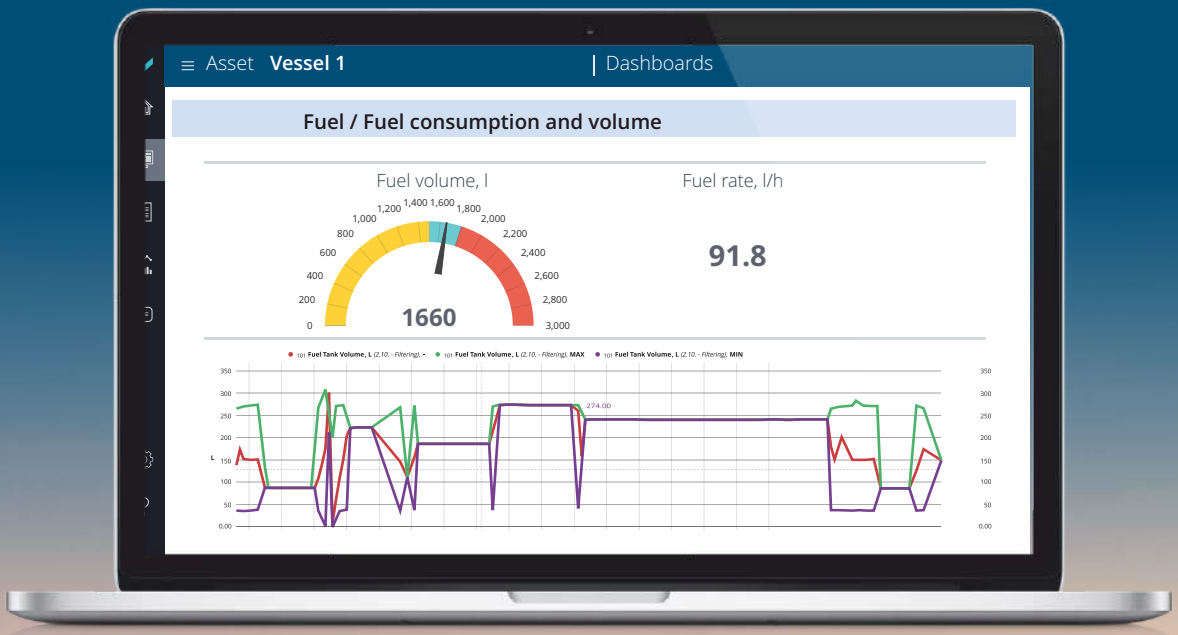
UNUM MARINE

MARINE & INLAND TELEMATICS FOR SHIP & SHORE TEAMS



UNUM MARINE

WHAT IS UNUM MARINE?

UNUM MARINE IS A HARDWARE & SOFTWARE SOLUTION FOR REMOTE MONITORING OF VESSEL OPERATIONS

Fuel Efficiency & Sustainability

- ✓ Fuel usage control across engines, generators, boilers.
- ✓ Verified and traceable fuel bunkering operations.
- ✓ Reliable protection against fuel theft and misuse.
- ✓ Accurate CO_2 calculation based on real fuel data.

Operational Reliability

- ✓ Early detection of engine issues and abnormal operation.
- ✓ Continuous monitoring of key operational parameters.
- ✓ Real-time alerts on deviations or system faults
- ✓ Continuous GPS vessel tracking in real time.

APPLICATION

Technical and auxiliary vessels

Inland transport vessels

Sea transport vessels

SOLUTION USERS

Vessel owners
Transparent fuel accounting and reduced operating costs.

Shore staff
Remote fleet control and actionable analytics.

Crew
Easy equipment monitoring and prevention of failures.

ADVANTAGES

Integration, open API
3rd-party and NMEA 2000 compatible. Data exchange API for ERPs, insurers, regulators.

Large amount of AI-ready data
Hundreds of parameters, 0.1s resolution, structured dataset for AI and ML.

Flexible pricing
Pay only for the options you need; task-based subscription model.

Cloud or on-premise setup
Flexible and secure deployment options; web app version and mobile app.

For all company roles
Enhances the performance and decision-making efficiency of both technical teams and management.

