

# EcoMATE™

Vessel performance monitoring system  
with fleet optimisation software

## ETA Process Instrumentation

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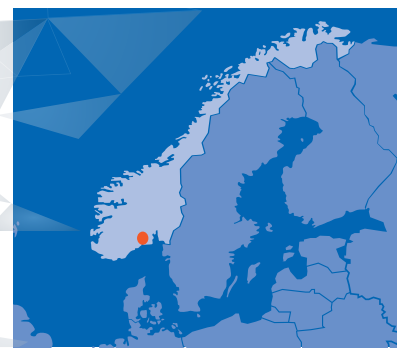
*Upstate New York*



**KROHNE**  
Marine

- Complete operations monitoring for all types of vessels in a single integrated tool
- Improve vessel and fleet performance, bunkering, reporting and OPEX
- Comply with existing and future regulations and requirements
- Comprehensive services, providing turn-key solutions from survey to installation





## KROHNE Marine – The Marine centre of excellence

KROHNE Marine, based in Brevik, Norway, is a dedicated expert division with over 60 years of marine industry experience. Since 1957, our highly qualified team has delivered certified systems, products, measuring solutions, and services to the global marine industry.

Our vision is to drive the maritime digitalisation and sustainability challenges by providing innovative, cost efficient and greener solutions. We are ISO 9001 and ISO 14001 certified, giving a clear signal of our commitment to quality and environmental policy requirements.

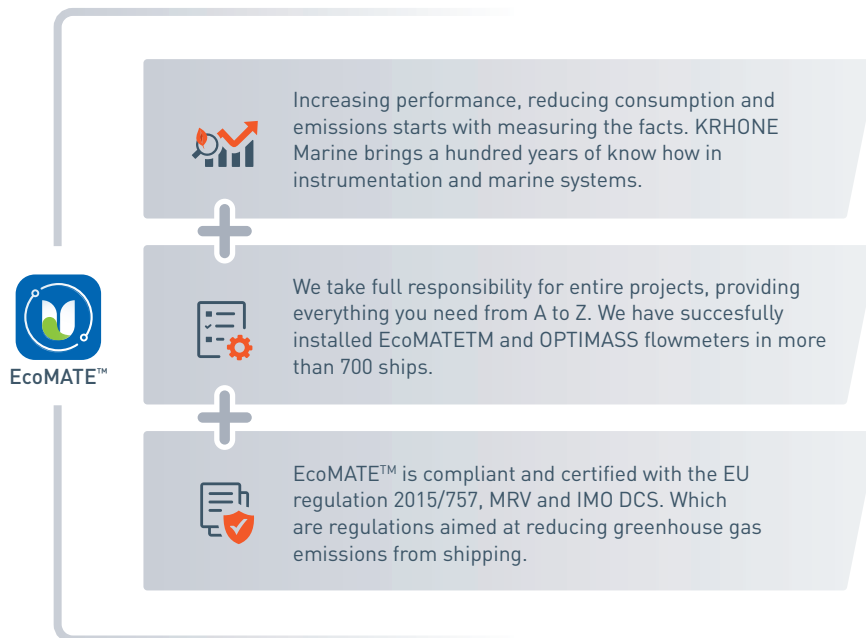
Through long-term and close partnership with our clients, we have gained extensive knowledge in what it takes to deliver sustainable products and solutions to ship owners, managers and yards. Our systems are installed on all kinds of vessels, from inland vessels to the largest seagoing ships.

## EcoMATE™ – Total control with a single integrated tool

EcoMATE™, the vessel performance system and fleet operation optimisation software from KROHNE, is designed to be a complete turnkey solution for real-time monitoring of fuel consumption, emissions and bunkering.

Regardless of vessel type, EcoMATE™, provides the complete picture you need to improve performance while lowering your OPEX. Allowing you to fully optimise for greener ship operations while adhering to regulatory requirements. As a result, many major shipping companies have chosen EcoMATE™ as their preferred solution.

We recognize that every organization is unique with its own internal requirements; thus the EcoMATE™ system was created with ease of use and flexibility in mind, while also providing a unified fleet solution for shipowners, managers and crew. As a cloud-based solution, EcoMATE™ can be accessed on shore and in real time. The system's four modules work in tandem to provide operational users with complete control and visibility over important fuel data.



### Highlights:

- Efficiently lower fuel costs and reduce GHG emissions by analyzing operational data
- Automatically monitor all vessel types with a single unified fleet tool
- Guaranteed full security and data integrity
- Fully improve vessel and fleet performance
- Online system diagnosis and remote device support
- Flexible and reliable reporting tool, with tailored solutions for various requirements
- Remote cloud solution, enabling on-shore vessel and fleet analysis
- Supports all types of vessels with either new or existing flowmeters

## The system software modules

EcoMATE™ is a 100% in-house product consisting of four modules. Once implemented, the EcoMATE™ system takes care of data acquisition, logging, calculations, monitoring and reporting.

