REINTJES
POWERTRAIN SOLUTIONS

Condition Monitoring – Your Safety at Sea

Precise Monitoring and Predictive Maintenance

QUALITY MADE IN GERMANY

Condition Monitoring – Your Safety at Sea

IMO GHG intensity targets or ambitions compared to the base year 2008

The maritime industry is increasingly relying on innovative technologies to monitor the condition of propulsion systems in order to increase operational safety and minimize unplanned downtimes. Modern condition monitoring systems enable continuous real-time analysis of the condition of the gear-box and can thus indicate potential damage at an early stage. This technology helps ship operators to comply with the strict safety and environmental regulations of the International Maritime Organization (IMO), which require ships' propulsion systems to function reliably.

Courtesy of: Ralph Kerpa

Discover the Future of Shipping with REINTJES Innovative Condition Monitoring System

Condition Monitoring (CMS) – Your Solution for Maximum Efficiency and Safety for all Vessel Types

The REINTJES CMS is an innovative technology that extends equipment life, minimises unplanned downtime and delivers significant cost savings through continuous analysis and early detection of anomalies, making it an essential investment for any forward-thinking ship owner.

CMS – Added Value Through Vertical Information flow: Your Benefits at a glance

- If you **operate vessels**, you optimise maintenance planning through early detection of signs of wear and potential damage. You increase the availability and reliability of your vessels by reducing operating costs at the same time.
- As a **shipyard**, you benefit working with suppliers and system integrators to minimise downtime through early detection of wear parts and damage. You increase the efficiency of construction processes and facilitate the integration of new technologies, which ultimately increases productivity and cost efficiency.

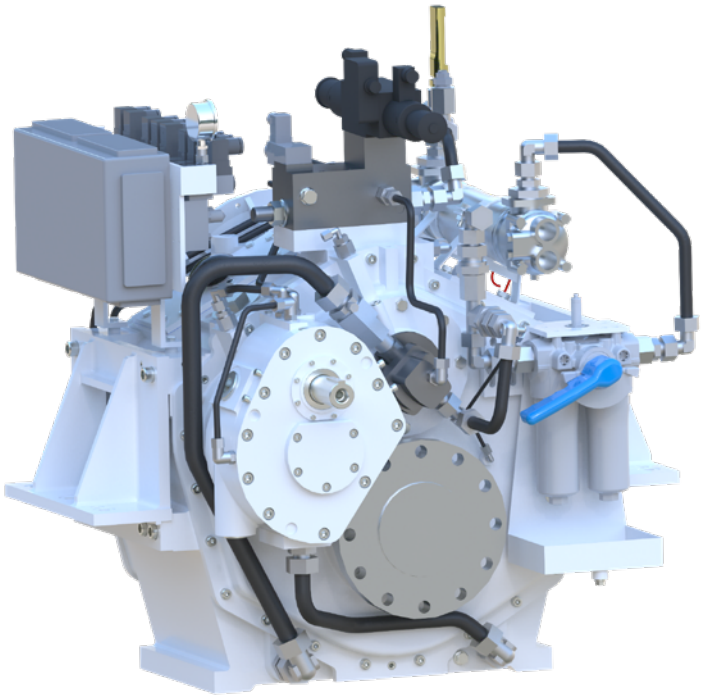
CMS – One Condition Monitoring Solution for all REINTJES Gearboxes

CMS Main Functions:

- Fault Detection
- Trend Analysis
- Maintenance Scheduling
- Root Cause Analysis
- Safety Assurance
- Operational Efficiency

Gearbox status and monitoring data is shown on a web-application.

The condition monitoring of a marine gearbox enables ship owners to monitor the condition of their propulsion systems around the clock, react proactively to potential problems and thus sustainably increase the efficiency and safety of their fleet.



