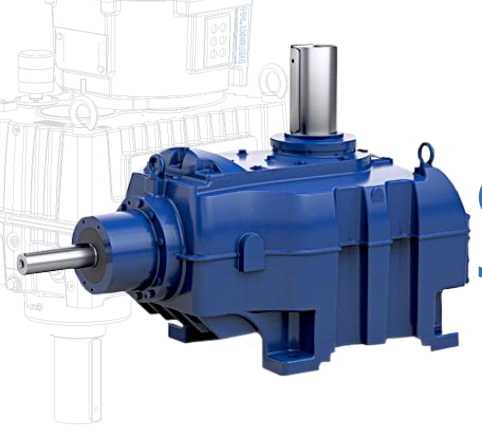




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ACC GEARBOX

PRACTICAL GUIDANCE FOR STORAGE, INSTALLATION, AND MAINTENANCE OF GEAR- UNITS FOR ACC FAN DRIVES



Edwin Houberg

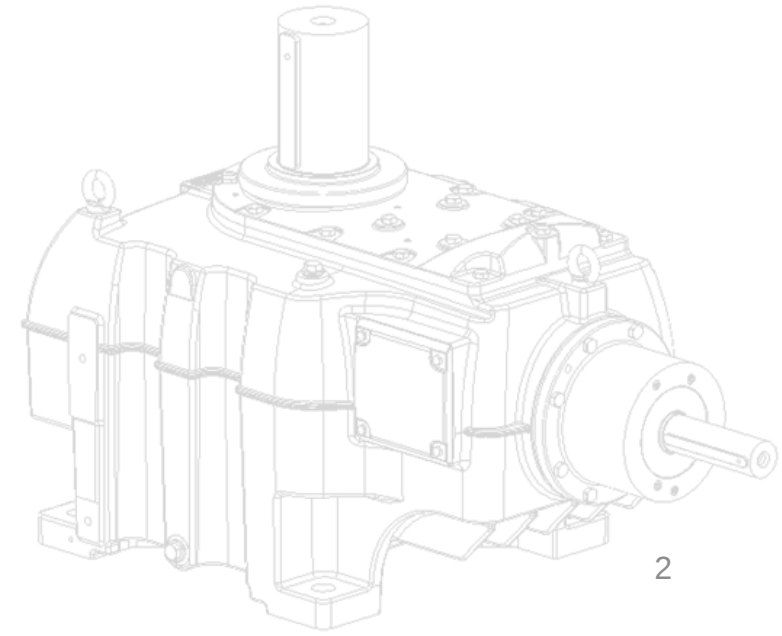
15 July 2026

Sumitomo Drive Technologies

Hansen Industrial Transmissions NV

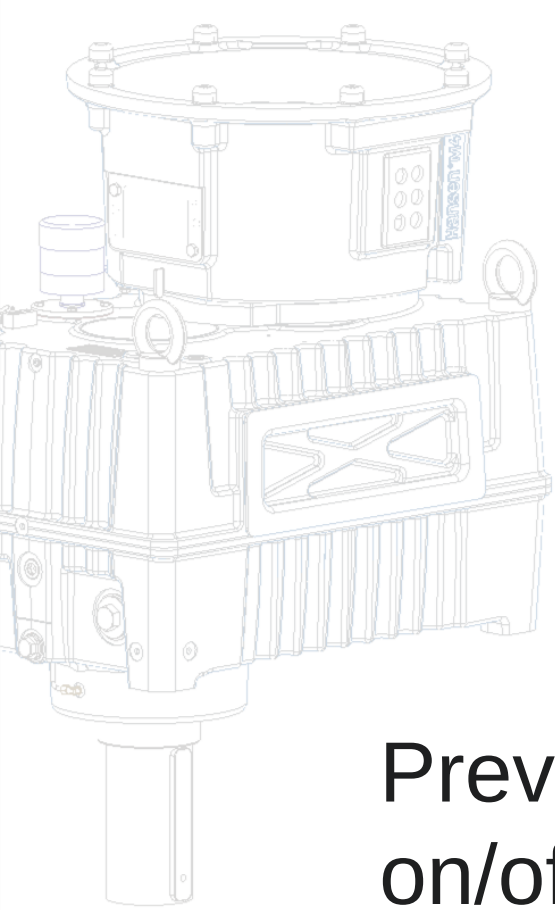
AGENDA

- 1. Starting Torque and Number of starts**
- 2. Storage**
- 3. Practical guidance for installation**
- 4. Practical guidance for maintenance**



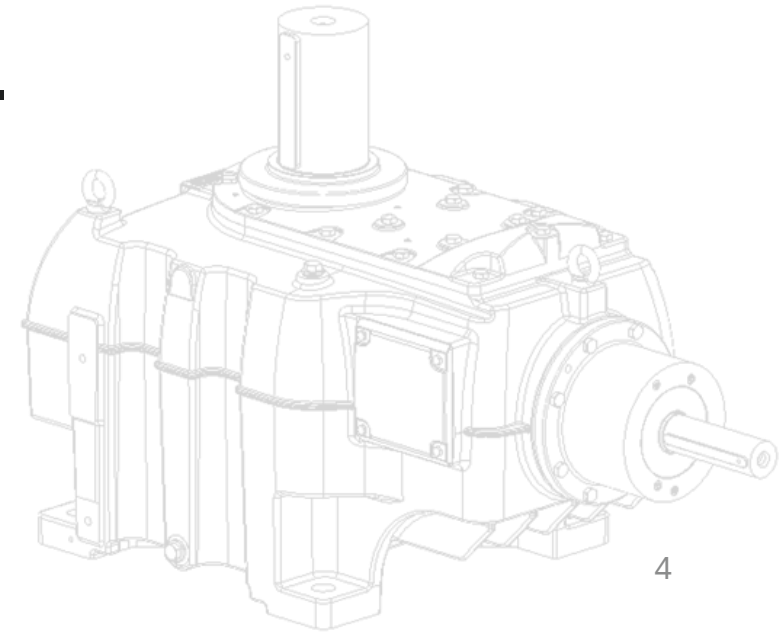
01

STARTING TORQUES



Prevent the same units from being switched on/off repeatedly but choose random.

Programm the DCS differently

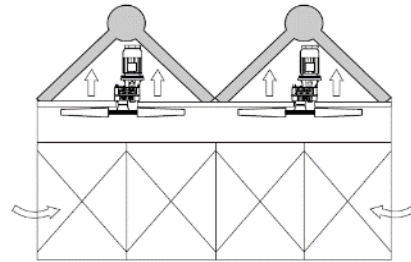


ACC FAN DRIVE = FREQUENT STARTS AND STOPS ...

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Parallel gearbox

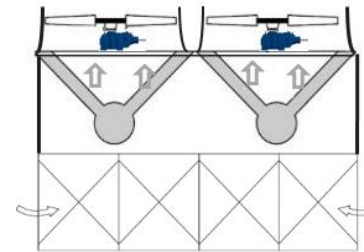
FORCED DRAFT AIR COOLED
CONDENSERS



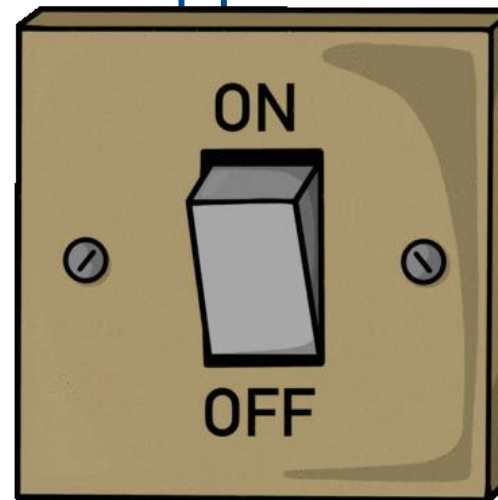
Hansen M4ACC

Right-angle gearbox

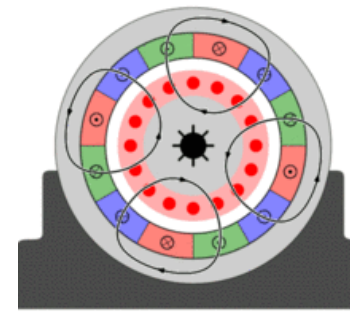
INDUCED DRAFT FOR AIR COOLED
CONDENSERS
(new design)



Hansen M5CT



MOTOR TORQUE PEAKS DURING STARTUP CYCLE....

