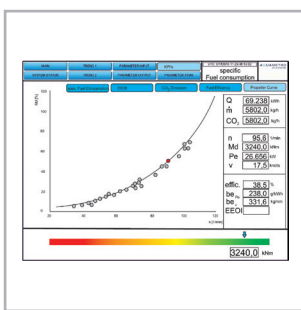




Fuel Performance 2.0 (FPS)

Fuel Monitoring Ship / Fleet
Management / Fuel Efficiency /
CO₂ Reporting (MRV)



The Fuel Performance System (FPS 2.0) is an open PLC-web based system to record signals, which are important to enable full transparency of all fuel and performance parameters of ship operation process. With fuel flow meters CONTOIL® sensors, shaft power meter SPM and additional data from ship automation the fuel consumption and fuel efficiency data can be acquired and stored for further analysis and reporting (CO₂ reporting MRV).

Features

- Web based visualization and reporting
 - Data collection
 - Trend curves
 - KPI analysis
 - Plausibility check
 - Monitoring and reporting
 - Fuel transparency and optimisation
 - Customizable monitoring systems

Benefits

- In the Office
 - Web access for Fleet Management
- On the Bridge
 - Performance and monitoring Management
- In the ECR
 - Performance and monitoring of all data calculated KPI's

Monitoring concept

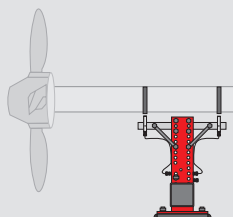
On board

Measurement

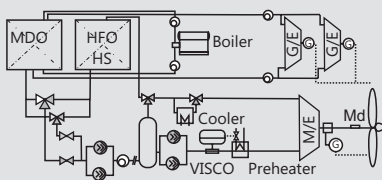
Ship automation / sensors



- Fuel consumption



- Torque
- Data record book
- GPS
- LOG

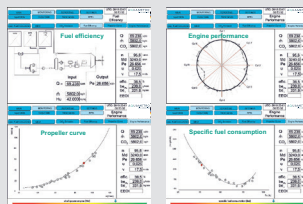


Example system design, actual system may differ.

Fuel Monitoring FPS 2.0

Open / full flexible web based system configuration

- Data packing / storage
- Data interface to:
Ship management - on board
Fleet management - on shore
- KPI calculation
- Trend - process performance
- Plausibility check / alarm control
- Open / flexible reporting
(noon-to-noon report / CO₂ reporting)