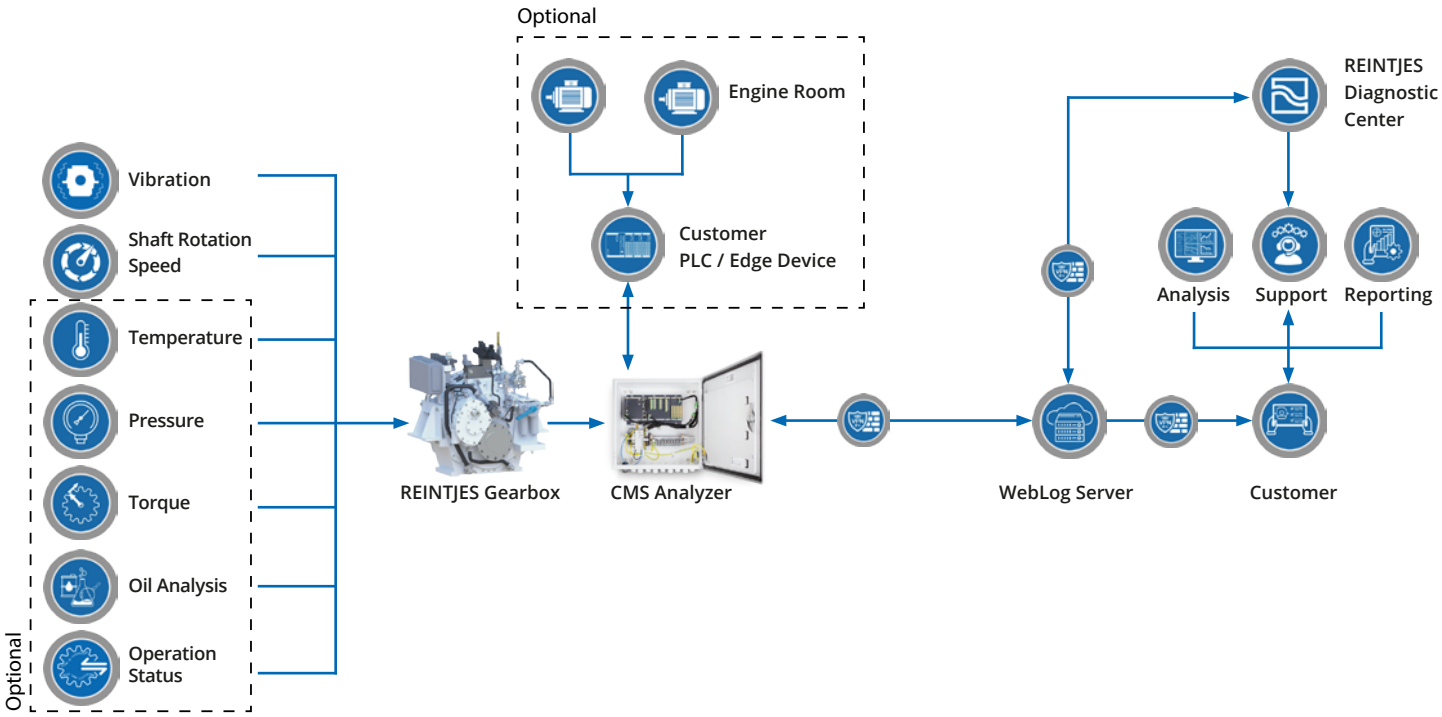
REINTJES WAF 344 HS with CMS (Example)

CMS – Features and Connectivity

The REINTJES CMS features a continuous condition monitoring of marine gearboxes.
Various process parameters such as vibrations, pressures and temperatures, oil quality and torque are monitored.
The collected data flows together in a dashboard and provides information about the health of the gearboxes - and therefore also about any service requirements.

CMS – Features Proactively Contribute to Safety at Sea

- Automated alarms
- Continuous frequency selective trend monitoring
- Advanced tools for data analysis
- Continuous trend monitoring
- Operation mode classification
- Various fieldbus interfaces & Remote access
- Reporting and Visualisation
- Scalability



CMS - Marine Gearbox Constantly in View

Condition monitoring identifies changes in condition, which can cause vibrations, such as:

- Unbalance, alignment, shaft damage, loose parts
- Toothing (local or circumferential flank form deviation)
- Beginning wear of roller bearings

Monitored components:

- Roller bearings
- Shafts
- Toothing
- Pumps

CMS – Smart Intelligence and Benefits

- **Improved Safety:**
  Early detection of faults prevent safety hazards associated with machinery failures, protecting both personnel and assets.

- **Early Fault Detection:**
  CMS detects potential faults or abnormalities in the gearbox before they escalate into significant failures and can avoid consequential damages.

- **Extended Equipment Lifespan:**
  Regular monitoring and timely maintenance help extend the lifespan of gearboxes by addressing issues before they cause irreversible damage.

- **Optimised Maintenance Resources:**
  Maintenance efforts are focused on equipment that truly needs attention, optimising the allocation of resources and reducing unnecessary maintenance tasks.

- **Cost Savings:**
  By reducing unplanned downtime and minimising the need for emergency repairs, it result in significant cost savings for the customer results.

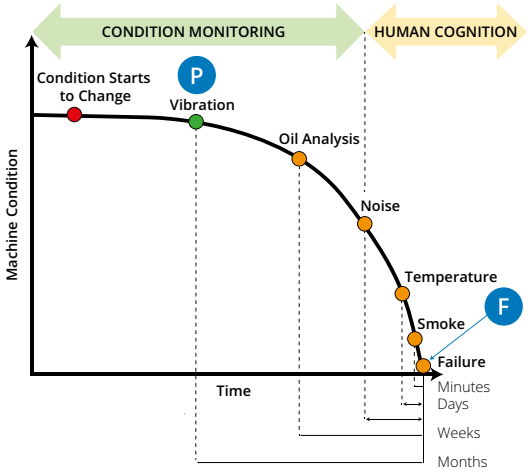
- **Predictive Maintenance Capability:**
  CMS enables maintenance to be scheduled at convenient times, reducing the likelihood of unexpected breakdowns and minimising downtime. Inside Information of vibration patterns can be used to predict future equipment failures, enabling maintenance to be performed proactively based on actual asset condition.