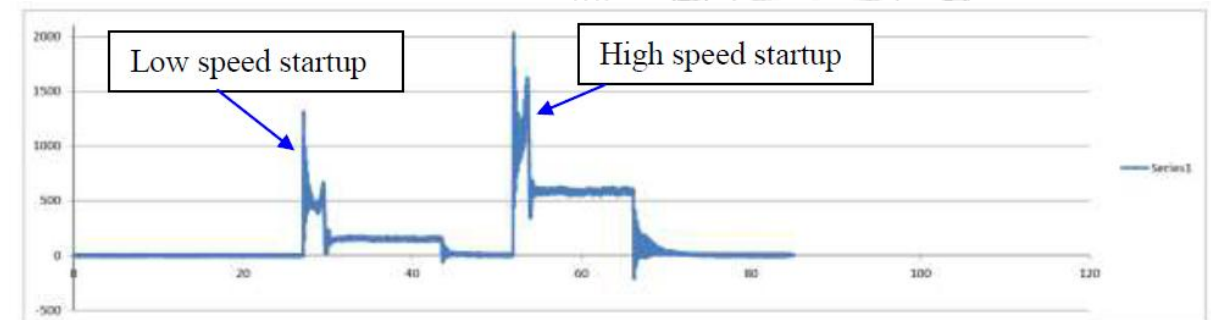
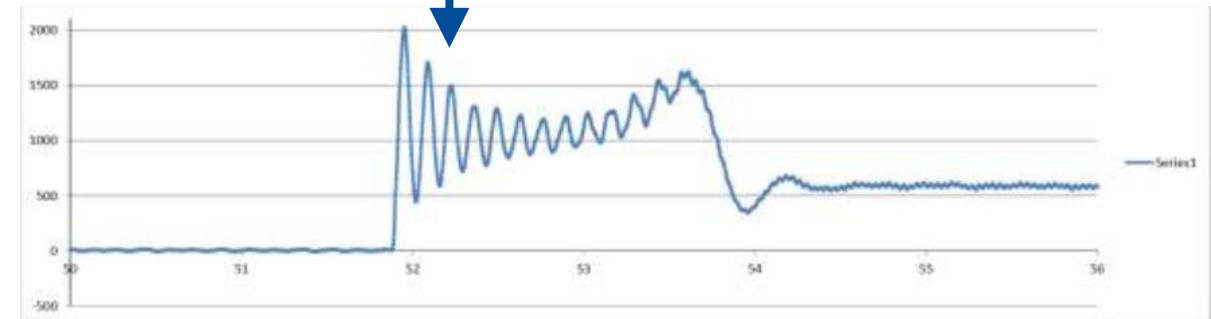
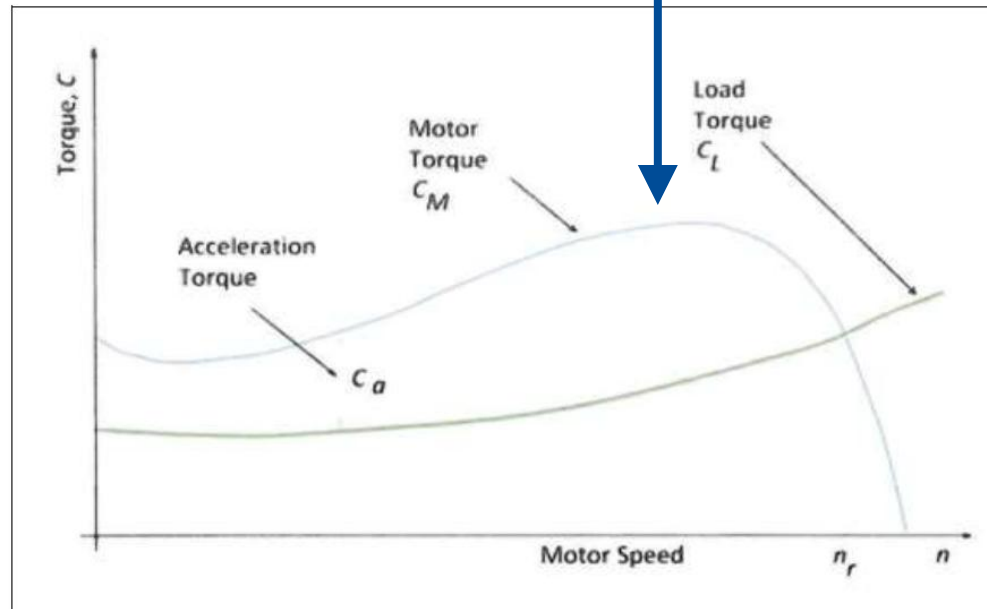


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3 x NOMINAL TORQUE of the motor or even higher



Additionally, motor creates a sinusoidal TRANSIENT TORQUE

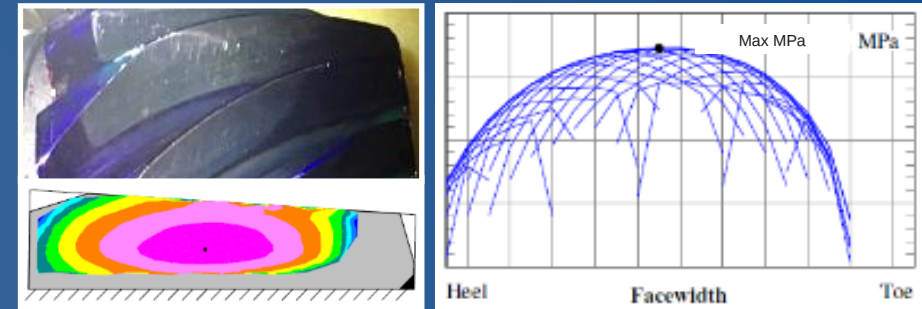
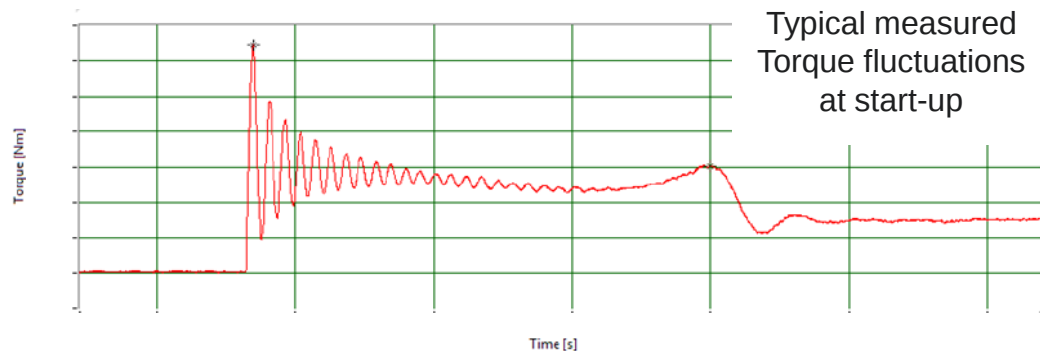


Torque measurements on gearbox input shaft with low and high speed startup

✓ **DEDICATED SELECTION METHOD
TAKING STARTS AND STOPS INTO
ACCOUNT**

✓ **DEDICATED GEAR MICRO GEOMETRY
FOR ACC APPLICATIONS**

Well balanced design to withstand many torque fluctuations at start-up



- Advanced designed micro geometry to withstand the peak fluctuations during start-up

VFD'S CAN ALSO BE A GOOD SOLUTION TO LIMIT THE STARTING TORQUE OF THE MOTOR



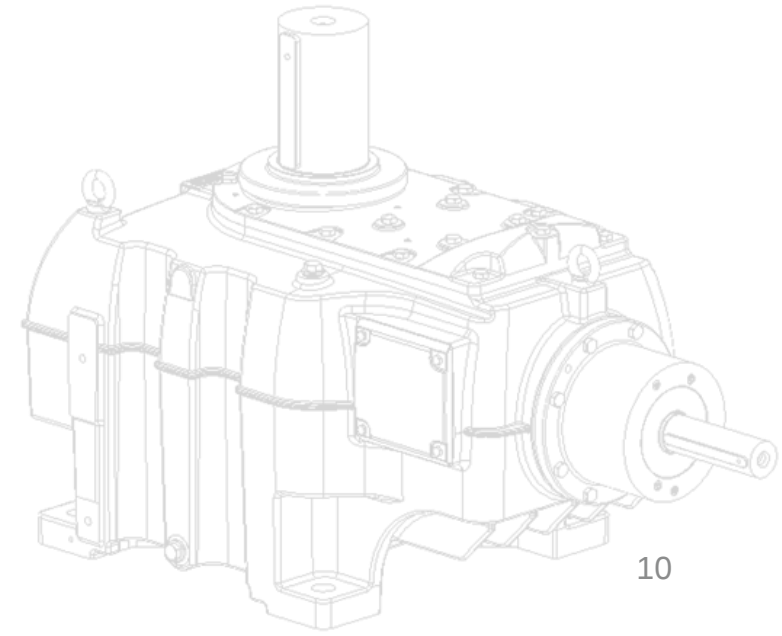
02

STORAGE



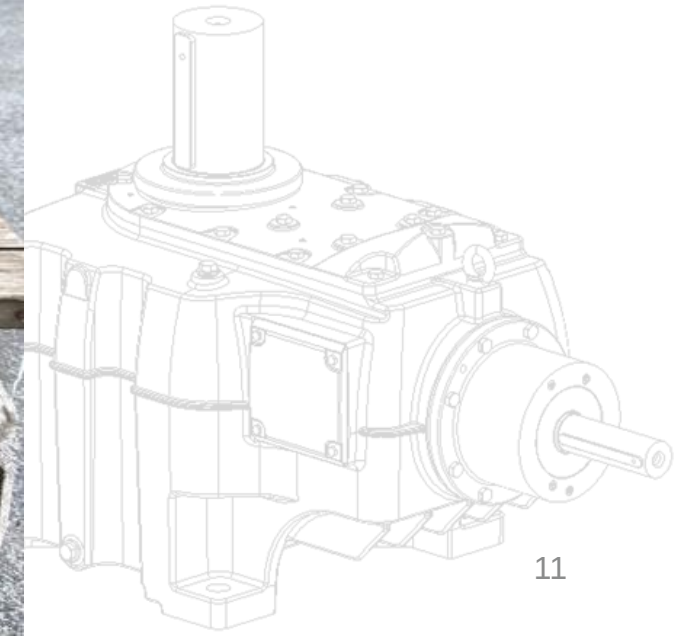
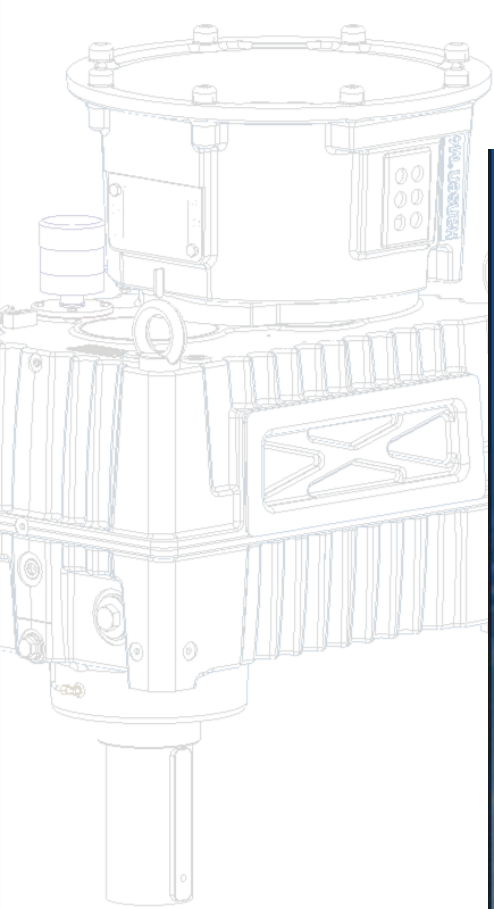
Storage conditions matter.

