

Information Bulletin - 107

PRODUCTS & SOLUTIONS

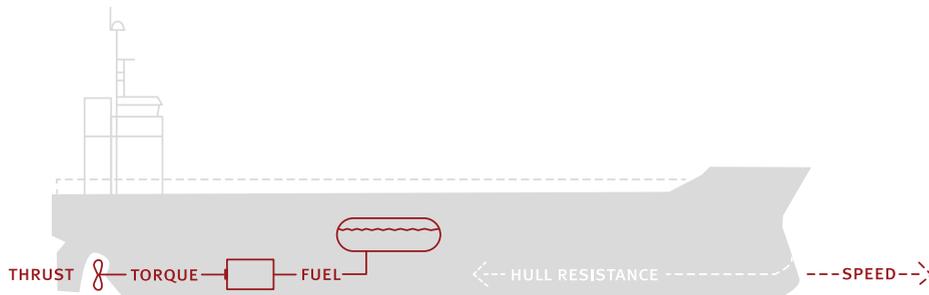


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**TO BE
REALLY
SURE**

Fleet performance

Managing a fleet, plant or any type of installation comes with numerous responsibilities and challenges. When it comes to propulsion management, optimising performance is key. Performance Management is not only driven by cost-effective goals and decisions. Environmental impact, competition and pending rules and regulations are also taken into account. To be one step ahead in Propulsion Performance Management, VAF Instruments develops and manufactures state-of-the-art sensors and solutions that provide you propulsion performance at your fingertips.



*Energy conversions & efficiencies
Only by measuring propeller thrust you are able to separate the propeller efficiency from the hull resistance*

Fuel Efficiency

Due to the increasing awareness of the impact of exhaust emissions on the environment, combined with the continued increases in fuel costs, there is great need for reduction in fuel consumption. This has led to a high demand for accurate measurement systems to monitor the fuel consumption per engine. Real-time measurement and trend analysis of fuel consumption provide helpful information for ship owners, ship managers and crew about the influences of their actions on the consumed fuel. VAF Instruments offers various kinds of systems for the most accurate measurement and analysis of fuel consumption. For the large variety in fuel systems, VAF Instruments offers a dedicated fuel consumption measurement system and diverse monitoring and management solutions.

Since 1938 VAF Instruments has gained experience in the development, production and application of precision measuring instruments for the measurement of (fuel) flow ranges from almost 0 up to 1 million liters per hour.

The very high accuracy (down to 0.1%) and high repeatability (0.05%) of VAF Instruments' Positive Displacement Flowmeters are not affected by pressure, viscosity or temperature of the fuel. In addition the design of the systems is very robust and easy to operate, making it ideal for use in the typical environmental conditions on board of ships and power plants.



PT2 Flowmeters

*Highly Accurate Flow Measurement
To monitor fuel consumption*

Since most of the operating costs of a ship are fuel related, it is very important to use fuel in the most efficient way. The measurement and control of the viscosity and density ensures an improved combustion efficiency preventing engine damage and reduction of fuel and maintenance cost. ViscoSense^{®3D} is a highly accurate sensor with a superior measuring principle based on the proven ViscoSense[®] technology. The sensor offers density, viscosity and temperature measurements. Furthermore, in combination with VAF Instruments PD Flowmeters, this measurement system is a cost effective solution for mass flow measurement for fuel consumption and bunkering applications.

ViscoSense^{®3D}

*Viscosity & Density Measurement
To enable mass flow measurement and viscosity control*



Propulsion Performance

Optimising ship's propulsion performance is one of the major factors to minimise environmental impact and reduce fuel costs. There are different levels of measuring ship propulsion performance.

The first step is by measurement of the propeller power or torque. By measuring torque the total propulsive performance change over time can be determined. The use of VAF Instruments' T-Sense® torque measuring system facilitates efficiency improvement and overload protection avoiding maintenance and breakdown costs. Using T-Sense® has led to savings up to 10% on fuel costs. The system is based on highly accurate optical sensor technology and can be mounted on shafts in power transmission systems. The T-Sense® can measure the combined effect of propeller and hull. But in order to separate the propeller performance and the ship's hull performance, the propeller thrust needs to be measured as well. The way to do so is by measuring thrust in addition to torque.



T-Sense®

Torque Measurement

To provide engine performance related to fuel consumption

The propeller plays an important role in the decrease of the total propulsion performance of a ship. In general one third of propulsion performance decrease is caused by propeller, where two third is caused by hull. Based on factual data, proper decisions can be made for either a hull cleaning or just a propeller cleaning (or repair). Next to this, the effects of for instance a propeller modification or a new hull coating can be measured much more accurately. In the end this provides essential insight aiding investment decisions for propulsion energy saving measures and greenhouse gas reductions.

In addition to torque measurement, VAF Instruments' TT-Sense® offers the unique possibility to separate propeller and hull resistance, therewith maximising the total savings potential on your maintenance and fuel bill up to 20%.

