

FUEL CONSUMPTION MONITOR EFCM

UNIVERSAL FUEL CONSUMPTION MEASURING OF THE EACH ON-BOARD COMBUSTORS



- First step to implement energy efficiency monitoring on the ship.
- Implementation of Energy Efficiency Management Plan requirements.
- Compatibility with electronic flowmeters output.
- Temperature Density Correction applying m^3 to Metric Tons conversion to increase the fuel mass consumption accuracy.
- Automatic detection of light/heavy fuel for each fuel system.
- Implementation of 24-hours abnormal consumption alarms.



The EFCM system is a special tool for fuel consumption monitoring on ships equipped with a volumetric or Coriolis mass flowmeters. The system is monitoring all fuel-powered devices, including:

- ME: Main Engine,
- AE: Auxiliary Engine,
- BLR: Boilers.

Wide range of flowmeters configuration: only at the inlet, at the inlet / return or otherwise on request. The System presents the results of instantaneous fuel consumption indicator for each device in [MT/h] and [MT/24h].

Pulse Flow Meter - counts the pulses and presents the result in [m^3/h].

Fuel temperature is measured by PT100 sensor installed on the pipeline (near FM).

Mass Flow Meter - presents the result in [m^3/h], [MT/h] and [MT/ m^3].

Volumetric flowmeter - automatic correction of temperature density is applied to convert m^3 to tons increasing the mass consumption accuracy.

FUNCTIONALITY

- Simple (inlet only) and differential measurement (inlet and return) possibility;
- Additional temperature measurement (PT100 on pipe) for each flow meter (offset correction);
- Automatic density calculation depending on temperature change – volumetric flow meters (ASTM tables);
- Density measurement from Coriolis mass flow meters available;
- Detection of light and heavy fuel for each system (via internal valve limit switches);
- Manual switch between high-sulphur and low-sulphur fuel:
- HSFO/LSFO and MDO/MGO;
- Resettable counters;
- Special functionality for bunkering operations;
- Total fuel consumption counters in MT (metric tons);
- Current mass flow in MT/h and MT/24h;
- Alarms implemented (24h High flow - prediction).

TECHNICAL SPECIFICATION

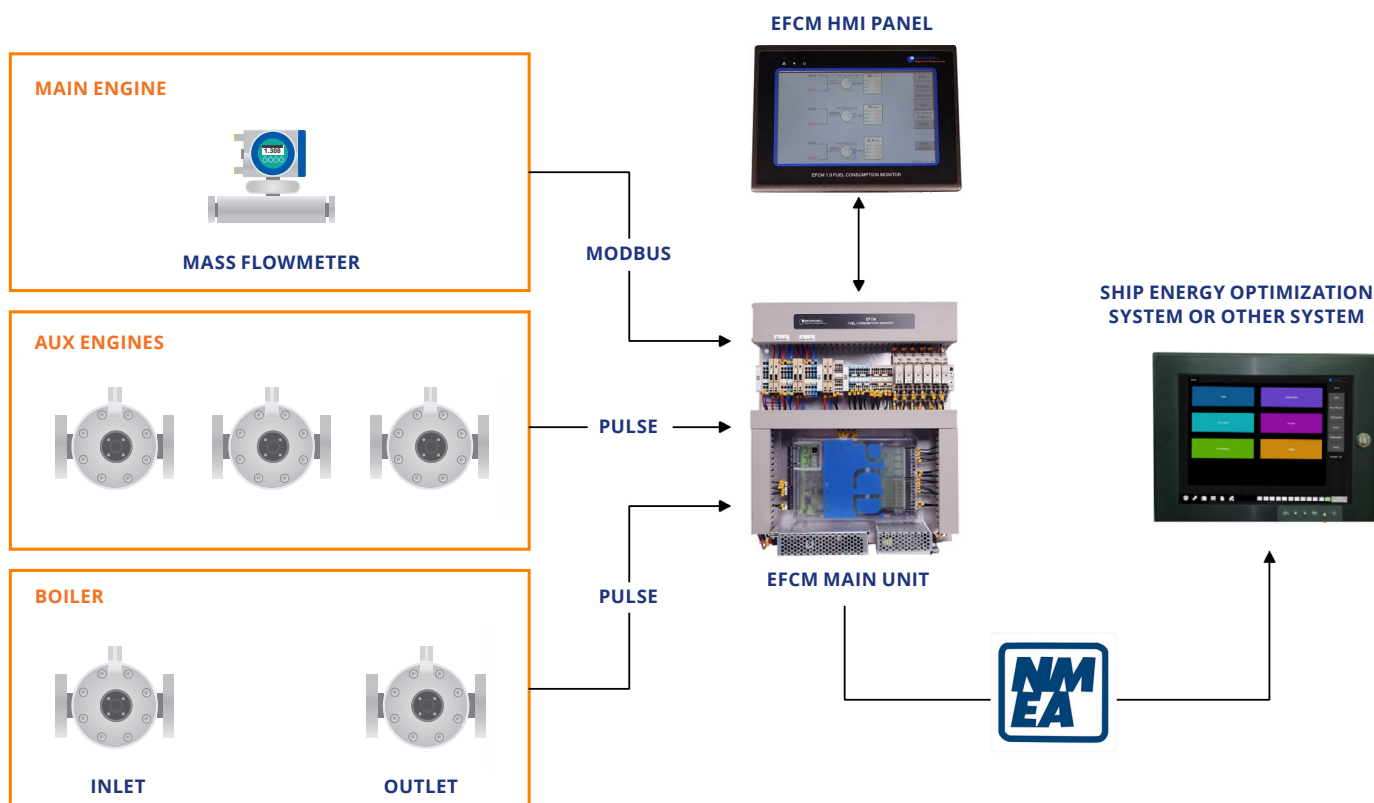
- Display: 7" TFT Contrast Ratio 500:1
- Resolution (W x H): 800x480
- Back Light: LED
- Power supply: 24 VDC
- Power consumption: max 4A@24 VDC
- Output signal in NMEA protocol (standard) for surveillance systems (i.e ESOS2)
- Volumetric Flow Meters: max 8 devices (pulse inputs)
- Temperature Density Correction: max 8 Pt100 sensors (analog inputs)
- Mass Flow Meter: any no. of devices

Additional Information

EFCM system is monitoring the type of fuel currently supplied to the device, such as HSFO (High Sulphur Fuel Oil), LSFO (Low Sulphur Fuel Oil), MDO (Marine Diesel Oil) or MGO (Marine Gas Oil). Using the existing limit switches the system is able to recognize the type of fuel currently supplied.

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Additional Information

Volume flowmeters are connected to our system via pulse inputs (reed switch or hall sensor). Mass flowmeters, in turn, are connected via digital communication (MODBUS protocol). We are able to connect all existing on-board flowmeters with electronic output, using mentioned standard of outputs and converters.

If there is no flowmeters with electronic output on-board we are able to provide new equipment fully compatible with our system.

EFCM can be integrated in SEEMP Set for the purpose of ship overall performance optimization.

EFCM is designed to cooperate mutually with SEEMP Set giving a readable and detailed analysis of ships operations at sea. The range of Enamor Ltd products is dedicated for ship-owners who want to find reliable solution to reduce ship energy consumption indicating the most effective ways to control fuel consumption and CO₂ emissions.