The right protection helps preserve critical components.



A spare gearbox should reduce risk.

Proper storage keeps it ready for operation.



1. STORAGE OF (SPARE) GEAR-UNITS

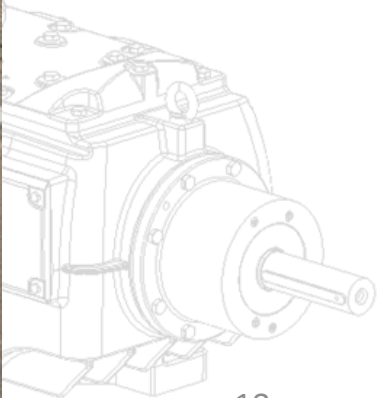
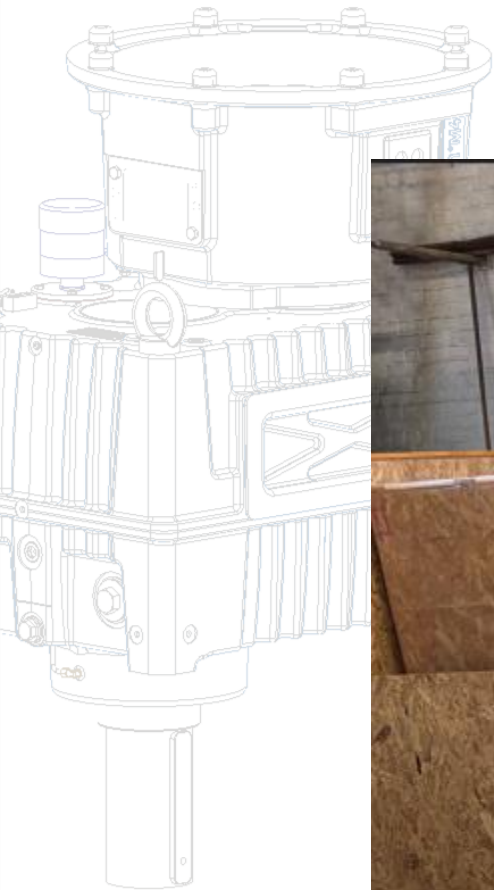
On request we can deliver a corrosive protection suitable for 2 years outdoors storage

The gear-unit is sprayed with a rust preventing mineral oil and contain a certain amount of volatile corrosion inhibitor oil.

The breather plug or filter is supplied separately and replaced by a red colored plug.

All other openings in the housing are hermetically sealed with red colored plugs or covers.

In order to draw the user attention on these special protection measures, the unit is provided with extra warning stickers.

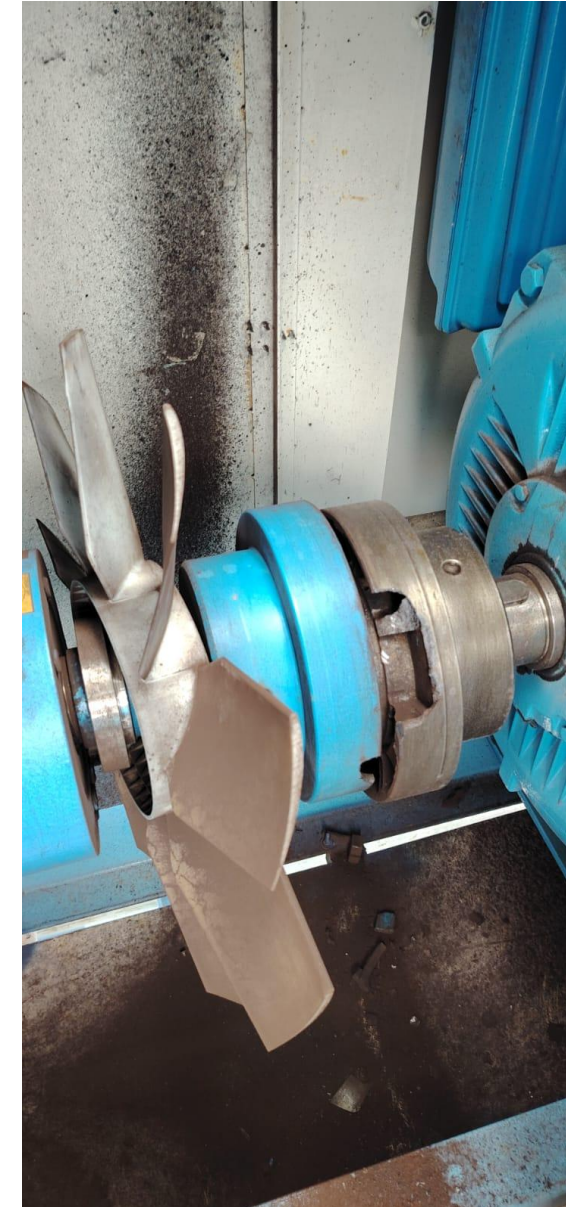
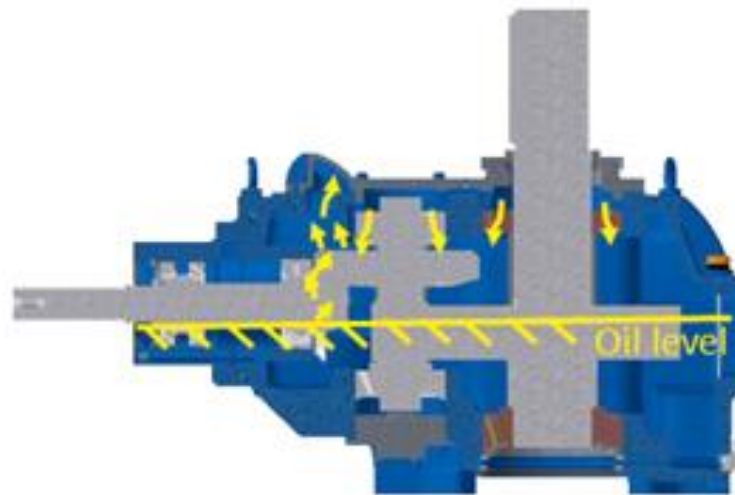
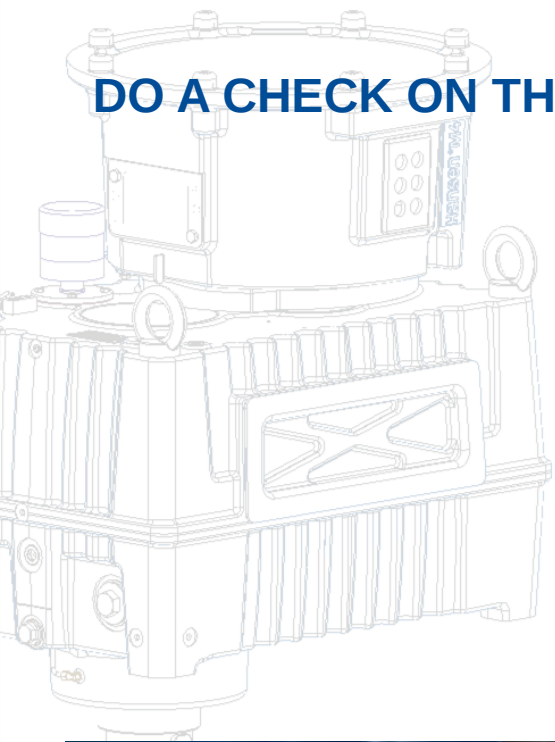


03

PRACTICAL GUIDANCE FOR INSTALLATION

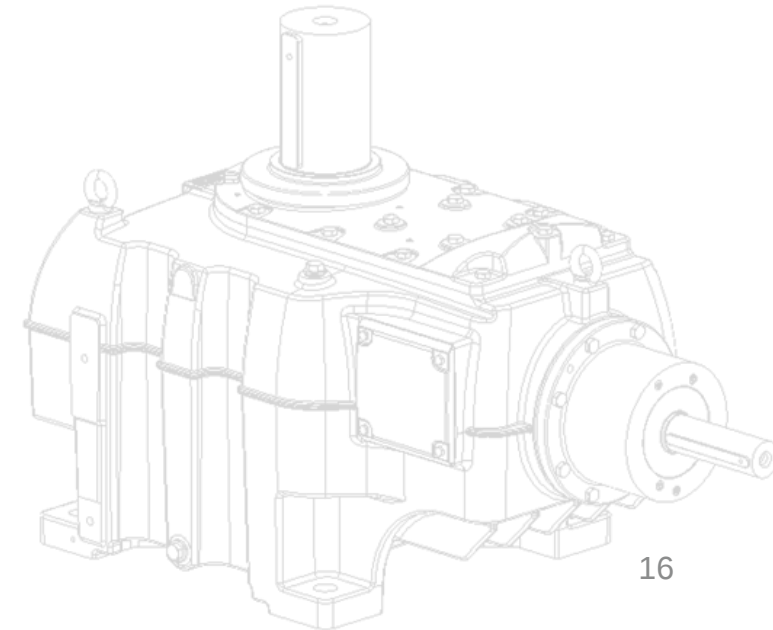
DO A CHECK ON THE POSITION/ALIGNMENT OF THE GEAR UNIT.