Powered by UNUM IIoT Platform

MONITORING FEATURES

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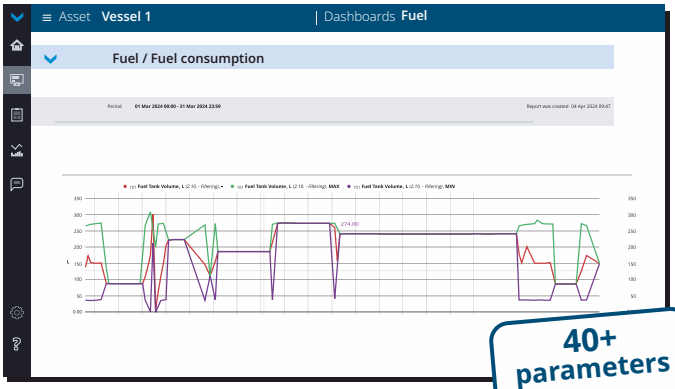


FUEL MONITORING

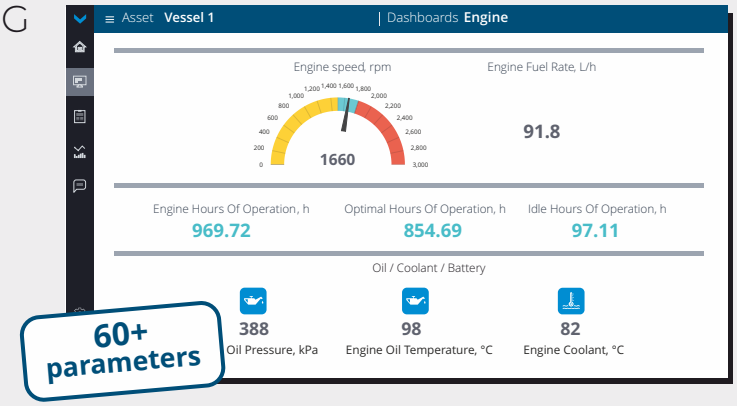
Each consumer monitored – engines, generators, boilers.

- ✓ Instant flow rate and total fuel consumption.
- ✓ Total fuel used in “Idle” and “Optimal” modes.
- ✓ Fuel temperature
- ✓ Fuel level in tanks.
- ✓ Remaining on board fuel oil/diesel.

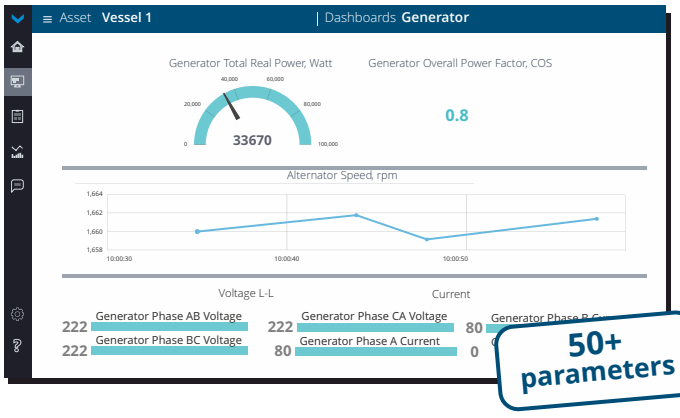
ENGINE PERFORMANCE MONITORING

High-resolution data for diagnostics and analytics.

- ✓ Engine hours (running time).
- ✓ Operating time in “Idle” and “Optimal” modes.
- ✓ Coolant temperature, engine oil pressure.
- ✓ Total and hourly CO_2 emission.
- ✓ Engine operating mode: Idle/Optimal/Overload.



