



technical
overview

engine*i* monitoring system



engine*i* the benefits

fuel monitoring

engine*i* is a complete fuel monitoring solution. It acquires and transmits engine data and fuel consumption from ship to shore, enabling shore based technical management to effectively manage fuel usage.

The system measures consumption by monitoring the supply and return flow rates of fuel to the ships engines. The fuel flow measurements are taken every 5 seconds, stored in an onboard data logger and when combined with the vessels GPS speed over ground calculations, determines the most efficient throttle settings. Basic fuel readings are displayed as a simple fuel consumption dial on the bridge, sent to shore and accessed via the engine*i* web dashboard.

Through the dashboard, shore based technical personnel are able to see a snapshot of fuel data across the fleet. They can overlay fuel consumption onto a mapping platform to compare consumption with speed. Managers can then develop efficient working practices through the comparison of vessel duty to vessel size, voyage-to-voyage, crew-to-crew and efficiency maximisation and trend analysis.

The solution can be fitted to any existing engine from the smallest, oldest generators up to the newest most powerful engines and is compatible with most High, Medium and Low Speed engine manufacturers.

main benefits:

- Reduction in fuel usage – proven 10% savings
- Increased fuel awareness within ships crew
- Efficient working practices
- Automated data storage and display – freedom from paper and spreadsheets
- Optimal running speeds
- All fuel and engine types



the bridge



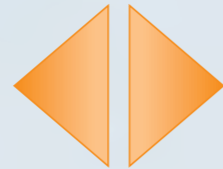
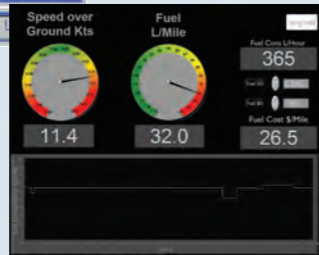
Fuel Consumption Gauge

Showing current fuel consumption in litres per hour, tonnes per hour or other units as required. Compact 5" touch-screen unit, typically located close to the master's station. This screen also provides access for calibration and maintenance.



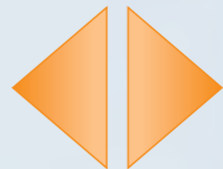
Fuel Optimisation Display

Detailed fuel consumption display showing consumption per mile as well as litres per hour. This display gives the master the information he needs to optimise the operation of the vessel to minimise fuel usage whilst meeting the ship's contractual obligations.



GPS

NMEA connection to the ship's GPS or to a dedicated standalone GPS if no spare ports are available on board.

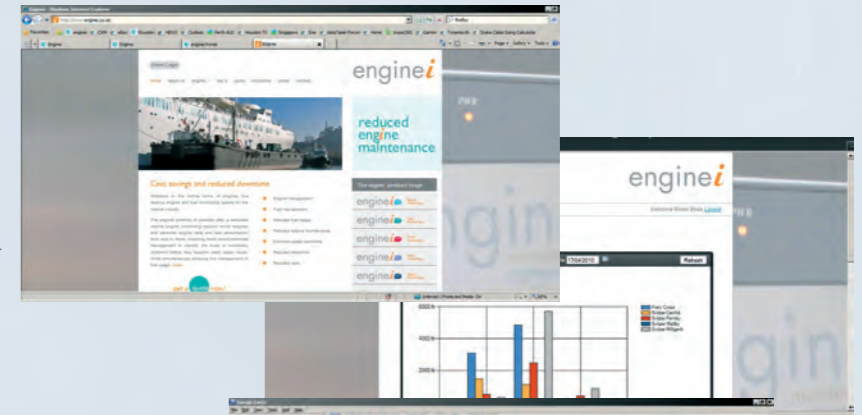


the onshore office

Data Transfer

All logged data is transmitted to the secure enginei server on shore for storage and analysis via the enginei web site. Data transmission is via the ship's existing mobile internet connection (3G/GPRS/Satellite) if possible. Alternatively, a dedicated mobile internet connection can be provided.