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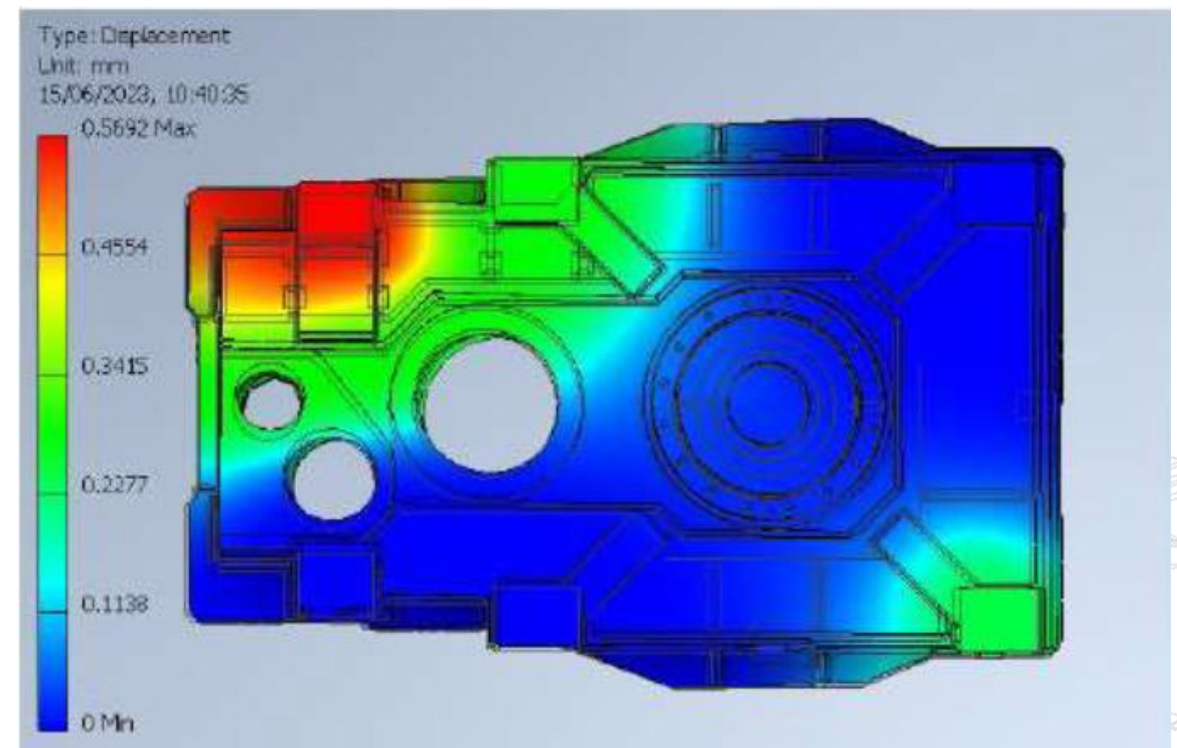
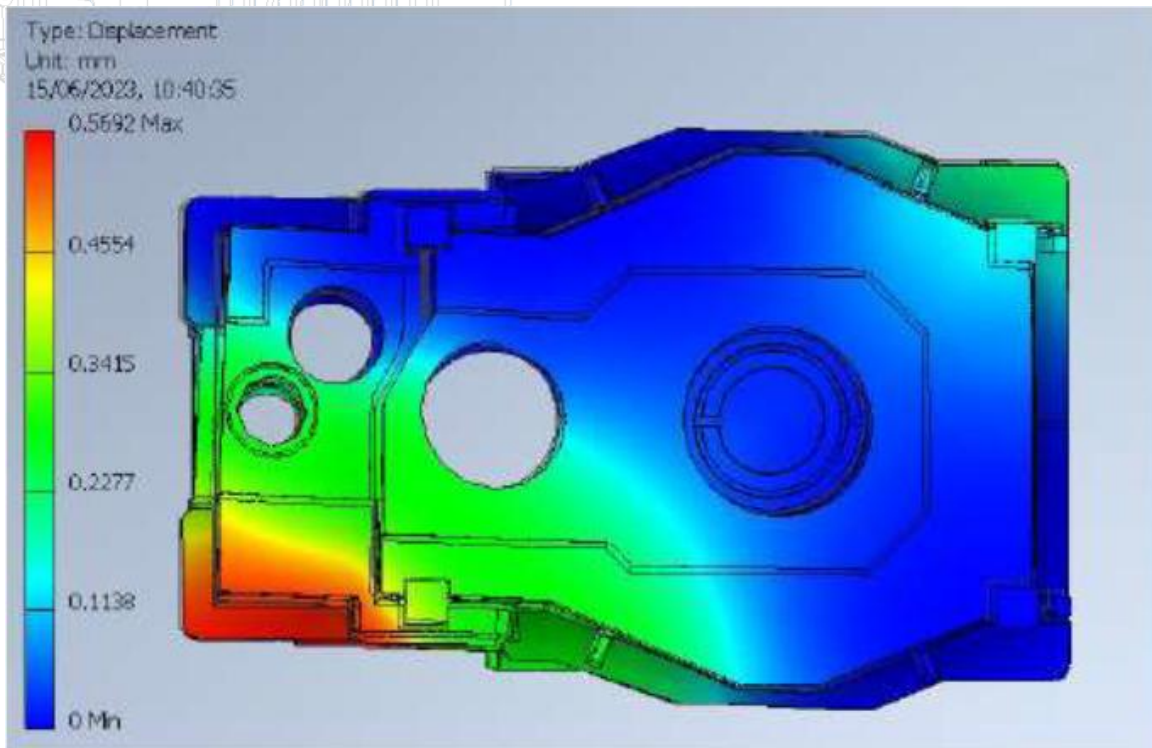
DO A CHECK ON SOFT-FOOT OF THE GEAR UNIT.

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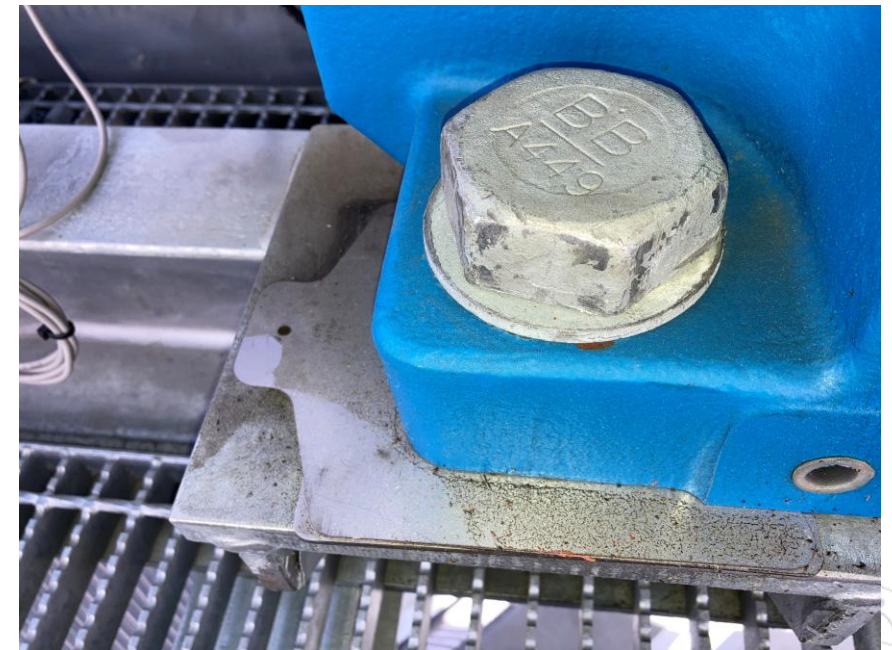
DEFORMATION OF THE HOUSING DUE TO SOFT-FOOT

- Misalignment of the shafts.
- Reduced gear contact pattern.
- Out-of-Round bearing seats, support of outer bearing ring reduced



DO A CHECK ON THE FIXATION OF THE GEAR UNIT.

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04

PRACTICAL GUIDANCE FOR MAINTENANCE

MAINTENANCE TASKS

We acknowledge that end-users don't always do this, but it should be done to maximize the lifetime of the gearbox.

Change the oil. First change after 800 hours of operations

Do a check for oil leaks.

Do a check on the safety covers for damages and dents.

Clean the gear unit.

Do a check for unwanted noise and vibrations.

Do a check on the gear oil level.

Do a check on the gear oil quality.

Do a check on the breather plug.

Do a check on the fixation and position of the gear unit.