TT-Sense®

Thrust & Torque Measurement

To separate propeller performance from hull resistance



Environmental Compliance

Rules and regulations such as MARPOL, SEEMP, ECA, IMO and MRV make sure ships put in their efforts to prevent from possible pollution caused by their operations. VAF Instruments makes every effort both to prevent marine pollution and to reduce the environmental footprint of the maritime industry.

Automated Voyage Reporting

To report all the details per ship and per voyage, made obligatory by legislation such as MRV and IMO DCS, seems to be a lot of extra paperwork and handling. There is an easier way though. The automatic data collection and automated voyage reports by MARVY® are the answer to push back the extra work and to be in compliance with the MRV & IMO DCS regulations. This MARVY solution for voyage reporting includes automatic berth & anchorage detection, automatic fuel oil consumption monitoring and automated voyage & MRV reports. This unique solution is certified by verification bodies and claimed to be the most advanced solution for MRV and IMO DCS compliance. With this certified solution, MARVY® eliminates human error in voyage reporting, due to automatic data collection, automated voyage reporting without manual input.

MARVY®

*Automated Voyage Reporting
To monitor and report for
IMO DCS and MRV*



Oil in Water Discharge

To prevent marine pollution and comply with MARPOL requirements, continuous on-line monitoring of discharge water during de-ballasting operations is mandatory. VAF Instruments' Oilcon® oil discharge monitoring and control systems are suitable for all ballast and slop water discharges. The system is based on the light scattering principle which technique results in unprecedented levels of accuracy, reliability and cost-efficiency of installation and ownership. The system is fully automated and is equipped with an intuitive user interface, making it the most user friendly system, also due to the fact that the robust system requires very little maintenance.



Oilcon®

*Oil Discharge Monitoring
To ensure environmental compliance*

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Data management

There are different levels of data management on board and on shore: data collection, basic visualisation of measured data, data enrichment and data analysis.

The innovative products and solutions, developed by VAF Instruments, can be linked to a range of data monitoring and management solutions. Basic data collection and visualisation of measured (mass) flow data from Flowmeters can be done by the onboard FCM2 Flow Computer. But if you want to step it up a notch, PEM4, the onboard Propulsion Efficiency Monitor combines flow information with torque and/ or thrust measurement data a.o. to define specific KPI's such as SFOC. In addition this system can make an automatic distinction between different fuel types. The system is able to monitor up to 12 Flowmeters (8 separate consumers), two T-Sense® or TT-Sense® sensors and can additionally be connected to speedlog or GPS to obtain the specific fuel consumption per nautical mile. Connecting the PEM4 with the innovative ViscoSense®3D provides mass flow monitoring.

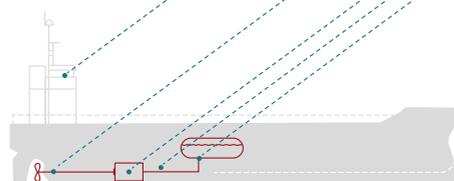


PEM4
*Propulsion Efficiency Monitoring
To monitor thrust, torque and flow
for KPI's*



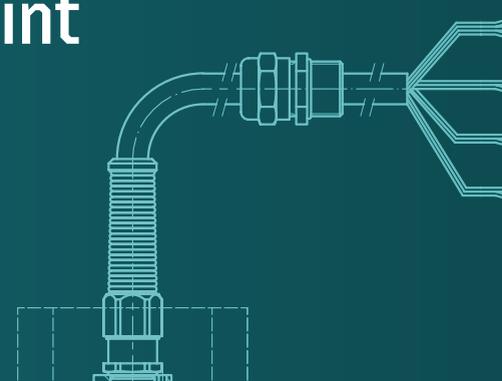
However, data collection of the relevant sensors on board of various ships of a fleet can result in unmanageable large amounts of data, so called Big Data. Therefore, the most important and difficult step is to refine the vast amount of raw measurement data into relevant data points. This enriched data is critical for KPIs on which decisions for ship performance optimisation can be based.

IVY®, VAF Instruments' solution for Propulsion Performance Management, brings you the fleet at your fingertips. From ship to shore, IVY® collects and enriches Big Data for powerful analysis. The web application of IVY® provides fleet and ship performance visualisation and insight into the relevant data and more than 30 KPIs. IVY® can be combined with a range of sensors on board, including all VAF Instruments' innovative measurement systems. IVY® brings Big Data back to the essence.



IVY®
*Ship-to-Shore Data Collection, Enrichment & Analysis
To manage and improve propulsion performance*





Maximise efficiency, improve propulsion performance and reduce your environmental footprint

Our mission

Our mission is to develop innovative and accurate measurement systems that create and increase awareness about inefficient operations and show where improvements can be made. Because our goal is to maximise efficiency, improve operational excellence and reduce the environmental impact of these operations.

VAF Instruments

VAF Instruments is the most preferred supplier of the top 100 shipyards and market leader in maritime measurement systems. Since 1938, VAF Instruments has gained a worldwide reputation as a specialist in developing and manufacturing measurement and control systems for the maritime and process industry.

With agents around the globe, VAF Instruments has a worldwide network. Over 70 representatives around the globe are specialised in VAF Instruments' products and solutions. Please feel free to contact us or one of our representatives, any time, any place.

