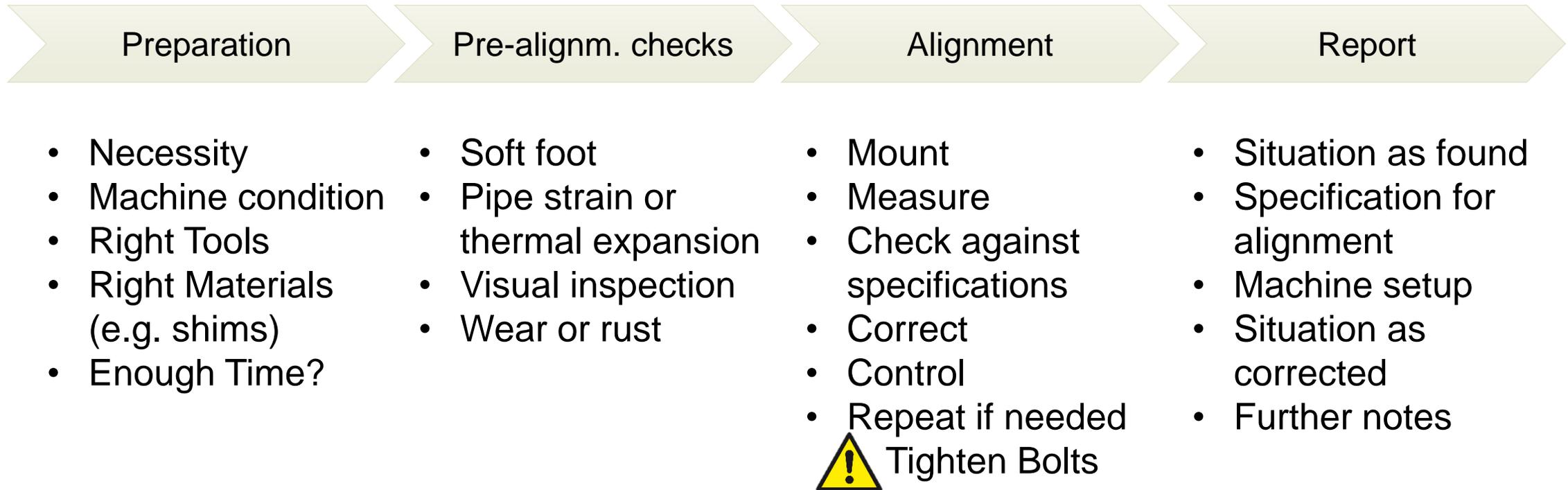
Machines shims aligned



Damaged shims



Simplified shaft alignment process



Often problems occur, when no preparations and pre-alignment checks have been made.