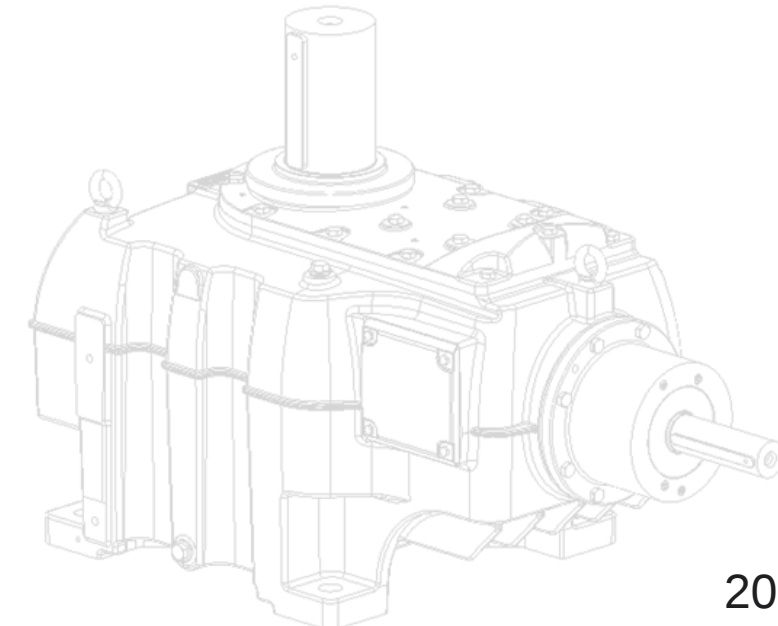
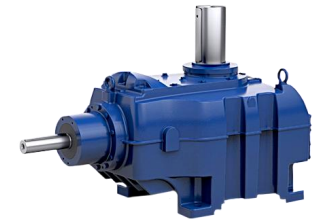
Do a check for corrosion.

Replace the oil filter cartridge.

Change the oil, based on oil sampling.

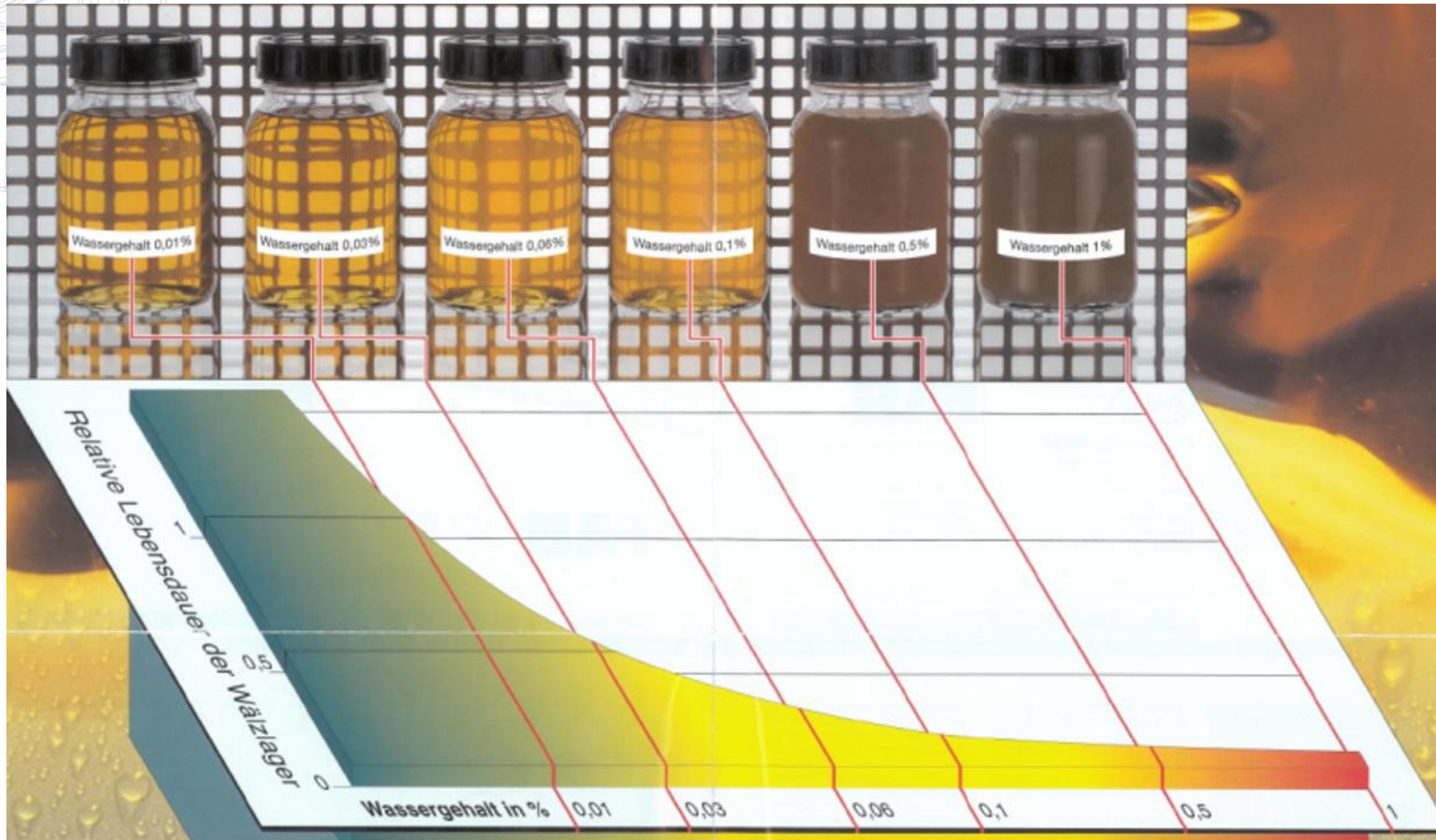
Drain the condensation water from the breather lines.

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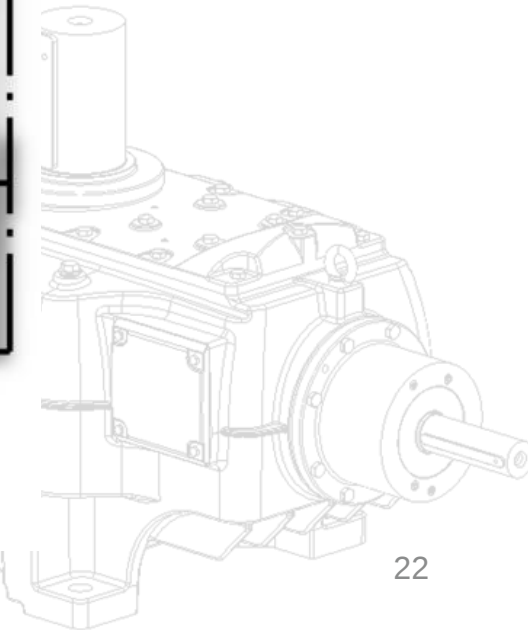
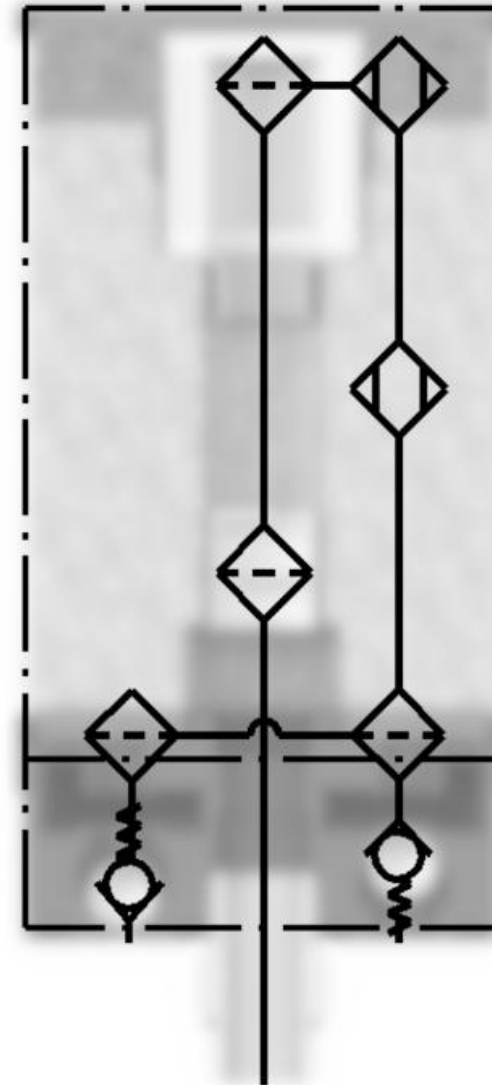
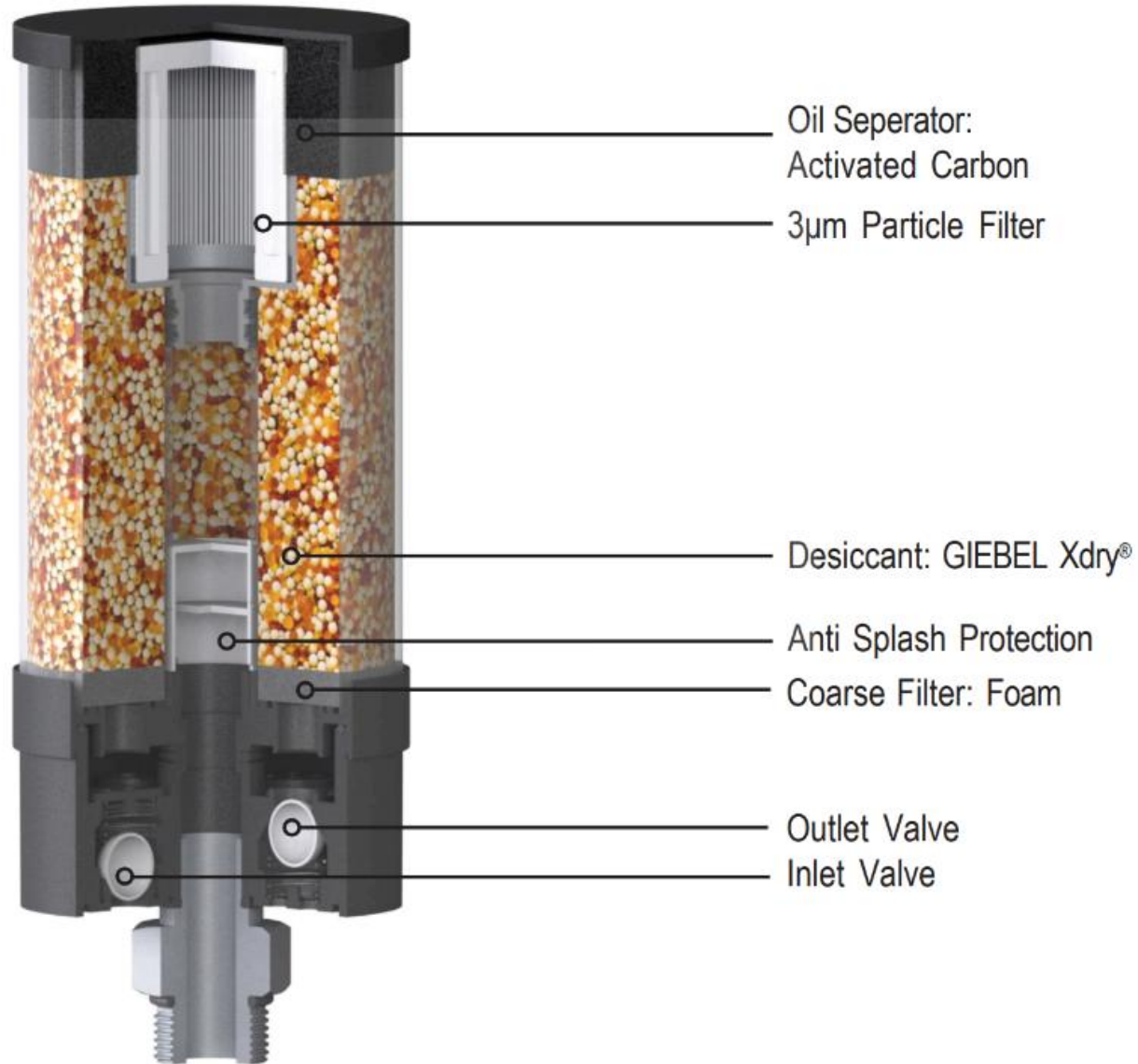