### Fuel efficiency is key in the SEEMP

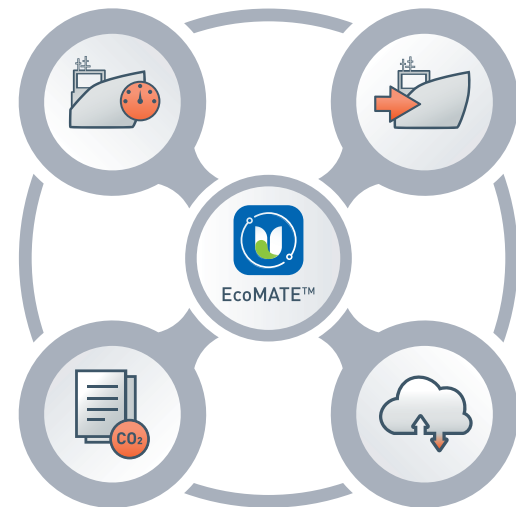
Precise fuel consumption measurement and monitoring is a critical link between emissions, costs, and efficiency. The fuel consumption module collects fuel data from mass flowmeters, displays instant fuel consumption, and generates reports.

**EcoMATE™ Fuel Consumption**  
For continuous measurement, monitoring and reporting of fuel consumption on board ships.

### Certified and dedicated module for emission report compliance

EcoMATE™ makes it simple, effective, and accurate for crew, owners, and operators to comply with emission reports. The module generates precise emission reports that are compliant with IMO and EU regulations while saving the user time and effort. Based on the voyage or vessel mode, a set of features that simplify daily operation and reporting requirements are included.

**EcoMATE™ MRV & IMO DCS**  
For carbon emission monitoring, calculation and reporting acc. to EU regulation and MARPOL.



### **EcoMATE™ Bunkering**

For verification of received bunker quantities and quality.

### **Fuel accounts for the majority of a vessel's total operating costs**

Accurate and dependable measurements are required to verify the amount of fuel oil delivered during a bunkering operation. EcoMATE™ measures the flow in your ship's bunkering line. The module provides trend graphs, the exact amount of fuel oil taken on board, total bunker quantities received, temperatures and the verification of fuel density during the entire bunkering process.

### **EcoMATE™ Cloud**

Shared digital platform for on-board to off-shore reporting and monitoring, with a vessel performance feature for flexibility and data analysis.

### **Shared digital platform for reporting, and monitoring of vessel performance**

EcoMATE™ connected vessels automatically transmit and sync data to the customizable cloud dashboard, allowing you to monitor trends, compare vessel data, view alerts, and report measured data. Our cloud solution offers greater flexibility and data analytic capabilities, which we combine with our vessel performance feature for maximum efficiency.



## Be better equipped to comply with existing reporting obligations as well as future emission reduction requirements

One of our goals at KROHNE is to lessen the environmental impact of our activities and products. This is especially important in the shipping industry, whose effect on the environment is of concern. As a result, we take proactive measures to reduce our emissions by:

- ✓ Complying with international environmental regulations
- ✓ Implementing eco-designs into our products and packaging
- ✓ Continuously contribute positively to sustainable development in all parts of the industry

We acknowledge that the shipbuilding industry's top priority is to operate in a future-oriented manner and to utilise environmentally friendly technologies. Increased demands for smarter operations and regulatory compliance pose a significant but necessary challenge for ship owners, managers, and crew. As a result, we offer the EcoMATE™ system as a data-driven tool for managing, reporting, and combating climate change.

By utilising our comprehensive system and instruments, you achieve the ability to combine profitability and performance. You gain not only positive change for your company, but also for the environment.



Join us in reducing GHG emissions by moving forward together. Allow us to assist you in achieving the global shipping industry's climate goals by meeting regulatory requirements.



Dark mode



Light mode

## EcoMATE™ Vessel Performance Feature

Planning a voyage and fully utilizing the engines necessitates close attention to the vessel's overall performance and management. Our VP feature provides a valuable tool for advanced data insight and analysis. Operators can manage vessel operations with real-time decision support by comparing crucial data, such as routes and times between vessels or crews. Alternatively, information can be connected from sources like fuel monitoring, shaft power, GPS, speed, ECA maps, draft/trim, and more.

Through the use of our shared digital platform, EcoMATE™ Cloud, data is exchanged between on-board and on-shore systems. All events are merged into a common timeline with searchable port listings for better overview and insight. Our improved data transfer protocols require less bandwidth between the vessel and the cloud. Assuring that real-time cloud alerts are available in a timely manner.