- **Retrofitable:**
  CMS is easy to install on board even in existing gearboxes. Its modular design makes it flexible for many monitoring requirements.

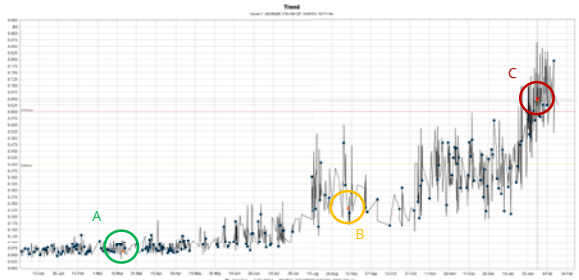
- **Enhanced Operational Efficiency:**
  With reduced risk of unexpected gearbox failures and optimised maintenance schedules, operational efficiency is improved, allowing businesses to meet production targets more consistently.

Your key-information everywhere

DIN ISO 18436-2 Cat. 3 vibration specialists



PF curve indicates progression from detection to failure



Continuously trend monitoring

CMS – Customer Success Stories

- **Gearbox Type:** WAF 344 RHS | 2x
- **Vessel Type:** Passenger
- **Engine Manufacturer:** SCANIA
- **Drive Power:** 368 kW
- **Classification society:** Bureau Veritas

- **Gearbox Type:** WAF 3455| 2x
- **Vessel Type:** Fishing
- **Engine Manufacturer:** ABC
- **Drive Power:** 1471 kW
- **Classification society:** -

- **Gearbox Type:** LAF 4566| 2x
- **Vessel Type:** Fishing
- **Engine Manufacturer:** WÄRTSILÄ
- **Drive Power:** 3000 kW
- **Classification society:** IWS+LMC, SCM+LLOYDS, RMC

- **Gearbox Type**: VLJ 7531 | 4x
- **Vessel Type:** Passenger
- **Engine Manufacturer:** MTU
- **Drive Power:** 9011 kW
- **Classification society:** Det Norske Veritas

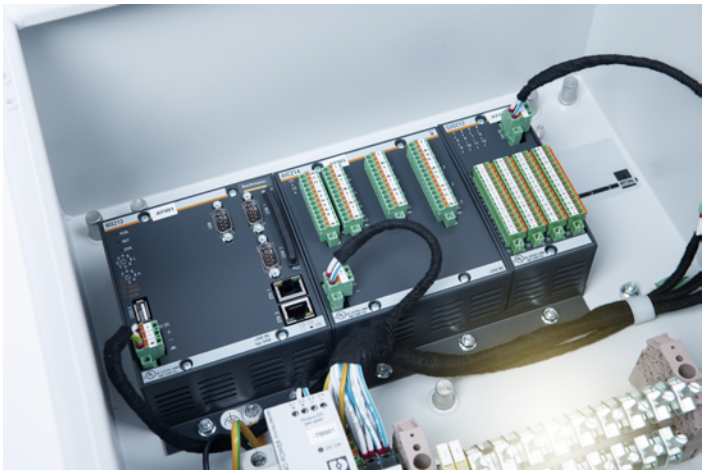
CMS – Technical Data and Specifications

Standard:

- System pre-configuration by REINTJES experts
- Control cabinet
- Measuring system consisting of
  - Communication module (large local memory)
  - Measuring module: records highly dynamic vibrations with up to 50 kHz
  - General purpose module: freely configurable analogue and digital input/output
- VPN router
- Supervision plan
- System test during FAT or commissioning
- Speed sensor
- IEPE vibration sensors
- Contractual services as agreed