CHANGE THE OIL. FIRST CHANGE AFTER 800 HOURS OF OPERATIONS,
DO A CHECK ON THE GEAR OIL QUALITY
CHANGE THE OIL, BASED ON OIL SAMPLING

The oil degradation Vs water contents



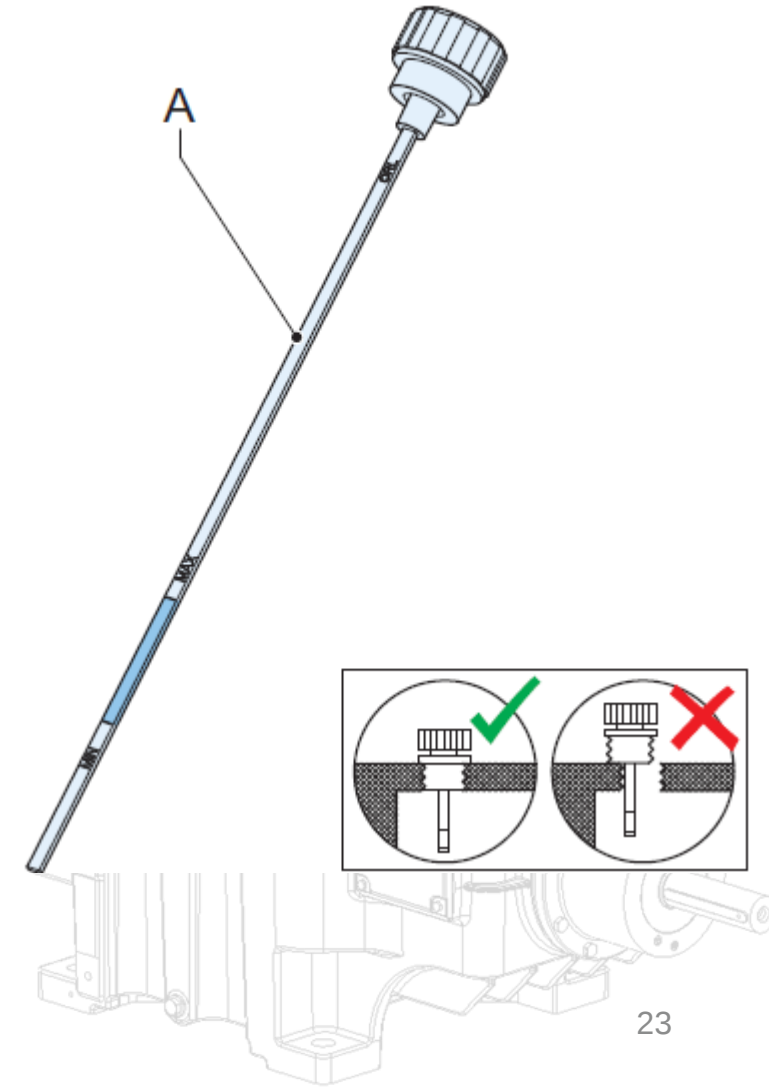
DO A CHECK ON THE BREATHER PLUG.



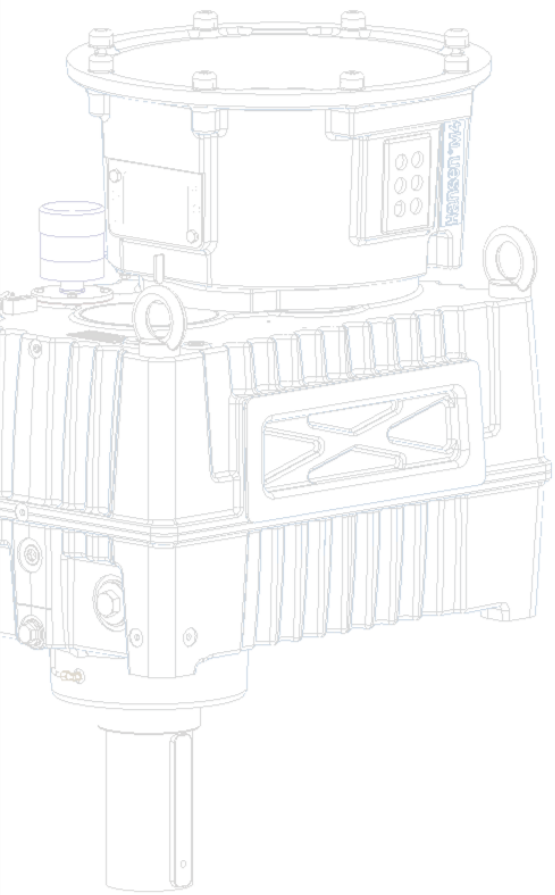
DO A CHECK ON THE GEAR OIL LEVEL.



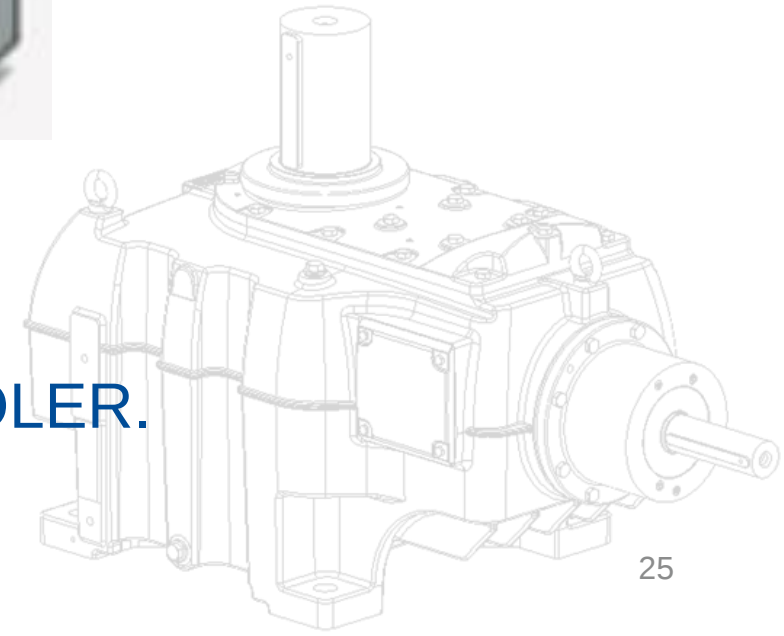
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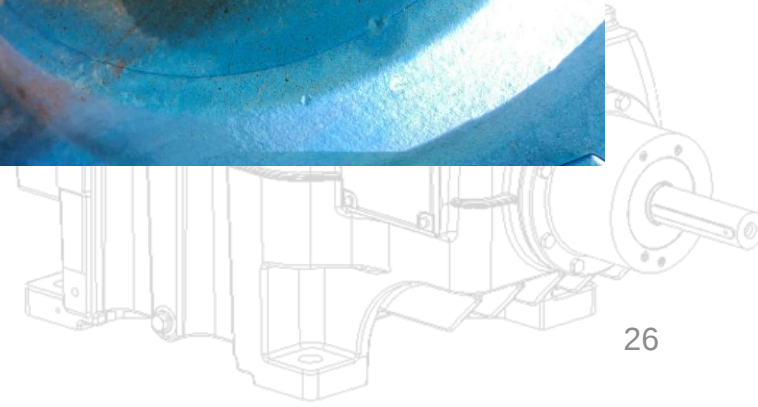


DON'T FORGET TO BLEED THE LINES TO THE OIL COOLER.



