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# Certified reliability for the seas

*Vaisala's industrial transmitters are now formally approved for the needs of ship instrumentation and automation.*



Improving the performance of ship onboard machinery is an ongoing challenge for ship builders and shipping companies. When precise and detailed information on system and ambient conditions is continuously available, it helps solve the challenge by minimizing maintenance costs and machinery downtime. At the same time, the information can also be utilized to optimize system performance and energy efficiency.

Vaisala's humidity, dewpoint, moisture in oil and barometric pressure transmitters have been used in ship instrumentation for

years. Now the products have received a formal type approval certificate for use in marine applications from Det Norske Veritas, one of the world's leading certification and classification societies.

## **Reliability, accuracy, and repeatability required**

The newly acquired certificate applies to the complete line of Vaisala's humidity, dewpoint, moisture in oil and barometric pressure transmitters serving measurement needs in versatile applications from ship

machinery rooms to bridges. The approval guarantees that the instruments can withstand the extremely harsh conditions in ship machinery rooms.

The products were approved to comply with Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft, and Det Norske Veritas' Offshore Standards. The classification is a special type of certification particularly applied to confirm that maritime structures and facilities comply with set requirements.

Vaisala's transmitters were tested according to DNV's Standard for



Certification No. 2.4 – Environmental Test Specification for Instrumentation and Automation Equipment. As part of the classification, DNV certifies all materials, components and systems relevant to the safe operation and quality of ships.

### **Online measurements minimize machinery downtime and maintenance costs...**

An obvious challenge for all marine machinery applications is the constant presence of water. In

lubrication and hydraulic systems, for example, water deteriorates oil performance, causes corrosion and ruins the oil additives. In fact, water contamination in oil has been identified as one of the main maintenance challenges by marine engine manufacturers, and they are now setting strict requirements for on-line measurement of oil moisture.

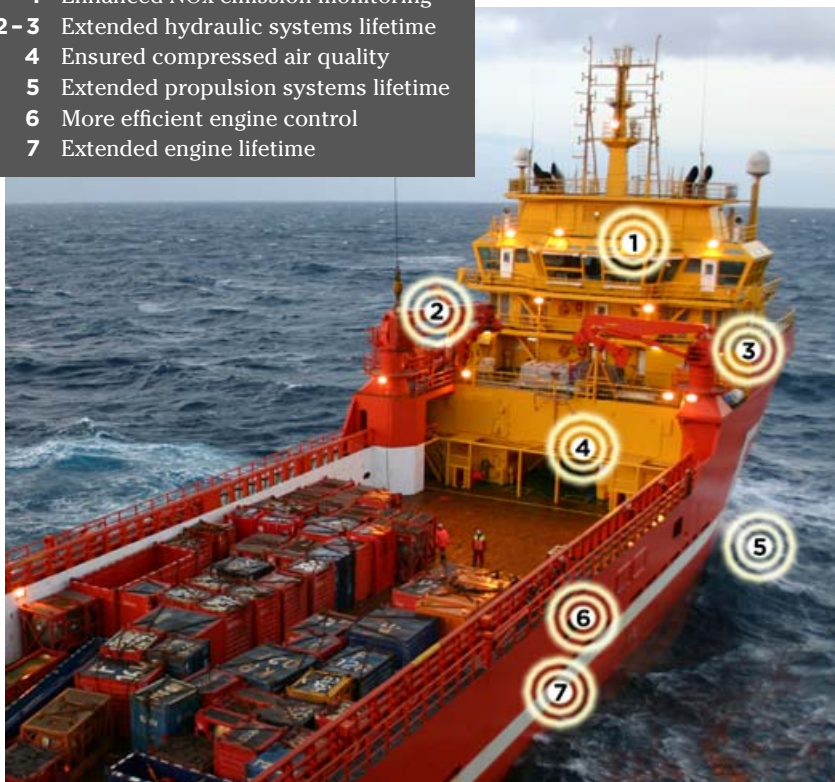
The ability of oil to hold water in solution depends on the oil type, its age, and what additives are present. When the water content in oil reaches saturation point, it separates out and free water is formed, which

quickly causes problems in the lubrication system and increases the risk of engine failure.

By continuously measuring moisture in oil, the risk of free water formation can be assessed accurately. In addition, when the moisture is measured online instead of relying on the traditional sampling methods, real-time indication is always available on how saturated the oil is.

As a consequence, corrective actions can be taken immediately, significantly reducing the wear and corrosion water can cause. Continuous measurement data also

- 1 Enhanced NOx emission monitoring
- 2-3 Extended hydraulic systems lifetime
- 4 Ensured compressed air quality
- 5 Extended propulsion systems lifetime
- 6 More efficient engine control
- 7 Extended engine lifetime



Real-time measurements improve onboard machinery performance.

helps plan preventive maintenance activities; unscheduled machinery downtime can be prevented by optimizing service activities.

In the same manner, the level of moisture in the ship's compressed air systems can be used to trigger maintenance actions, before the air gets so moist it starts to condense, causing corrosion or freezing of the system. Compressed air is used for many different purposes in ship automation from starting the main propulsion engine to blowing the ship's whistle.

### ...and maximize system performance and emissions control

Measuring the moisture, temperature and pressure of engine inlet air helps to control the engines and improves the system's energy efficiency. At the same time, emissions can be cut.

Moisture in the intake air lowers the peak burning temperature in the engine's cylinder, improving the

engine's efficiency and reducing thermal nitrogen oxide (NOx) emissions. However, water condensation must be avoided here as well, creating a need for accurate moisture information.

Information on ambient air conditions is also needed in emission monitoring systems to correct emissions to standard conditions. The need to monitor and report NOx emissions is increasing as emission restrictions are tightening in the marine sector, just like in every other industry all over the world. The International Maritime Organization is currently enforcing stricter criteria for the allowed NOx emissions, and some ports and countries already restrict ships from coming to their waters unless they meet certain emission requirements.

#### Further information:

[www.vaisala.com/shipinstrumentation](http://www.vaisala.com/shipinstrumentation)



### Complete product platform certified

Vaisala HUMICAP® Moisture and Temperature Transmitter Series MMT330 provides a true, real-time picture of the oil's condition and feeds an alarm signal to ship automation system, if alarm level of water contamination is exceeded.

Vaisala DRYCAP® Dewpoint and Temperature Transmitter Series DMT340 features industry leading accuracy and long term stability for demanding dewpoint measurement in compressed air lines.

With its unprecedented ability to measure the moisture accurately in air that is close to saturation, the Vaisala HUMICAP® Humidity and Temperature Transmitter HMT337 provides optimal solution for the engine control system.

Vaisala Combined Pressure, Humidity and Temperature Transmitter PTU300 provides accurate and reliable pressure, temperature and humidity data on ambient air to the ship emission monitoring system to perform correction calculations to standard conditions used in reporting.