SKF Shaft Alignment Tools

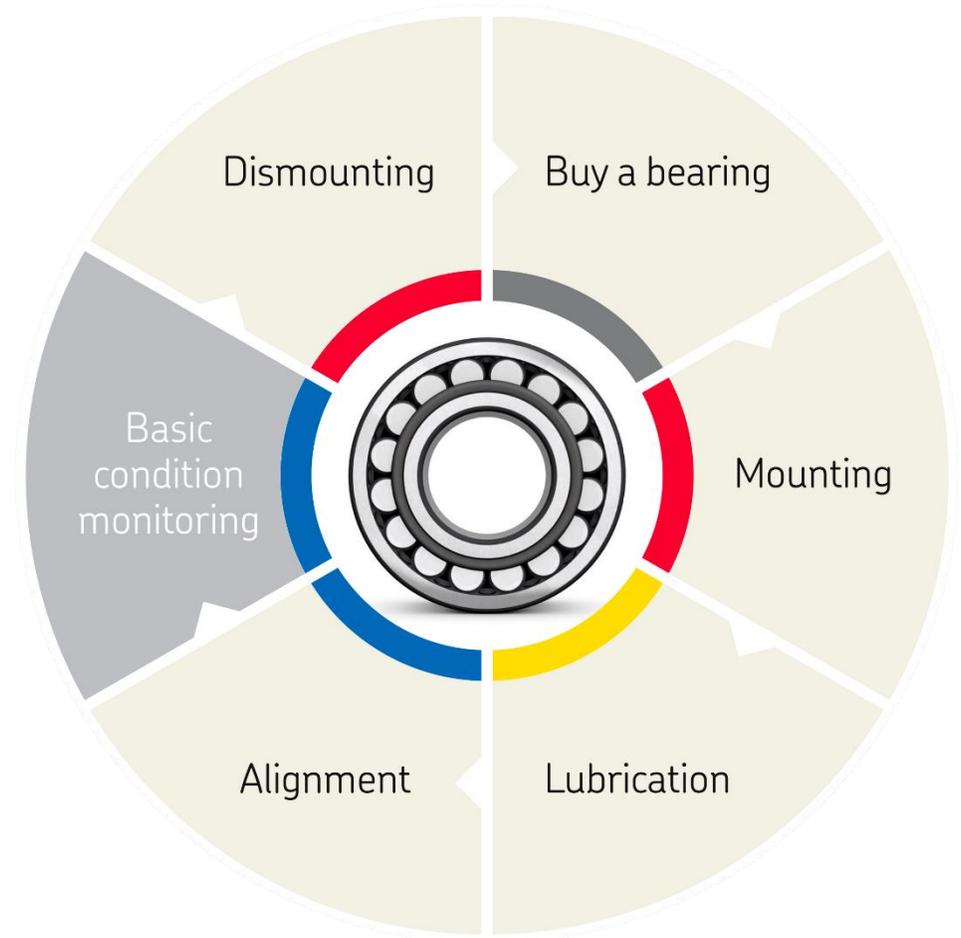


- Confidence in performing correct shaft alignment
- Easy to operate and intuitive to use
- Attractive and innovative design

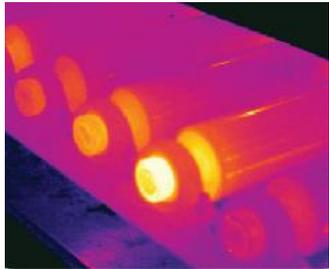
- Mobile tablets or traditional displays
- Competitive features and functions
- Truly affordable prices



SKF Bearing Life Cycle
Condition Monitoring



Monitoring and Inspection



Infrared cameras



Stroboscopes



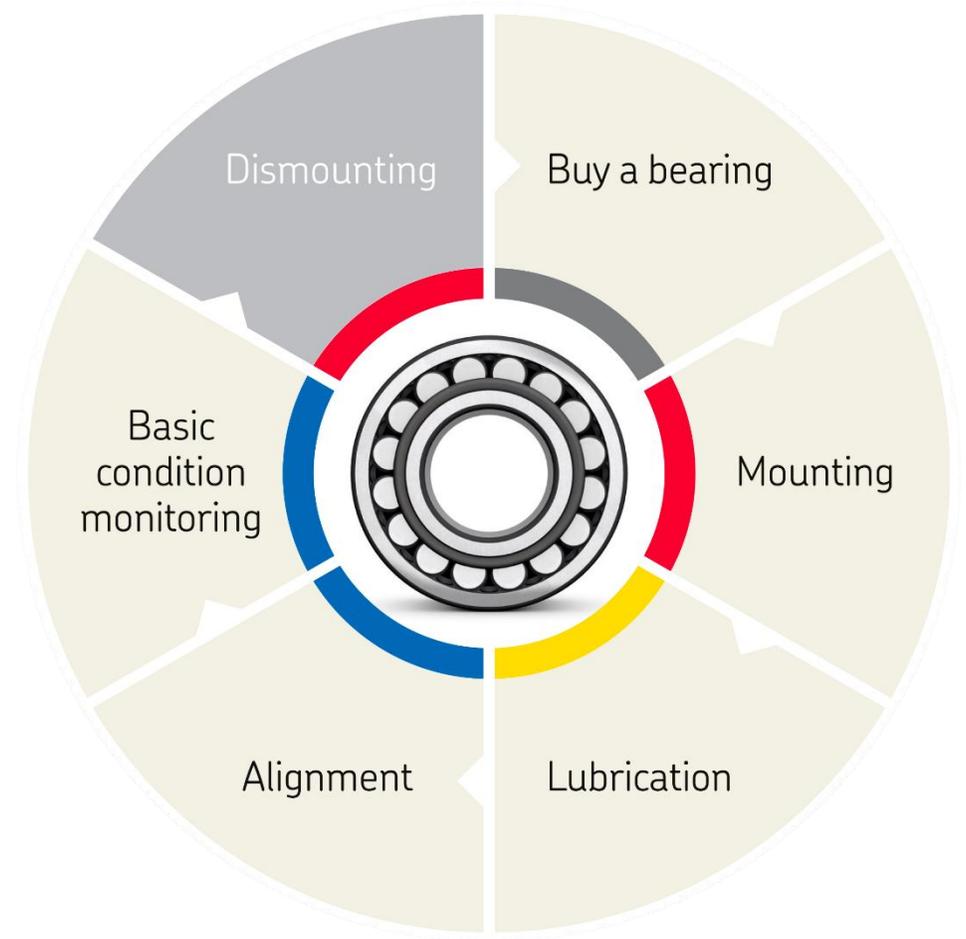
Stethoscopes



Endoscopes



SKF Bearing Life Cycle
Dismounting



Common dismounting techniques



Best practices for dismounting



- Clean and prepare shaft for dismounting
- Do you want to re-use or re-manufacture the bearing? If so,
 - mark the relative position of bearing and housing before dismounting,
 - avoid transmitting force through the bearing when dismounting,
 - demagnetize bearing when induction heater is used
 - clean the bearing with suitable solvent,
 - protect the bearing against corrosion.