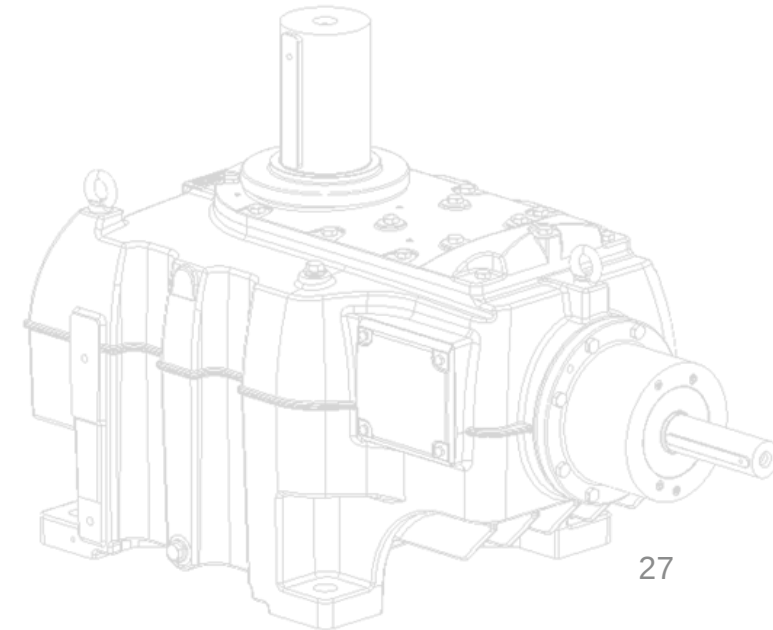
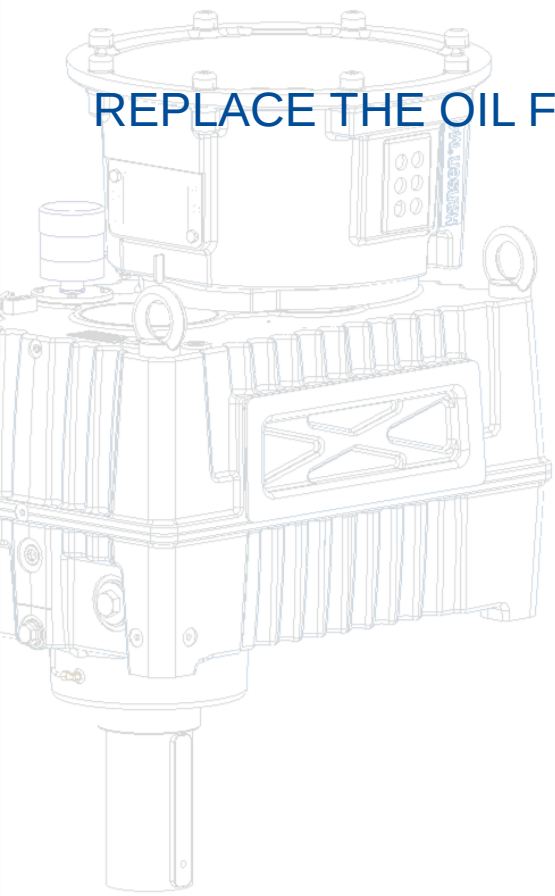
DO A CHECK FOR OIL LEAKS.

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REPLACE THE OIL FILTER CARTRIDGE.

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DO A CHECK FOR CORROSION.

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Oil Filtration



EYE CLEAN:

Oil filtering



SCAN ME



EYE CONNECT:

Oil quality & vibration
monitoring



SCAN ME



EYE COMPLETE:

Oil filtering, oil quality
and vibration monitoring

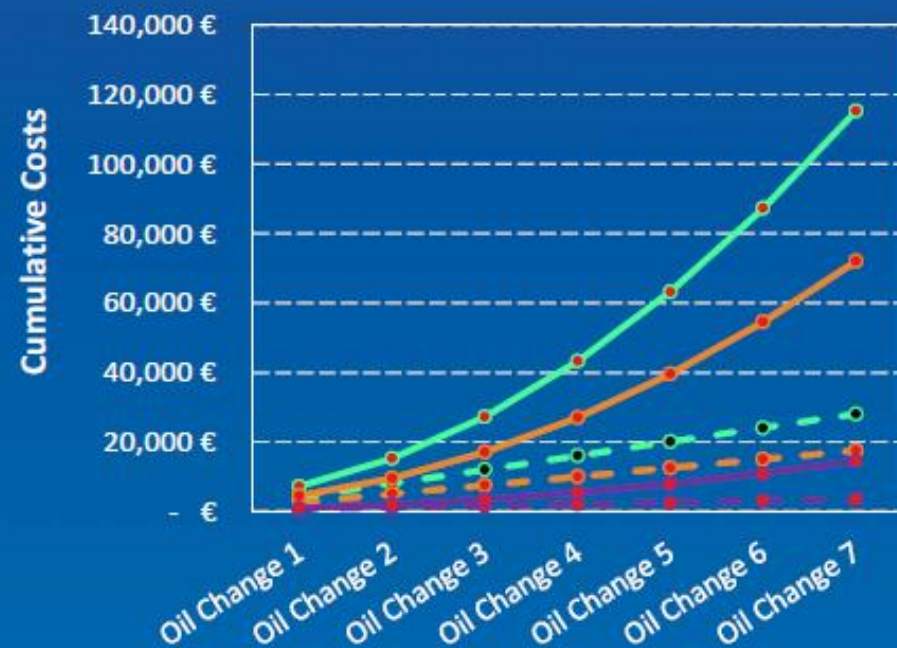


SCAN ME



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Cumulative cost of oil changes (excluding downtime operation, recycling, and person-hours) for industrial gearboxes



- Large GB: Oil Change Cost Cumulative (Mineral)
- Large GB: Oil Change Cost Cumulative (Synthetic)
- Medium GB: Oil Change Cost Cumulative (Mineral)
- Medium GB: Oil Change Cost Cumulative (Synthetic)
- Small GB: Oil Change Cost Cumulative (Mineral)
- Small GB: Oil Change Cost Cumulative (Synthetic)

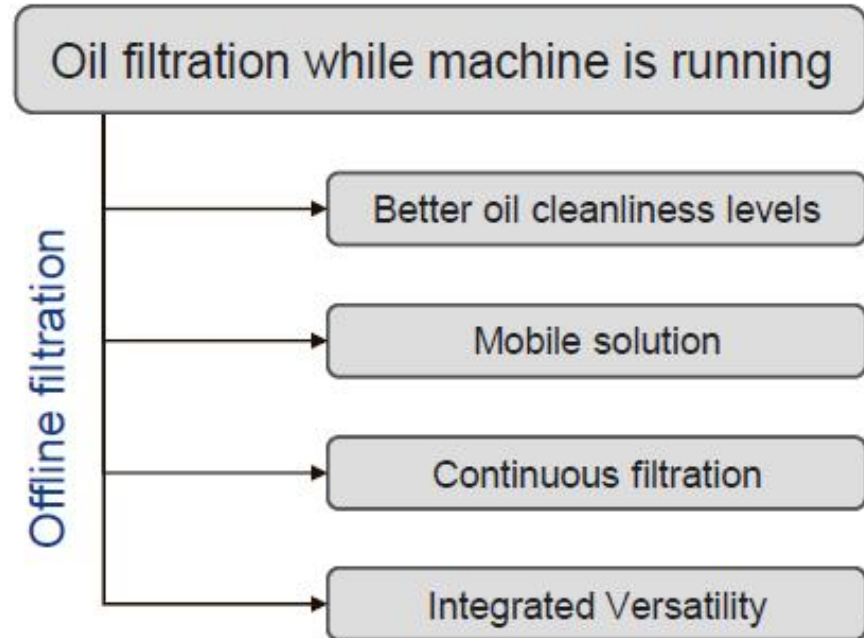
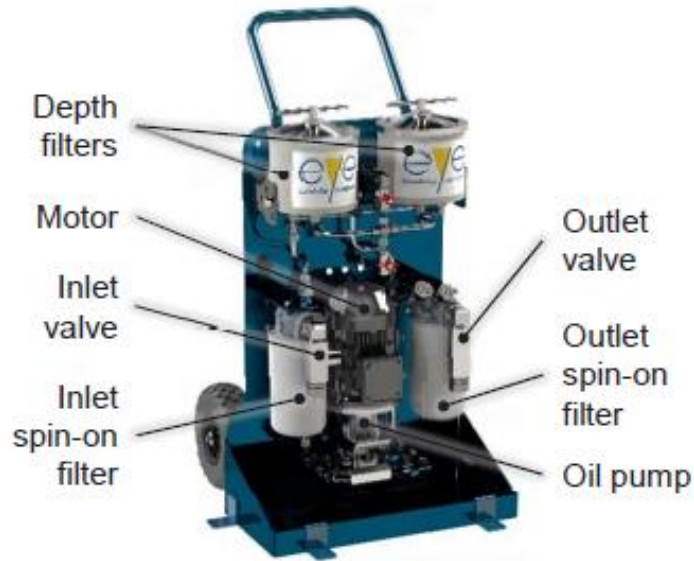
Sample cost calculation

- Mineral oil cost: 5 €/l
- Synthetic oil cost: 9 €/l
- Large GB oil capacity: 800 l
- Medium GB oil capacity: 500 l

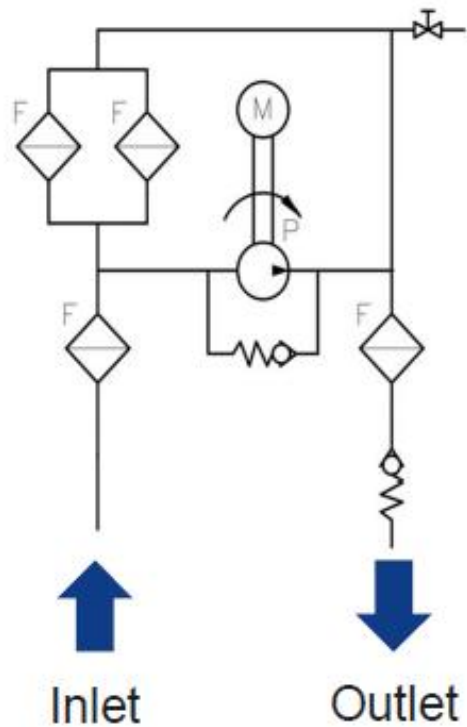
Oil filtering costs:
Investment in eye CLEAN
+ filter elements replacement

Offline filtration

As part of its products portfolio,
Sumitomo Drive Technologies,
provides a mobile solution for offline oil filtering.