During normal operation the enginei system uploads a packet of fuel consumption data every 15 minutes. If the internet connection is not available – if the ship is out of 3G signal range for example – the data is stored in the internal memory of the system until the internet access is restored, and is then uploaded to the server. On-board data storage is in excess of 3 months.



Website

Fleet-wide reporting of fuel consumption, operating hours, distance travelled and many other parameters is available through the enginei web site. Vessel tracking through Google Earth and export of raw and summary data to Excel for analysis, or as PDF reports for management information.



Data Logger

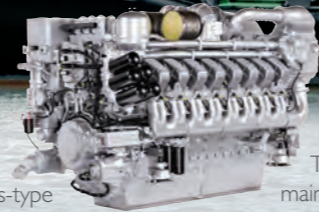
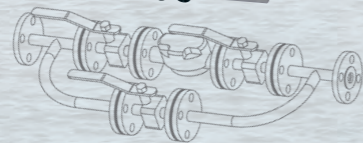
The core of the enginei system is an advanced data collection and storage unit which accepts a very wide range of analogue and digital inputs from almost any type of sensor.



the engine room

Flow Meters

Stainless-steel positive-displacement meters for standard operation, with the option to use coriolis-type meters for heavy-fuel applications. All meters are integrated into a dedicated bypass pipework system with three stainless steel valves.



This allows the meters to be removed for maintenance without affecting the integrity of the fuel pipework or preventing the vessel from operating. Bypasses around flow meters are usually required by Classification Societies.

Operation

The system can be installed as a passive monitor which provides fuel consumption and operational information to shore-based management, or by the crew to proactively reduce fuel consumption.

engine*i* the questions

frequently asked questions

What fuel types can the system accommodate?

All liquid and gaseous fuel types, including all grades of marine fuel oil.

From an enginei/fuel point of view, is it the same equipment for medium and slow speed engines?

Fuel flow meters will be different, depending upon fuel type and flow rates. All other equipment will be exactly the same.

What is the byte size of the data that gets transmitted if every hour for example.

For simple fuel measurement – approx 8kb per hour.

For full engine monitoring – approx 36kb per hour.

Can we switch between heavy fuel and gas oil (when in port, for boilers and generators)?

Using coriolis meters, yes.

Are the flow meters class approved?

The entire installation is to Class rules, including selection and specification of the components and materials.

How long is the installation?

2-3 days depending upon the size of complexity of the vessel. The ship will be immobilised only whilst the fuel flow meters are being installed – 6-8 hours per engine.

My vessels are in the Middle-East how would you install over there?

We would send enginei engineers or use local labour.

Can you send me alerts via email or sms if a master exceeds an engine threshold or a fuel consumption threshold?

SMS and email alerts.

Can we use an existing GPRS/satellite platform?

Yes it is possible to use an existing platform and network.

Are there any ongoing costs?

There is a nominal monthly charge for secure data storage and access to it via the web site.

Data transmission is very cost effective and is usually covered by your existing service agreement

Is my data secure?

Yes all data is held on our secure server which is hosted off site in a secure data centre.

How far can I go back to obtain data from both the ship and from the interface?

The data can be stored in the datalogger for up to 14 days onboard and indefinitely on the website.

Can I see my entire fleet on one interface?

Yes, if you have more than one vessel with enginei installed, then these vessels will all be displayed on one account.



engine*i* the system

enginei: a product by
Royston
diesel power

system characteristics

Fuel Measurement Accuracy	0.5%
Power	220 - 250 VAC or 24 VDC
Power Consumption	< 1A
GPS Connection	NMEA
Enclosure	IP56
Data Storage Onboard	Rolling 3 months
Data Storage Onshore Server	Indefinite
Transfer Protocol	GSM/GPRS/Satellite
Engine Interface	CAN Bus, RS48S, RS232 as applicable

engine*i*

monitoring
system

www.enginei.co.uk