With EcoMATE™ as your key to greener operations and efficiency, you can fully utilise your data and digitalize your operations in response to the industry's sustainability challenges. Assess measurements of specific fuel oil consumption (SFOC), which can be extended by using engine torque, as well as fuel performance in relation to vessel conditions. The flexibility of this feature aids shipowners and crew members in better voyage execution, while ensuring the safety and profitability for everyone involved.

### Better overview & insight

- **Fuel & Emission Calculations Dashboard**

The momentary values widget display live values such as:

- Total momentary fuel consumption, CO<sub>2</sub>, SO<sub>x</sub>, NO<sub>x</sub> emissions
- Speed through water and performance
- EEOI / CII per voyage / period
- Specific fuel oil consumption (SFOC)
- Shaft power, torque, thrust
- ROB (remaining on board)
- Currently selected fuel type for each consumer on-board
- Historical data and events arranged along a timeline

- **Switchable vessel specific views**

User friendly UI and customisable dashboards. Get an overview of consumption, events, voyage, KPI's, bunkering/ROB and much more!

## EcoMATE™ – Instrumentation flexibility

KROHNE Marine perfectly combines the leadership of KROHNE Measurement Instruments, such as OPTIMASS Coriolis mass flowmeters, OPTIFLUX electromagnetic flowmeters and OPTIWAVE radar level transmitters, with our Marine Systems and Application experience for your reliable data management.

### KROHNE OPTIMASS Coriolis mass flowmeters

When used in combination with the OPTIMASS Coriolis mass flowmeters, EcoMATE™ will provide detailed information on fuel consumption by measuring the supply and return lines to the main engine. It will also provide automated emission reports for different fuel types and give an overview of all corresponding flow readings. The OPTIMASS is perfect for measuring advanced ship fuel applications due to our EGM™ (Entrained Gas Management) technology.



OPTIMASS Coriolis mass flowmeters

### KROHNE OPTIFLUX 2X00 electromagnetic flow meters

Combining the OPTIFLUX 2X00 electromagnetic flow meters with the EcoMATE™ system's water bunker measurement is a wonderful example of extended use.

Traditionally, the EcoMATE™ system has been outfitted with OPTIMASS mass flowmeters for fuel oil bunker measurement. However, we can also facilitate the integration of the OPTIFLUX for water bunker measuring by connecting it to a marine-approved PLC via Modbus or Pulse IO.

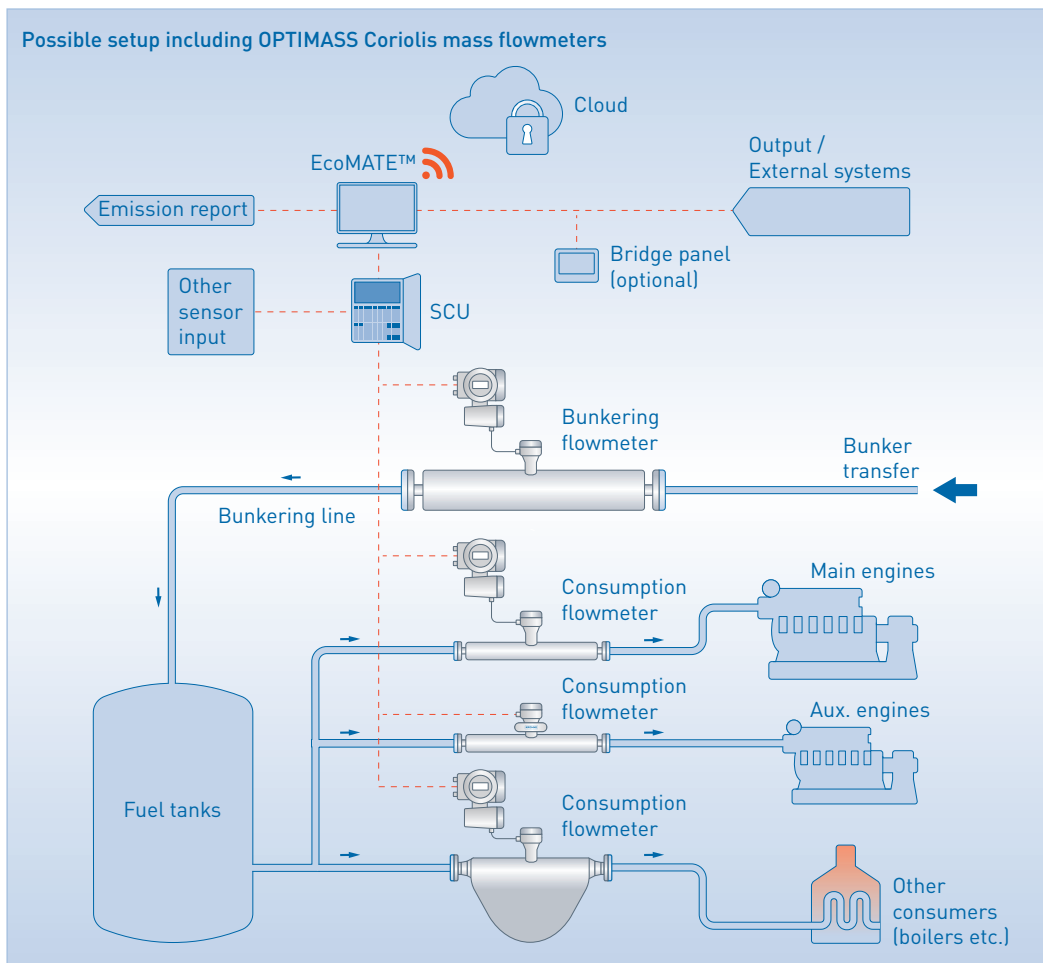
Thanks to close collaboration with clients and positive experiences. The systems flexibility enables the integration of various instruments for extended use.