On shore

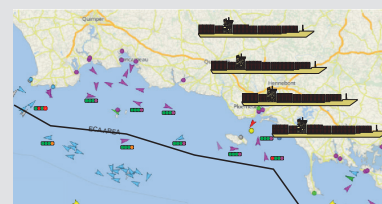
Fuel Monitoring FPS 2.0



- Data server on shore
ship / fleet management



- Stationery or mobile applications
- Fleet management



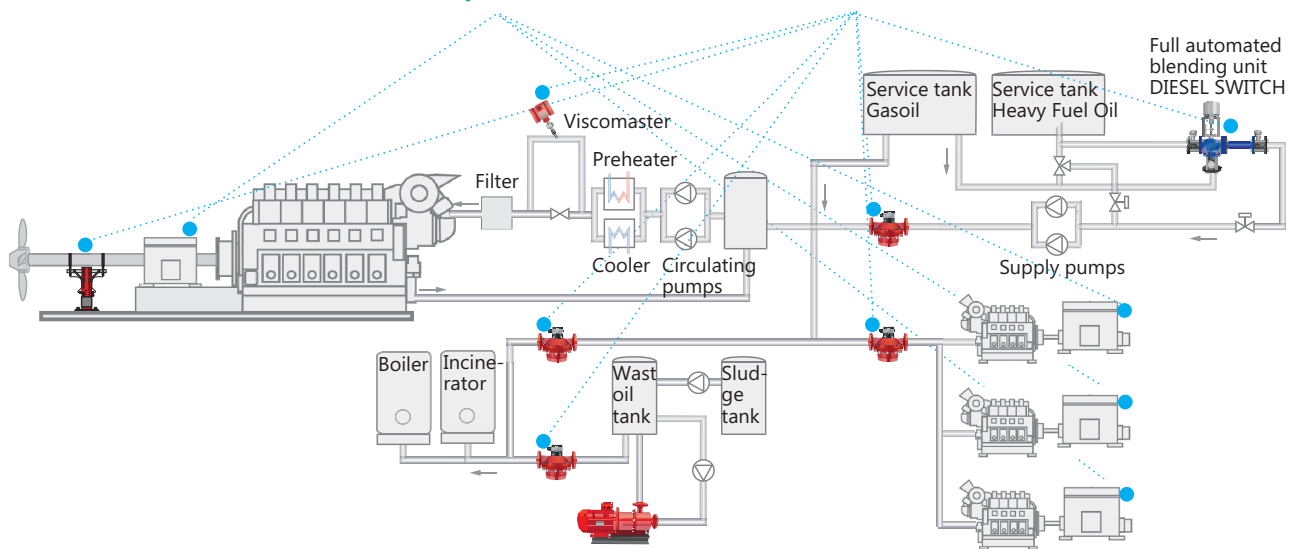
System installation

- PLC based fuel monitoring and performance system FPS expandable for all available datapoints and interfaces.
- Open system for pre configuration of the real ship operation system on board (engines, boilers, AE's, shaft generators, ...).
- Supports multiple engines, bunkers and engines parameters on board.
- Web portal for on board / on shore.
- Real-time monitoring of fuel consumptions and all implemented parameter, KPI's on shore.
- Performance charts and reports are available and free configurable.
- Data storage and data history visualization.
- Communication mode to on shore server for notification, database as well as report updates.
- Minimum human intervention is required.
- Trip reports, CO₂ reports and noon-to-noon reports can be generated, stored and transferred to shore.
 - Clear indication of fuel efficiency, total fuel consumption and CO₂ emission for a particular trip.
- Fleet monitoring on shore based on available server database and reports (PC or mobile devices).
 - Submit requests for immediate position of the vessel and the total fuel consumption since the last report.
 - View the tracking history including events that took place on this fleet.

Monitoring system hierarchy

Office	Web access for Fleet Management
Bridge	Monitoring / Performance / Ship Management
ECR	Monitoring / Performance / Ship Operation Web based visualization and reporting Data collection, <ul style="list-style-type: none"> ■ Trend curves ■ KPI analysis ■ Plausibility check ■ Monitoring and reporting Reporting data according engine log book
ER	Interface Ship automation Performance Sensors

Depth of information



Example system design, actual system may differ.

Hardware concept

- Standard PLC with class type appr. certificate
- Web based open configuration and data visualization
- 2nd screen in ECR to display main values with status (red / yellow / green)
- Data history on board & data export on shore
- Standard data interface to communicate with other systems on board to collect and send data
- Reporting open configuration, CO₂ reporting
- Modular design to configure according customer request

Software concept

- Free configurable in & outputs, reporting
- 0-20 mA, 4-20 mA, 0-10V, pulse, NMEA, Modbus Slave
- Engine performance or report of available data

KPI / Data Collection / Reporting

- Fuel efficiency for propulsion system
- Trend curves
- Specific fuel consumption
- Propeller curve
- Engine performance
- Data reporting
- EEOI operating Index
- CO₂ emission monitoring/reporting
- Engine performance reporting

Based on:

- Fuel specification acc. BDN (bunker delivery note)
- Nautical information (ship speed, weather conditions, cargo, trim, etc.)

Interface Ship Automation - different measurement transmitter signals

- Fuel Data of M/E, A/E and Boiler
 - total consumption
 - consumption per time
 - CO₂ emissions
- Engine operation / performance data
 - Data of propulsion (power / torque / shaft rpm)
 - Data of electrical generators (power of shaft generator, A/E' s)
 - Data of engine performance (temperatures, pressures fuel viscosity, fuel density, ...)
 - Digital data (alarms / status information)
- Ship operation data
 - Speed over ground
 - GPS position
 - Trip information
 - Cargo information
 - Environmental conditions



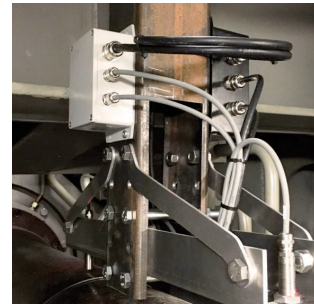
CONTOIL® VZO / VZF II (A) 15...50

- Electronic display for onsite verification
- Highest accuracy (better than 0.5 % in total)
- Paired calibration for use in supply and return measurement
- All meters with marine type approval (LR, RMRS, RRR, DNV, GL)
- Highest operational safety including burst pressure and flammable endurance tests
- Cost-effective due to minimum maintenance requirements
- Flexible to use in different fuels like heavy fuel oil (HFO, different grades), marine diesel oil (MDO) or diesel oil (DO)



Shaft power measurement - SPM

- RPM, torque and power signals
- Reliable data
- Fuel / propulsion efficiency
- Key component for fuel performance system FPS 2.0
- Incl. 0/4-20 mA output for rpm, torque and power
- Web based configuration



GPS receiver / satellite terminal (optional)

- Easy installation
- Global coverage (A1+A2+A3)
- Robust design, light weight and small footprint
- Highly reliable
- Integrated with GPS receiver



Authorize Trading Partner / OEM



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