

A large container ship is docked at a port at night. The ship is blue and red, with a deck covered in colorful containers. In the background, there are several cranes and other vessels. The sky is dark, and the water reflects the lights from the port.

**SKF**® SUSTAINABLE MARINE SOLUTIONS

On the ocean, for the ocean

# The Marine Industry sustainability challenges

Transport accounts for 25% of global emissions

Maritime industry accounts for 3% of global emissions  
 (despite being the most efficient transportation systems in kgCO<sub>2</sub>/kg goods)

IMO target Net Zero close to 2050

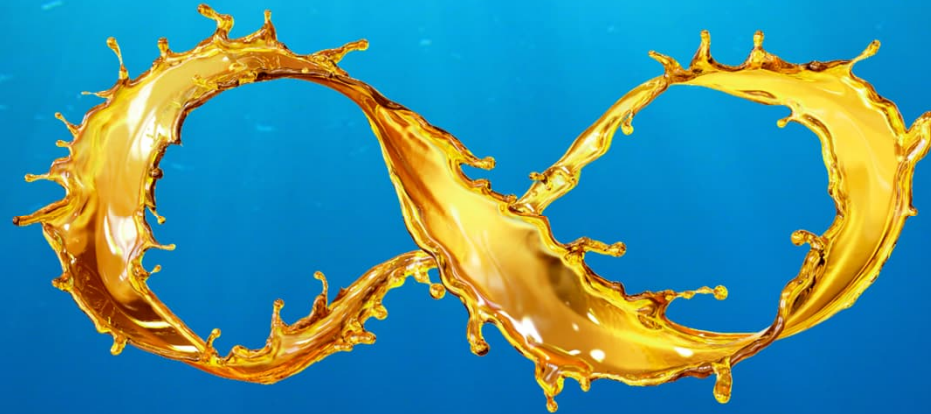
Maritime industry has a direct impact on UN Goals



# Our contribution for a better tomorrow



WE



OIL

SKF RecondOil offers a fully circular use of oil, reducing costs and environmental impact.

Oil no longer has to be viewed as an environmentally harmful consumable, but rather as a sustainable, circular asset.

The oil is affecting a much larger part of the maintenance budget than the pure purchase cost

2%

...is often the average cost of lubricants in the maintenance budget

40%

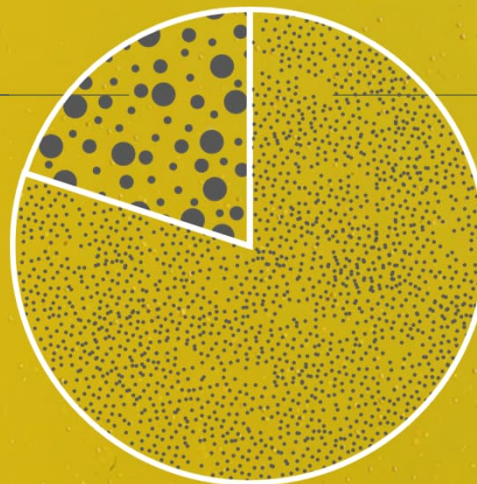
...of maintenance costs are influenced by lubrication activities