Maintenance



GENERATORS AND BOILERS DATA

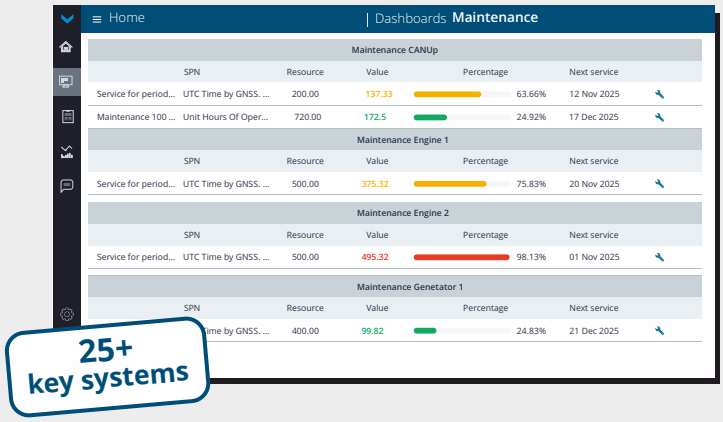
Electrical and thermal performance parameters.

- ✓ Power network voltage.
- ✓ Energy production per liter of fuel.
- ✓ Generator (Phase) frequency, voltage, current.
- ✓ Boiler steam and water pressure.
- ✓ Boiler water, steam temperature.

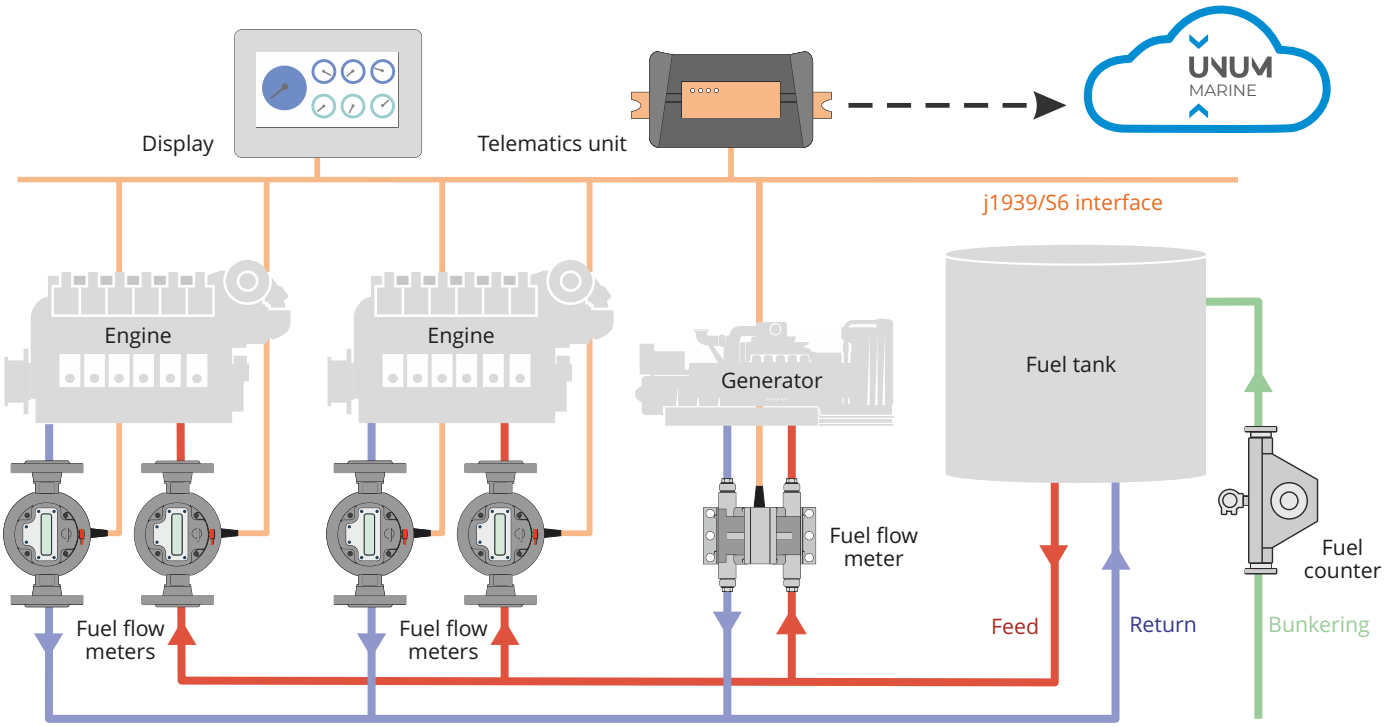
MAINTENANCE MONITORING

Health monitoring of main vessel systems.