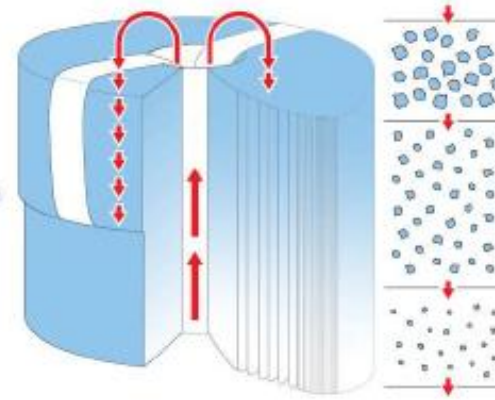


Filtration system



Fast and depth!

Depth filtering



- Water content
- Fine particles
- Filter element selection: 3*, 5, 10 μm

* Default

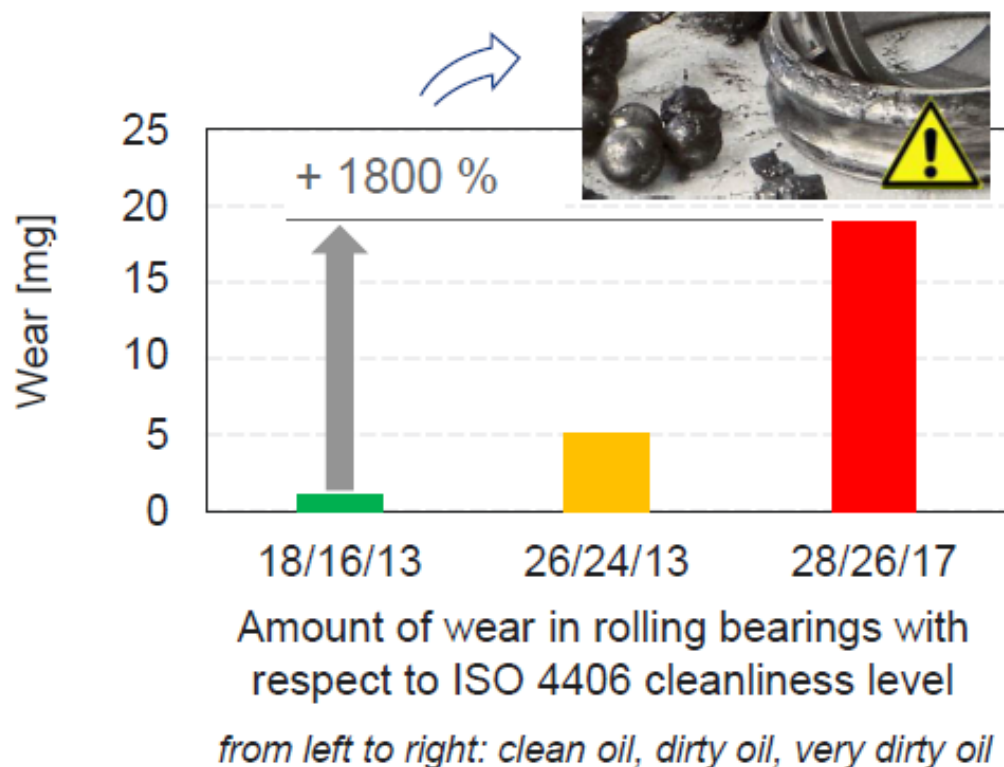


Surface filtering

- Medium particles
- Longer filter lifetime
- Filter element selection: 3, 5, 10* μm

* Default

Impact of Oil Cleanliness Level on Machine Wear



Your oil cleanliness level

"As supplied" lubricants can have various levels of cleanliness. They can range from 16/14/12 to 21/19/16 and higher.

Fine filtration is a 'MUST' in an advanced maintenance strategy!



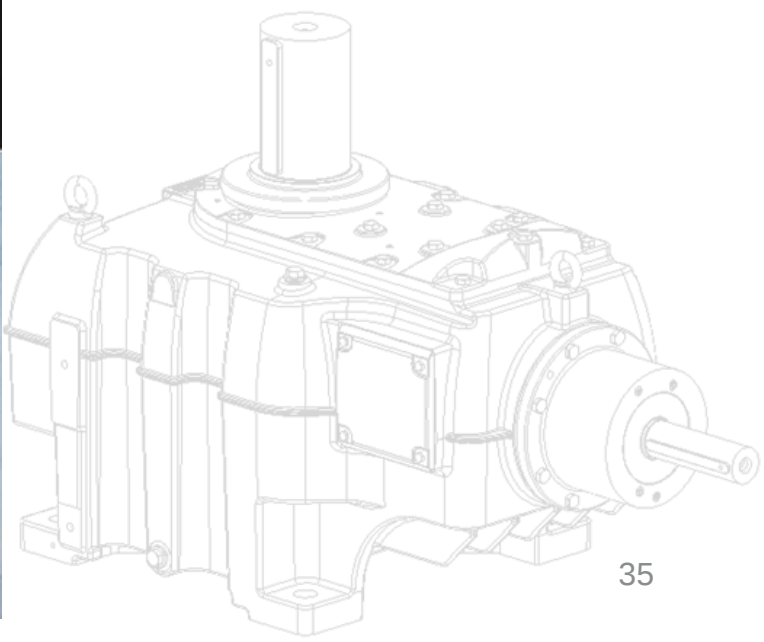
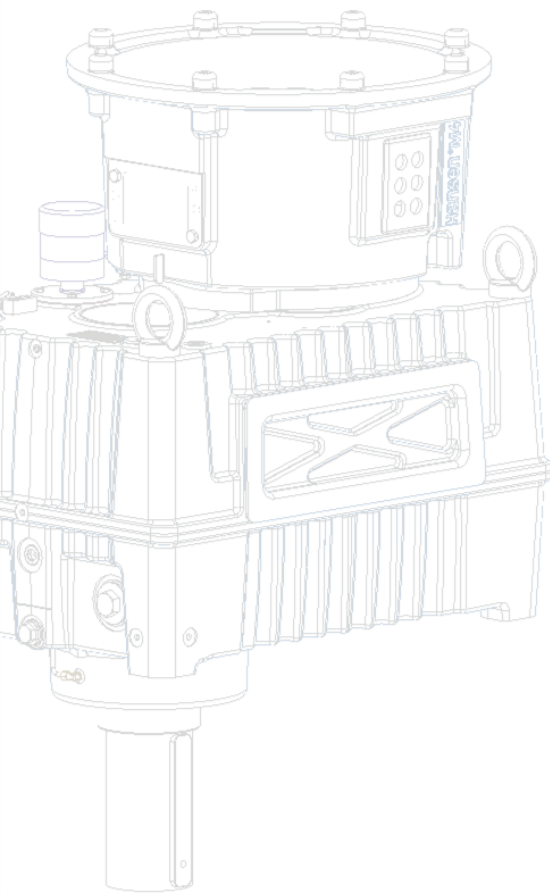
Institute of Machine Elements
Gear Research Center - FZG

Tested and approved by
Technical University of Munich



Technical
University
of Munich

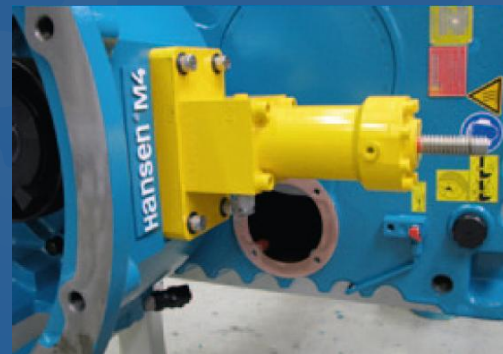




M4ACC BRAKE SYSTEM

- Anticipating the Machinery Directive 2006/42/EG, Hansen Industrial Transmissions has developed a brake system, specific for use on the Hansen M4ACC gear units.
- With this brake system, Hansen Industrial Transmissions offers added value to manufacturers of cooling towers worldwide.

Patented



Sumitomo Drive Technologies

»» Building Tomorrow Together



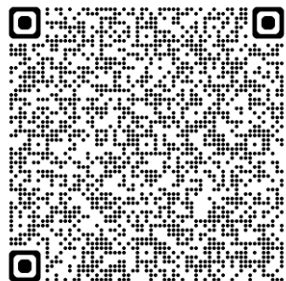
Dan Rosseljong, PMP ✓ 🔊

Analytical | Industrial Gearbox Experienced | Dale Carnegie Graduate and former volunteer Coach's Assistant | Technical AND Personable | Product Manager - GB at Sumitomo Drive Technologies

Waynesboro, Virginia, United States · [Contact info](#)

Dan.Rosseljong@shi-g.com

LinkedIn



Edwin Houberg · 1st

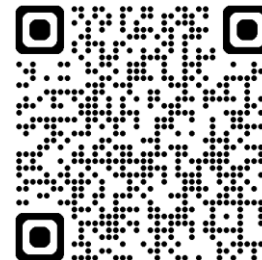
Sales Manager Global Key Accounts at Hansen Industrial Transmissions

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 Hansen Industrial Transmissions

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THANK YOU
FOR YOUR ATTENTION