50%

...of premature bearing failure is caused by poor lubrication and contamination

# Conventional filters only remove the 20%...

**20% micro**  
Particles > 1  $\mu\text{m}$



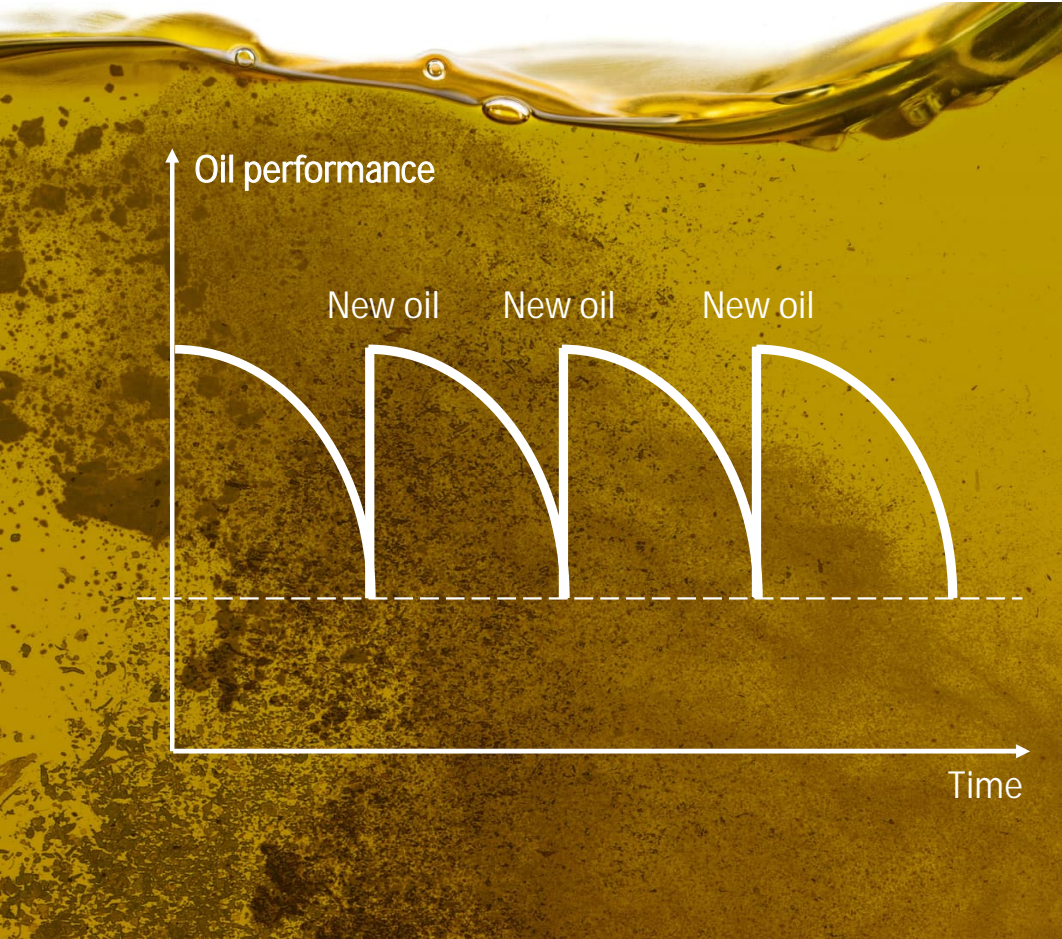
Total contaminant  
surface area

**80% nano**  
Particles < 1  $\mu\text{m}$   
Not captured in conventional filters...

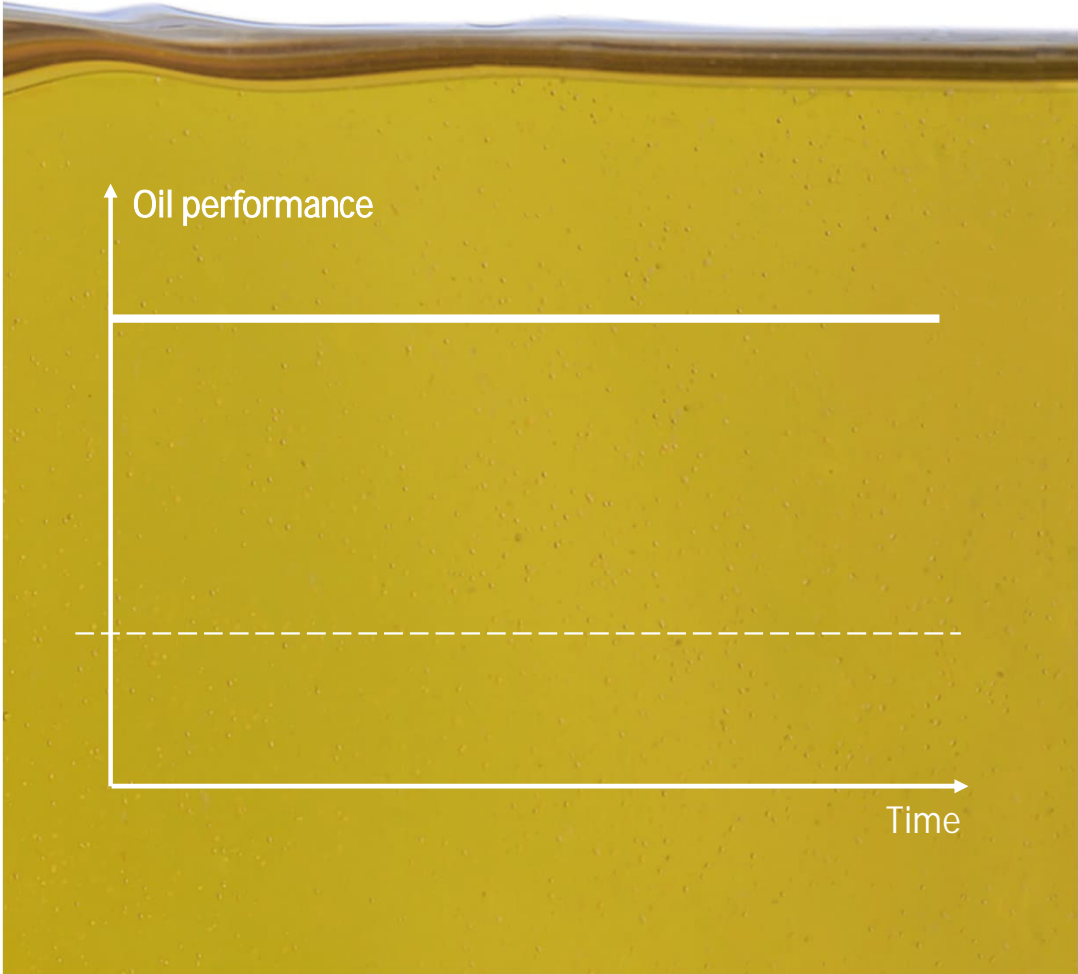