- ✓ Engine and generator operating hours tracking.
- ✓ Runtime monitoring of telematics equipment.
- ✓ Fuel-based engine and generator health monitoring.
- ✓ Maintenance scheduling based on actual runtime and fuel consumption.



DIRECT MEASUREMENT OF FUEL CONSUMPTION – FLOW METERS



Vessel fuel consumption monitoring system diagram

DFM fuel flow meters

DFM Marine fuel flow meters

DFM Industrial fuel flow meters

LC Corio fuel counters

Product line	DFM	DFM Marine	DFM Industrial	LC Corio
Flow rate, l/h	0.5 ÷ 600	20 ÷ 4,000	720 ÷ 25,000	420 ÷ 402,000
Interfaces	CAN J1939, RS-485 Modbus, pulse, wireless (Bluetooth)			CAN J1939, RS-485 Modbus
Accuracy error, %	1	0.5	0.25	0.21
Fuel to be measured	Diesel fuel		Diesel fuel, heavy fuel oil	
Measurement principle	Ring-type chamber	Ring-type chamber	Oval gear chamber	Coriolis effect
Body material	ZAMAK alloy or brass	Duralumin or brass	Aluminum/silicon/ copper alloy	Stainless steel

ONBOARD EQUIPMENT

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FUEL VOLUME AND ENGINE MONITORING

DUT-E fuel level sensors
- ✓ Exact fuel level and volume measurement.
- ✓ Tank fill-up and draining detection.
- ✓ Fuel quality change detection.

MasterCAN converters
- ✓ Conversion of analog signals to digital and vice versa.
- ✓ Conversion of Bluetooth to NMEA2000.

CANUp telematics gateway
- ✓ Gathering data from smart sensors, and CAN bus.
- ✓ Edge-computing – data analysis, sending reports and alarms.

EQUIPMENT FEATURES

All units from one supplier
Plug-n-play operation, compatible with various displays and terminals

Precise operation data
Measurements of dozens fuel / engine parameters, data resolution from 0.1s.

Tailored for heavy machinery
Robust and scalable on-board equipment

DFM flow meter, research vessel

DFM Marine flow meter, harbor tug

DFM Industrial flow meter, sea ferry

FUEL PARAMETERS AND EVENTS

- ✓ Instant fuel rate.
- ✓ Total fuel consumption.
- ✓ Total fuel used by “Idle” mode.
- ✓ Total fuel used by “Optimal” mode.
- ✓ Fuel tank volume.
- ✓ Fuel tank level in mm and %.
- ✓ Fuel temperature.
- ✓ Fuel draining from tanks.
- ✓ Bunkering – start and end time.
- ✓ Volume of received fuel.

Over 100 fuel-related parameters

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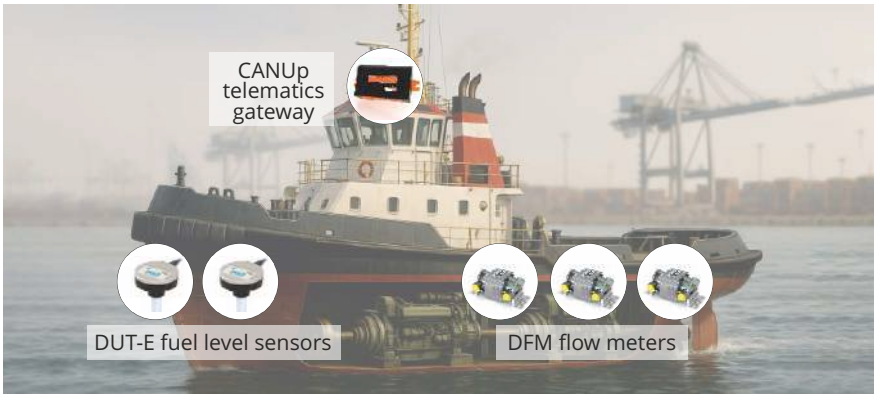
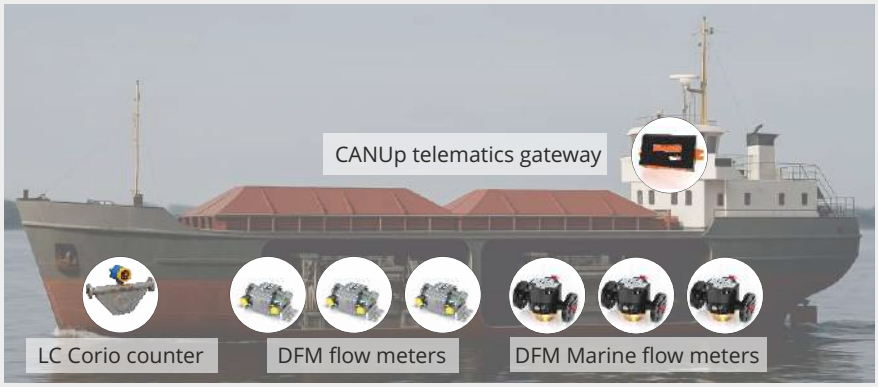
TYPICAL ONBOARD EQUIPMENT SETUPS