OPTIFLUX electromagnetic flowmeters

## The whole setup at a glance

Shipowners use EcoMATE™ to monitor all vessel types in their fleet with a single tool. A basic setup with EcoMATE™ and our instruments will include a marine approved PLC and one or more flowmeters mounted inline with the fuel supply or bunkering line. Through our adaptable options in KROHNE, we provide an easily integratable solution.

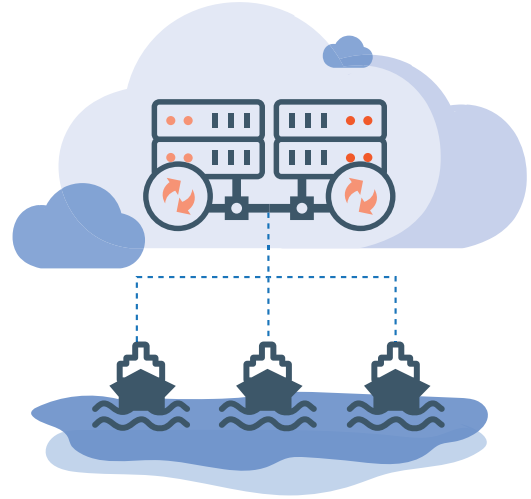


## EcoMATE™ – Interface, security and data integrity

The EcoMATE™ system offers interface to applications such as AMS, IACS, reporting systems and a variety of others. EcoMATE™ also interfaces all relevant types of sensors, flowmeters, GPS, LOG and other NMEA values to view on-board and on-shore.

The EcoMATE™ cloud service ensures complete data security and integrity. To prevent unauthorized access to firewalls, all traffic to and from our cloud service is HTTPS encrypted, with all cloud servers running in a VPC (Virtual Private Cloud). In addition to reducing the risk of sensor and data leaks, manipulation, and disruption. Our cloud service also includes a dedicated vessel satellite connection option.

Data is stored and encrypted in multiple data centers to prevent data loss and ensure trustworthy data for reporting. The EcoMATE™ cloud service also performs daily data backups, which ensures that your data is always available for recovery in the event of power outages, fires, or other catastrophic failures.



# KROHNE Marine provides full in-house expertise

We offer advisory on a variety of solutions based on the customers needs and operational requirements worldwide. We provide complete turnkey solutions with our own R&D, engineering & system design, production, service & spare parts, sales, and marketing.

## Our strengths:

- 60 years of experience in the marine industry
- Wide range of intelligent solutions and high quality instruments produced by KROHNE
- Sustainable and future-oriented operations & technology for our clients
- Commitment to quality and environmental policy requirements, certified ISO 9001 & 14001



### Full Scope Supplier

We produce instruments ensuring high quality delivery, tailored to fit all types of vessels, retro-fit or new builds.



### Marine Software Development

All software is developed and maintained in-house. Our developers handle integrations of various systems. We are aware our clients have individual requirements. As a result, we stay up-to-date by constantly evolving our technology.



### Marine System Engineering

Our skilled engineers are involved in the entire solution development process and provide input at every stage, from consultation, design and maintenance to service. No off-hire is required for installation.



### Global Marine Service

To support you and your operations, our network of service stations worldwide is ready to provide you with high quality support at any time.



Survey



Engineering



Project management



Production and Fabrication



System and Solution delivery



Installation and commissioning

# Learn more about EcoMATE™ and KROHNE Marine

Industry page



Solution page



eLearning EcoMATE™



Process detail page



Product page



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