### Nano particles cause:

- Oil oxidation and thereby oil degradation
- Formation of varnish
- Wear of mechanical components

# Today



# Tomorrow



# RecondOil Box for Hydraulic Power Units (HPU)



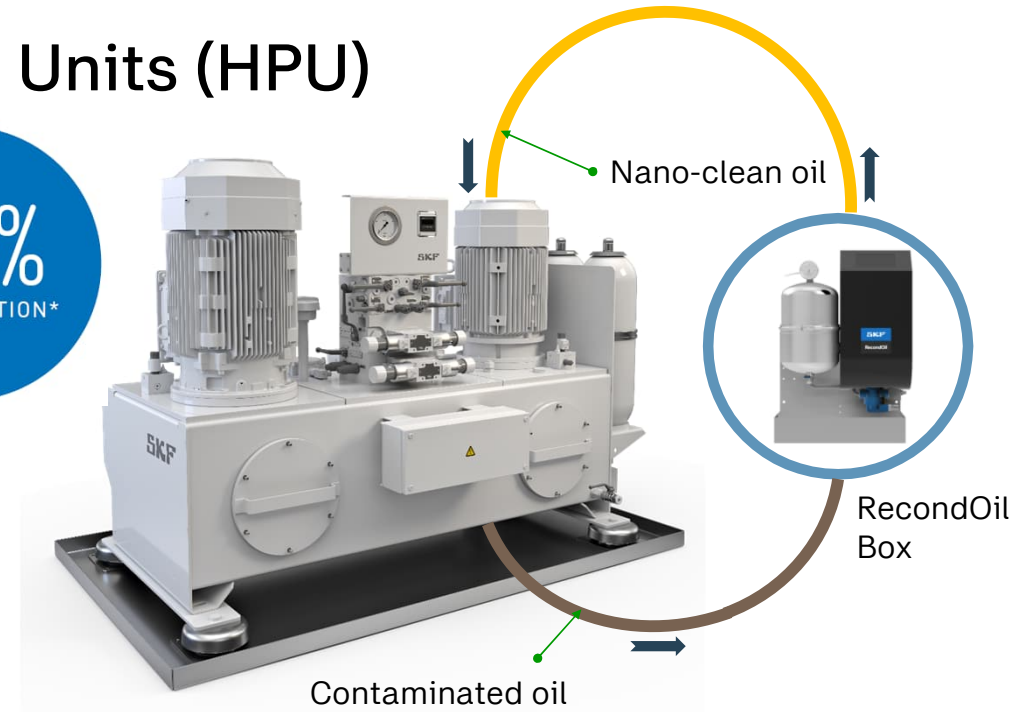
- Remove even the smallest particles from your oil
- Restrain oxidation process
- Reduce wear
- Extend oil drain intervals
- Prevent silting of critical component