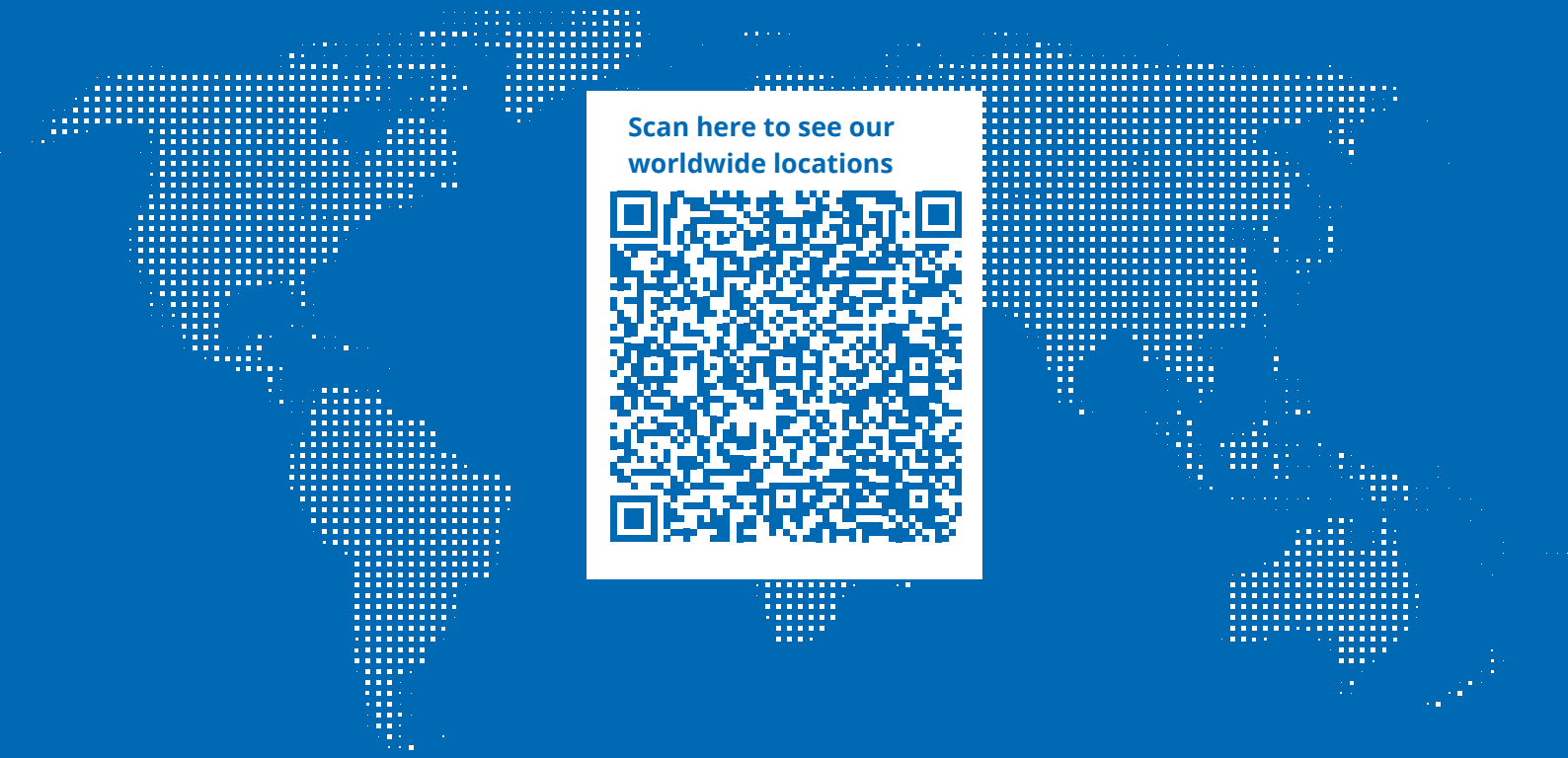
Optional:

- Temperature sensors
- Pressure sensors
- Transfer of characteristics via field bus interface (project specific according to interface list)



REINTJES Principle

REINTJES is committed to quality, innovation and sustainability with all its products and services – ever has been. Offering robust and easy to integrate products with modular and customizable options, enabling designers, shipbuilders and operators to select the components best suited for their specific needs is a REINTJES core philosophy. This applies to gearbox condition monitoring solutions as well. If you would like to find out more about what we and our products can benefit you, please contact us directly.



Scan here to see our worldwide locations

This document and any data contained herein are subject to modifications or updates at any time and are always non-binding. The data serve informational purposes and cannot be guaranteed in any way. In addition, any data and information will be assessed and determined individually for each project and purpose. This is necessary due to differing characteristics of each project. If this document is delivered in another language than English and in case of divergences of interpretation between the different language texts, the English text shall prevail. Pictures and logos courtesy from all owners of the respective trademarks and rights. Gearbox standard design is dry. All lists only show an extract of gearboxes available. Additional sizes, offset configurations and variations are available on request.

Dimensions and dry weights are approximate and may vary with housing or by input and ratio. Specifications are subject to change without notice. Please contact your REINTJES distributor for current information and binding data.

REINTJES GmbH
Eugen-Reintjes-Straße 7
31785 Hameln
Germany

E-Mail: info@reintjes-gears.de
Phone: +49 5151 1040

www.reintjes-gears.com

Scan here to download all our product brochures