Tools for bearing dismounting

Puller

External



SKF
TMMA,
TMHP,
TMMP
series

Internal



SKF
TMIP,
TMIC,
TMMD
series

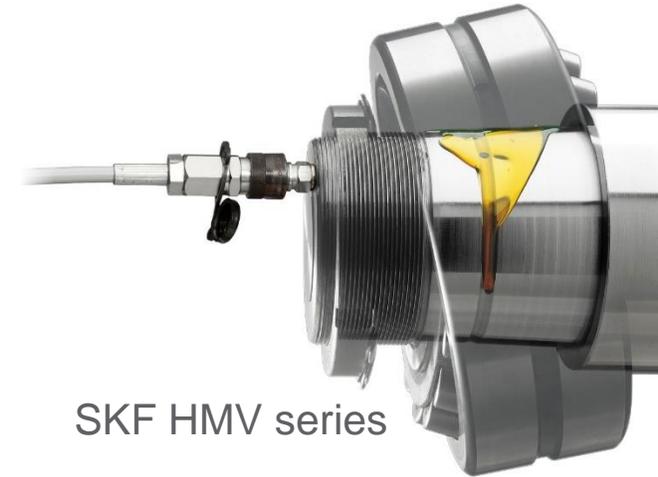
Induction Heater



SKF EAZ series

Oil injection pumps
with 100 MPa or more
SKF 728619 E, TMJL 100

Oil Injection



SKF HMV series



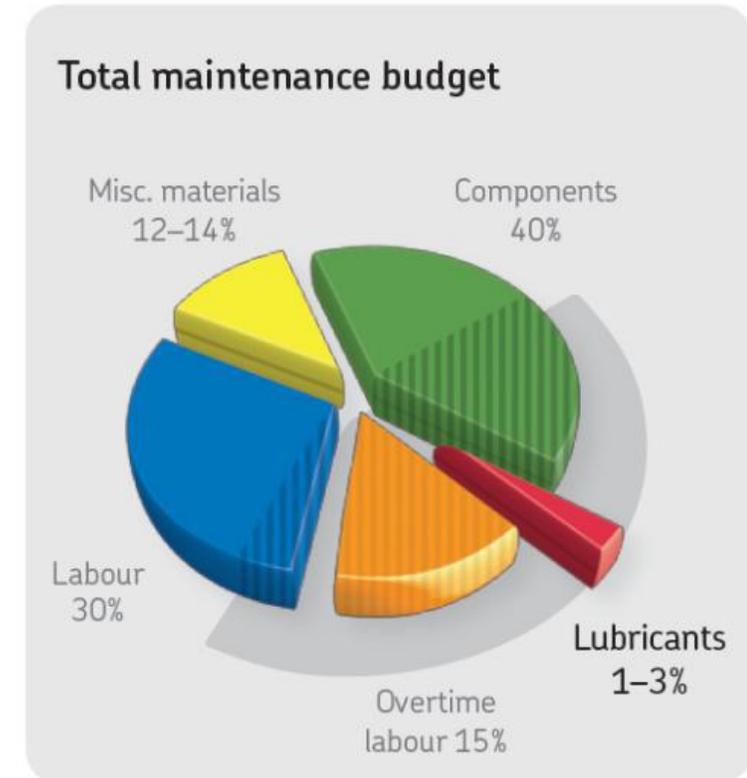
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Lubrication Management
by Alain Noordover

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The importance of lubrication

- Still ~50 % of premature bearing failures
- Root causes failures such as:
 - Wrong/inadequate lubricant
 - Inadequate Quantities & frequencies
 - Inadequate practices & processes
 - Contamination & cross mixing
 - Lack of knowledge and/or interest
 - Complacency
 - **And most often a mix of those**
- Profound impact on plant's KPI's & costs
 - Downtime
 - Extra labor
 - Components costs
 - EHS & environment