96%  
CO<sub>2</sub> REDUCTION\*



- Remove soluble and insoluble varnish
- Avoid clogged systems
- Cooler operating temperature of oil

→ **Less frequent maintenance**



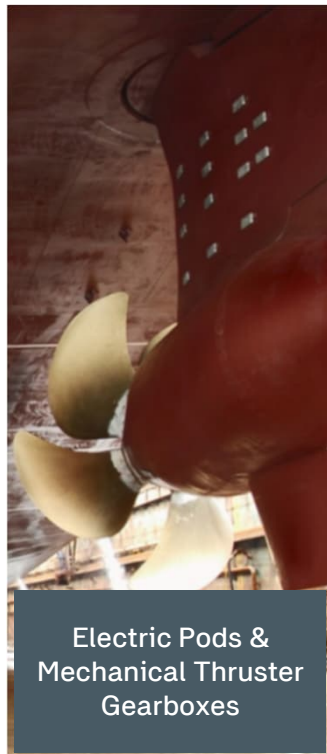
One system	
Three functions	Nanofiltration
	Varnish removal
	Water removal

\*CO<sub>2</sub> reduction when compared with traditional oil cycle. Source: Life cycle analysis performed by IVL Swedish Environmental Research Institute (2021).

# Marine applications for retrofit and new building



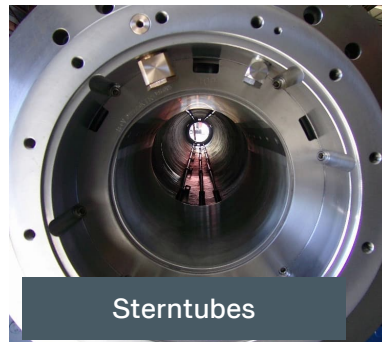
