



KONGSBERG



## ENERGY MANAGEMENT (EM)

# Enhancing awareness for informed operational efficiency

Kongsberg Energy Management (EM) solution is part of our portfolio of solutions and promotes an evidence-based, data-driven culture of continuous improvement. Our integrated solution allows the customer to make informed decisions for more efficient vessel and fleet operations.

### Improving vessel and fleet performance

EM helps improve crew's awareness of their ship's performance, supports environmental compliance, and can assist customers to reduce energy usage, fuel consumption and operating costs. EM offers an enhanced ability to improve the performance of an individual vessel or an entire fleet. The system provides details on fuel consumption and overall energy efficiency levels benchmarked against historical performance, allowing the crew to exploit opportunities to minimise fuel usage and cut emissions. EM is highly customisable and can be configured to meet specific customer needs across a wide range of vessels.

# ENERGY MANAGEMENT (EM)

## FEATURES:

- Improved operational efficiency for vessels and fleets, providing real time data to both ship and onshore
- Supports regulatory compliance
- Provides details on fuel consumption and energy efficiency displayed against historical data
- Highly customisable
- 24/7 help desk

### On-board system helping crew optimise operations

EM takes data from the ship's control system and a multitude of sensors on the vessel, logged at frequent intervals and processed in real time.

Data sources include the engines, propulsion system, automation, deck machinery along with other equipment. Selected information is displayed graphically using a clear and uncluttered design that focuses the crew's attention immediately to key elements. For example, fuel consumption levels are displayed against a baseline of historical data, showing whether consumption is higher than need be for the conditions. From this insight, the crew could start optimising operations, for instance, by changing the number of running engines in order to bring the operating engines into the load range with the lowest specific fuel consumption. The on-board interface is available on any connected device and kept up to date using built in remote access to meet ever changing customer requirements and governmental regulations.

### On-shore portal enabling further vessel and fleet analysis

All the data collected is encrypted before being transmitted on to a Kongsberg-hosted web portal onshore, where more detailed analysis can be carried out. Our cloud based portal enables fleet managers and operators to compare actual performance data with historical benchmarks. Performance indicators and baseline analysis create potential for further improvement, and helps to enable a data driven performance management and decision-making approach across fleet management operations.

### Sensor requirements

Information requirements can range from just a few signals on the basic system to hundreds on the comprehensive package.

For a modern vessel, the majority of information is already available and instead of installing new sensors, the system can interface to Kongsberg or third party systems to receive data.



On-board interface for crew

## Supporting regulatory compliance

Energy management provides vessel efficiency and performance information that enables the ship to comply with IMO and EU regulations (Marpol, SEEMP, EEOI, MRV). It eases the regulatory process via automated logging of data and extraction for verification and reporting. EM is designed with future regulations and reporting in mind.

## Benefits of energy management

- Helping you reduce energy usage, emissions and operating costs
- Providing real-time data to both ship and shore
- Extensively tested and proven across a variety of different vessels and fleets
- Supporting regulatory compliance (EU MRV, SEEMP)
- Combining expert data analysis with extensive knowledge of vessel equipment
- Frequent software updates in accordance with new functionalities and regulatory framework
- Available for any vessel type with equipment from any manufacturer

- Multi-layered cyber security embedded within solution

- Integrated with Kongsberg Maritime Health Management so our customer can view operational performance and health status of vessel equipment together.

## On-shore portal capabilities:

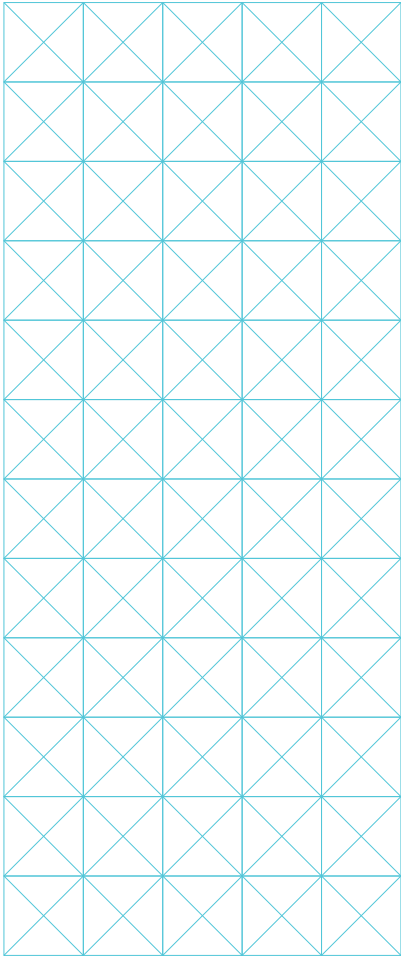
- Fleet overview
- Vessel to vessel comparison
- Close-to-real-time monitoring of fleet and ship performance
- Overview of monthly, weekly, daily performance and operational data
- Voyage reports
- Individual equipment performance details
- Customisable dashboard
- Map overview with performance status