Lubrication Management program

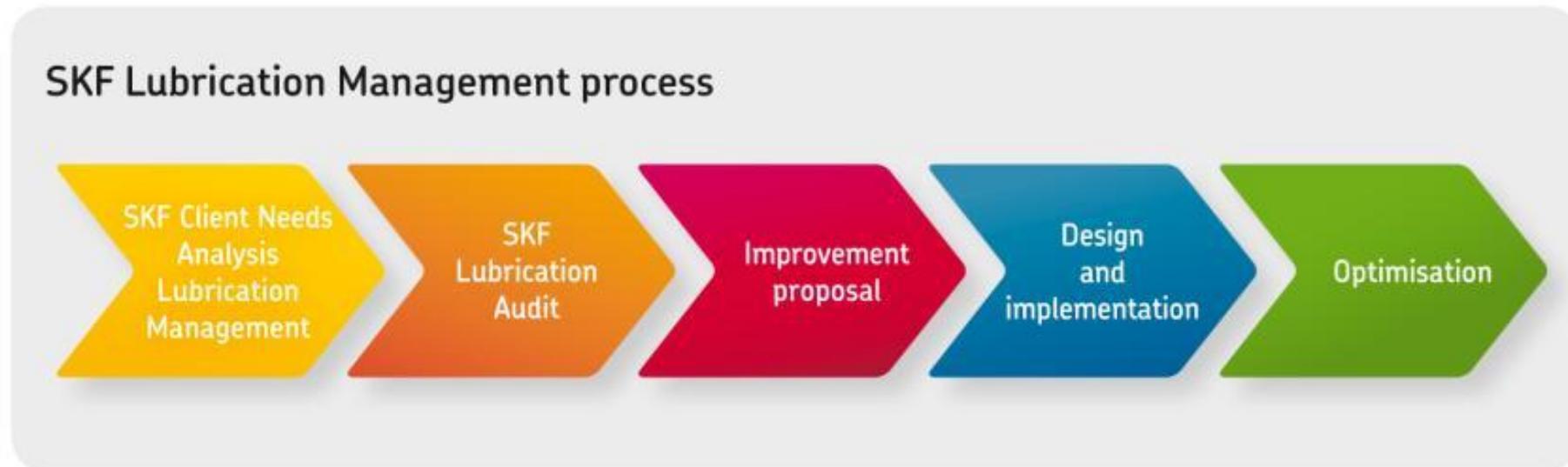
“The effect & efficient organization of resources in order to reduce machines failures, inefficiencies & injuries related to lubrication”

It covers:

- **Logistics and supply chain:** Process to select and assess the lubricants suppliers
- **Lubricant selection:** Optimize lubricants for your applications and your inventory
- **Lubricant storage & handling:** Provide a clean and safe environment for lubricants and personnel
- **Lubrication task planning & scheduling:** Develop a process to execute and follow up your lubrication tasks
- **Lubricant application procedures:** Supply the right lubricant in the right way at the right point
- **Lubricant analysis programme:** Assess lubricant health, machine health, contaminant monitoring
- **Lubricant contamination & condition control:** Monitor, remove and control lubricant contamination
- **Lubricant waste & handling & EHS:** Follow regulations for disposal and EHS
- **Automatic lubrication systems:** Optimize machinery lubrication with latest lubrication technologies

Our lubrication management approach

- A consultancy approach
- A structured model that helps identifying the required improvements in a lubrication program and to guide towards lubrication excellence



LM benefits for industrial customers

- Poorly performed lubrication **is still a major contributor** to bearing & other components premature failures.
- It also leads to **severe inefficiencies** and **accidents**
- Lubrication **should not be considered solely as an isolated “task”**, but needs integration with any reliability improvement program
- LM can lead to **simple improvements** which can increase drastically reliability
- **Empowerment** of lubrication technicians is key and Support from **company management** is a must!
- SKF can support with lubrication related **products, services, trainings**

LM benefits for SKF Distributors

- **Helps you differentiate:**
 - Focus on customer's real pains
 - Holistic view on lubrication
 - Work together with customers to increase reliability & efficiency
 - Combination of LM with other services (PdM, Lubrication systems,...)

A close-up photograph of a person in a blue business suit writing in a blue notebook with a silver pen. The person's hands are the central focus, with the left hand resting on the notebook and the right hand holding the pen. The background is blurred, showing another person in a suit sitting at a table with a glass of water. A semi-transparent blue rectangle is overlaid on the left side of the image, containing the word 'Summary' in white text.

Summary

Bearing Maintenance and the right tools

- Bearings are a **key machine component** and **directly linked to machine lifetime and reliability**.
- **Bearing performance impacts KPIs on company level**. For example: production result, worker safety and total cost of ownership.
- First steps to improve bearing performance are often easy; **Review maintenance practices and use appropriate tools**.
- **SKF supports you** with improving your bearing maintenance. Our distribution partner and us offer structured improvement programs to support you such as **SKF Lubrication Management** or **SKF Maintenance Assessment**.



SKF®