Hydraulic Stabilizers



Electric Pods & Mechanical Thruster Gearboxes



Hydraulic Power Units



Stern tubes



Hydraulic Steering Gear

## Fields of applications

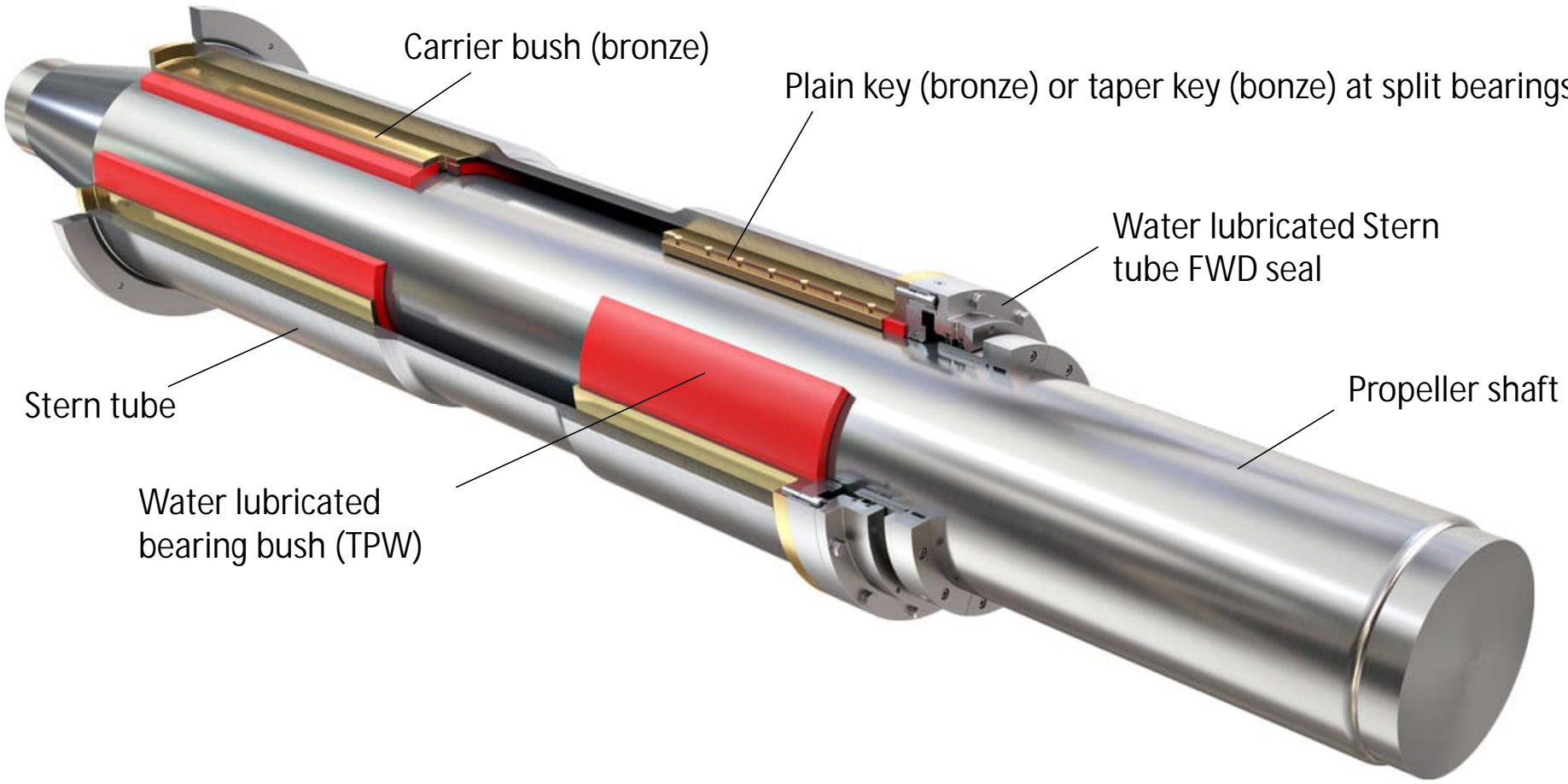
- Commercial
- Work boat
- Cruise
- Yacht
- Passenger/RoPax
- Dredger
- Navy
- Offshore
- Research vessels
- Tugboat
- Shipyards

## Further applications

- Passenger elevators
- Winches / Ramps
- Hatch covers
- Cranes
- Jack-ups
- Compressors
- Gearboxes
- Engines