TECHNICAL AND AUXILIARY VESSELS

- ✓ Fuel consumption of engines.
- ✓ Operating time of fuel consumers.
- ✓ Fuel level and volume in tanks.
- ✓ Location, route, traveled distance.
- ✓ Fuel refueling/draining from tanks.
- ✓ On/off status of engine/generator.



TRANSPORT INLAND VESSELS



- ✓ Fuel consumption of each consumer.
- ✓ Operating time of fuel consumers.
- ✓ Assessment of CO_2 emissions.
- ✓ Location, route, geofences.
- ✓ Bunkering – volume of fuel.
- ✓ Engine overspeed, boiler overheating.

TRANSPORT SEA VESSELS

- ✓ Integration with NMEA 2000 vessel bus.
- ✓ Fuel consumption of each consumer.
- ✓ Operating of fuel consumers.
- ✓ Assessment of CO_2 emissions.
- ✓ RPM, temperature of technical fluids.
- ✓ Bunkering – volume of fuel.
- ✓ On/off of engine/generator/boiler.

FUEL STANDARDS VALIDATION FOR RESEARCH VESSELS

Task. Accurate measurement of fuel consumption and transmission of data to the telematics system.

Solution. Installation of wireless DFM fuel flow meters, data transfer via Bluetooth to converters, and data transmission via NMEA 2000 to display and terminal.

Result. Development of validated fuel consumption standards for vessels of this type.

30% FUEL-COST REDUCTION ON DRY-CARGO VESSELS

Task. Direct measurement of fuel consumption by each consumer with data transmission to a telematics service.

Solution. Installation of DFM fuel flow meters on engines, generators and boiler. All data is transmitted to the telematics gateway through a unified telematics interface.

Result. Full control of actual fuel consumption and a 30% reduction in fuel costs.

FUEL COMPLIANCE VERIFICATION FOR SEA FERRIES

Task. Precise direct measurement of fuel consumption and data transmission to onboard display and telematics service.

Solution. Installation of DFM Industrial flow meters with data transmitted to the display and terminal via the S6/J1939 interface.

Result. Verification of fuel consumption standards developed for this vessel type.

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DEVELOPED BY TECHNOTON

OUR MISSION

We develop smart telematics technologies to provide owners of mobile and stationary machinery with detailed, accurate insights into their equipment's performance, highlighting opportunities to optimize operating costs.

TECHNOTON
www.jv-technoton.com

FACTS AND FIGURES

- ✓ Since 2000 in telematics and fuel monitoring markets
- ✓ 600+ integration partners in 140+ countries
- ✓ 20+ official dealers and distributors
- ✓ 3 production facilities: precise mechanics, electronics, piloting
- ✓ 150 employees in all divisions
- ✓ R&D: team of 25 HW & SW developers and designers
- ✓ Quality assurance system is certified in ISO 9001
- ✓ Comprehensive technical support and documentation
- ✓ Regional Service Centers in Europe and Asia

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