## Additional services

- 24/7 help-desk
- Expert in the loop (EITL)



On-shore interface for management



## KONGSBERG ENERGY MANAGEMENT SYSTEM

### Lite package

Basic fuel and emissions monitoring

- Fuel performance and benchmarking
- Energy efficient operating index
- Operational profile detection
- Emissions monitoring
- Leg and voyage documentation

### Standard package

Fuel, emissions and ship performance monitoring

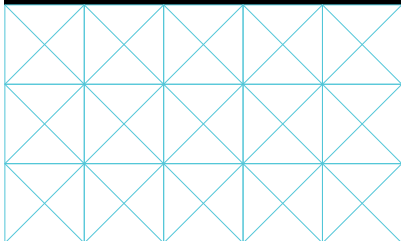
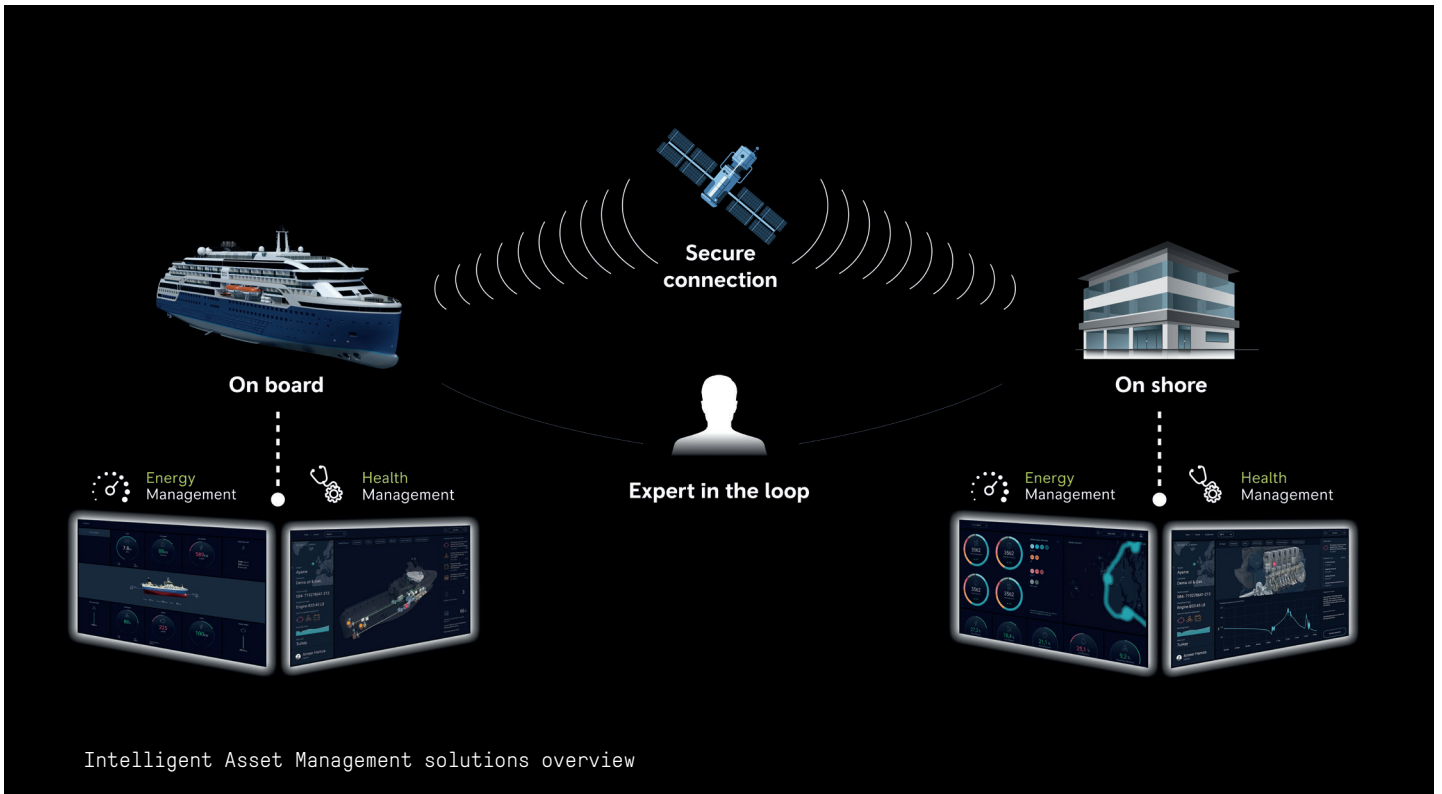
- Weather resistance indication
- Engine and battery performance
- Speed optimisation
- Operational cost monitoring

### Premium package

Comprehensive performance monitoring

- Trim optimisation
- Propulsion performance
- Electrical balance
- Thermal sankey
- Hull growth indication

Module combination can be customised to customer preference



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