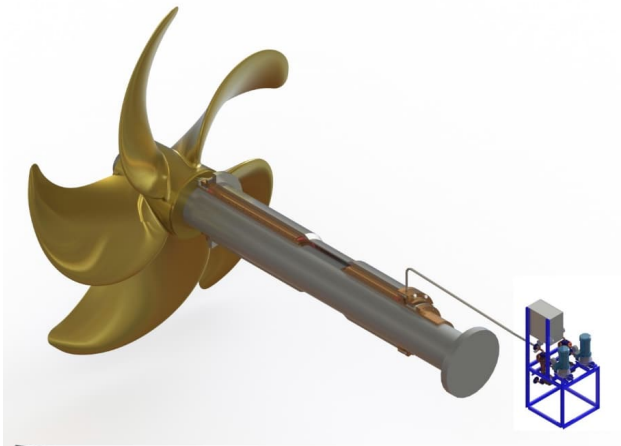
# Water lubricated stern tube



# Simplex BlueRun - For closed and open water-lubricated stern tubes

## Open stern tube with fwd. seal

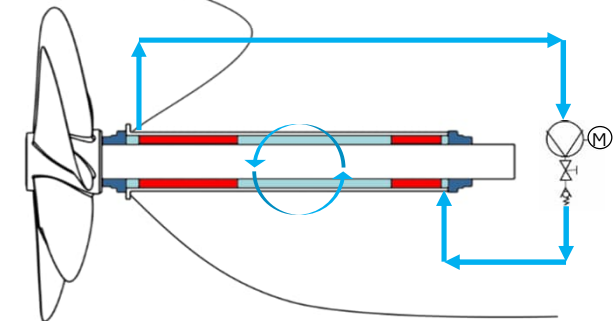
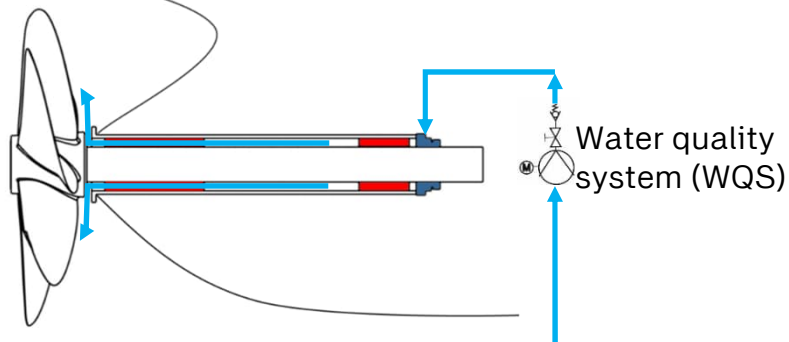
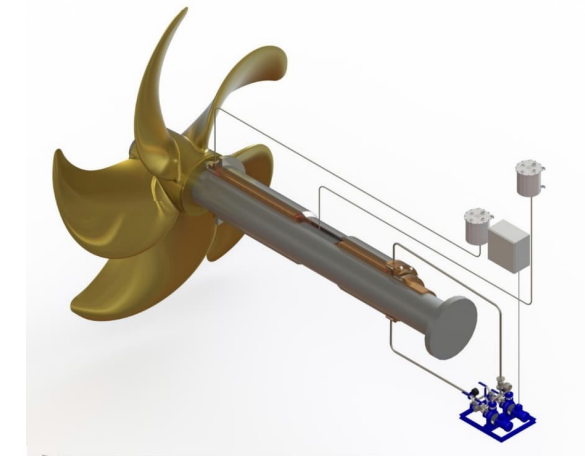
- Stern tube with **seawater** access from the aft



- No risk of pollution & ready for tougher regulations
- Contributes to UN14 Goal, Life under water
- Supports your company in reaching your fleet sustainability goals

## Closed stern tube with fwd. and aft seal

- **Fresh water** filling



# Simplex Seals for water-lubricated stern tubes



Simplex SC 3 ZW-P



Simplan



Carboplan

*"Thrusters are many times fitted to vessels involving critical operation and unexpected failures is not accepted"*

## Zero Maintenance at Sea – No Compromise with Reliability

### Ice breaking

- High load with external forces from ice milling
- Dangerous operations where function of the thruster is critical not only to the vessel but also surrounding vessels



### Dynamic positioning

- Dynamic positioning in critical situations or long periods of continuous operation
- The load profile many times in the low to medium range but on occasion high load profile

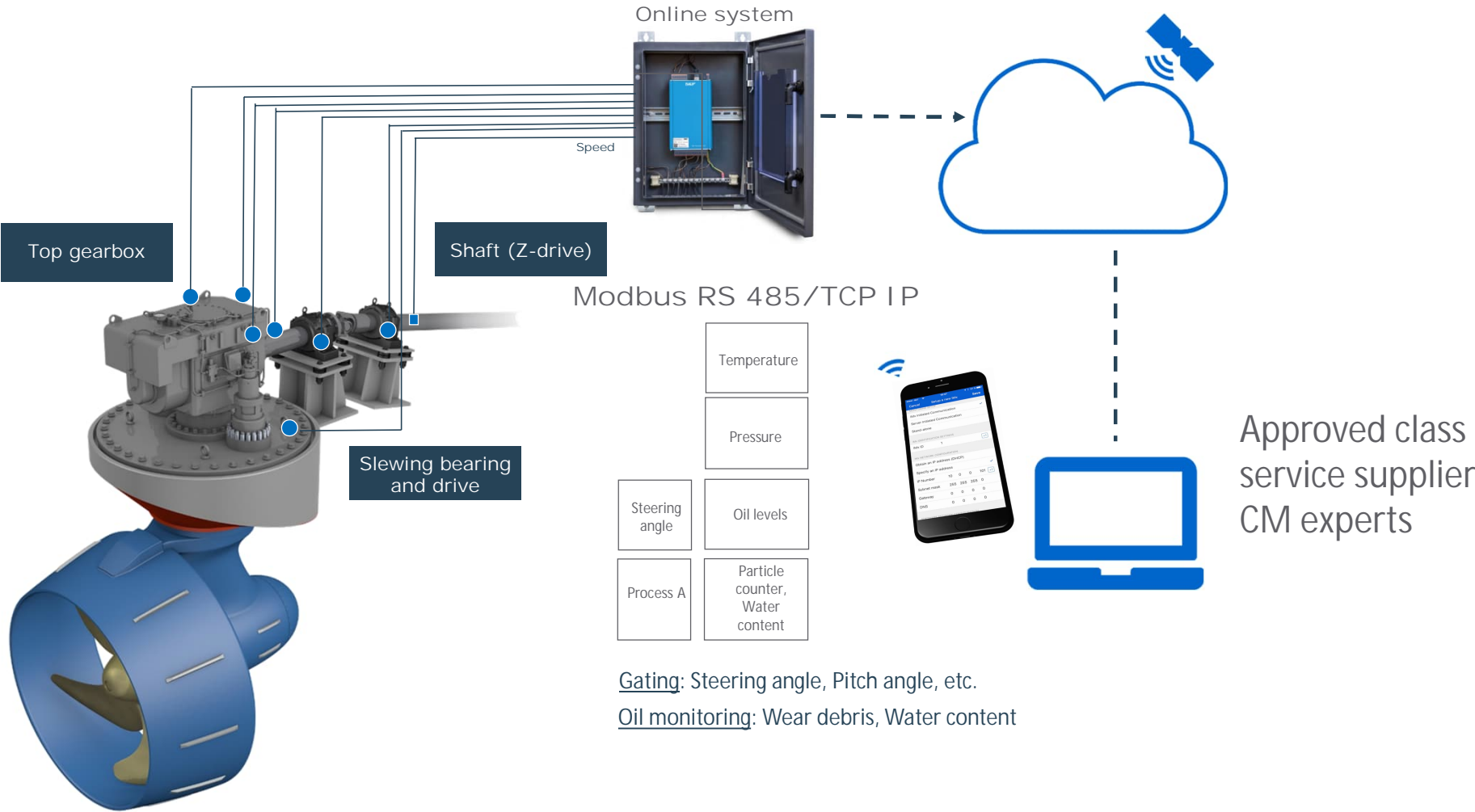


### Thrust operation

- High load and stress to the thruster components
- Load profile depending on vessel type e.g.
  - Tugs @150% short bursts
  - Ferries @100% for hours



# Typical SKF Thruster Monitoring Installation



# Reliable propulsion through data-driven decisions

- More and higher quality data to support the strive for optimized maintenance and fuel – to meet the reduced CO2 levels
- Remanufacturing of bearings
- A wireless communication link (compact in size) and smart electronics for sampling vibration and/or fibre optics enables the electronics to be fitted in the lower gearbox

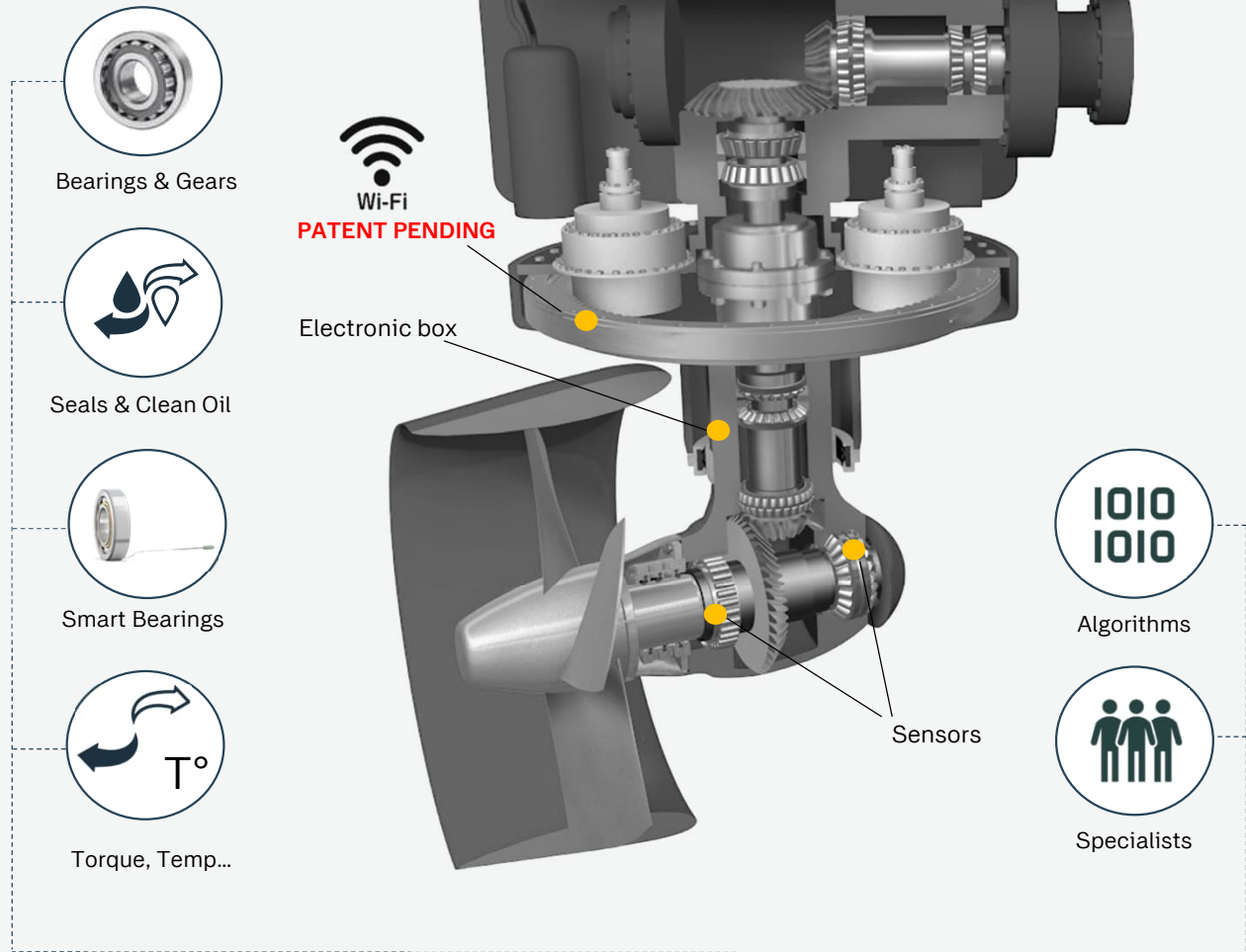
7 AFFORDABLE AND CLEAN ENERGY



13 CLIMATE ACTION



SKF

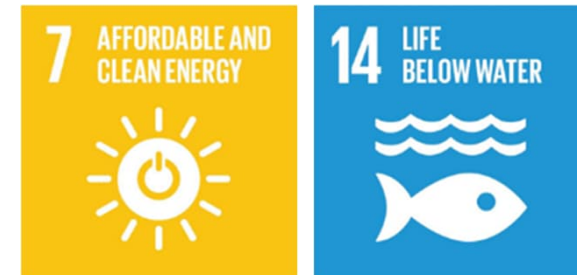


## Hydraulic goes Electric

- Sustainability Improvement
  - 35% Less weight
  - 90% Less oil on Board
- Silent operation:
  - 30% Less Noise
  - 80% Less Vibration
- Less maintenance: industry standard parts (maximum reliability)
- Energy recuperation system minimizing electric power consumption to operate the fin through an internal storage device



Fully electric fin stabilizer, type EFZ



# Recuperation



- Energy recuperation: energy generated by fin is stored in internal accumulator
- Additional energy can be fed into vessel
- Alternative storage complete internally



## Summary

- Make things last longer
- Eliminate oil
- Go electric



**SKF**®