



REMOTE MONITORING SYSTEM (RMS)

Performance Monitoring

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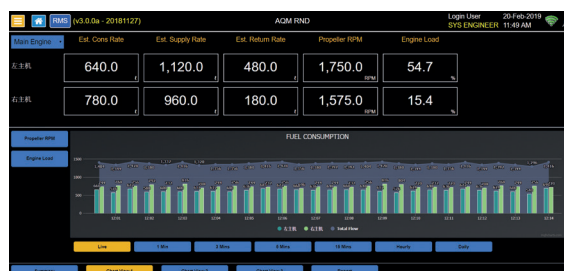
Fuel Monitoring Ship / Fleet Management / Fuel Efficiency

Remote Monitoring System (RMS) is a complete fleet level solution that monitors individual vessel's performance, fuel consumption and bunkering events.

A complete scalable Fleet Monitoring web portal for easy access via PCs, laptops, tablets or smart phones on the go.

Features:

- » Ease of navigation
- » Graphical data charts
- » Regular positions and data updates
- » Support data comparison using charts
- » Support reports generation and export
- » Provide vessel historical position route with detail events information
- » Support estimated R.O.B. calculation
- » Fleet management
- » User account management
- » Further customization possible



Benefits:

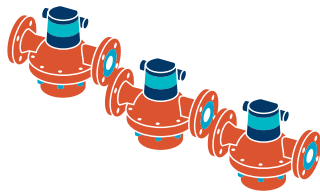
- » Real time monitoring in the office or on the moves
- » Hourly engine consumption at the finger tips
- » Enable onshore user closely monitor vessel whereabouts with down to 5 mins position update
- » Push notification to register user mobile phone on monitored events
- » No more missing events notification
- » Up to 3 years onshore historical data
- » Daily summary reports to give user a full day overview on the individual engine consumption and running mins
- » Constant system enhancement to give owner a better user experience

SYSTEM OVERVIEW & FLEET MONITORING

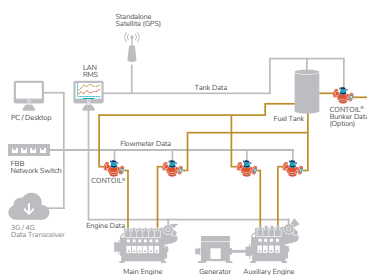
RMS on board

Measurement

Ship automation / sensors



- » Fuel consumption
- » Data record book
- » GPS
- » LOG

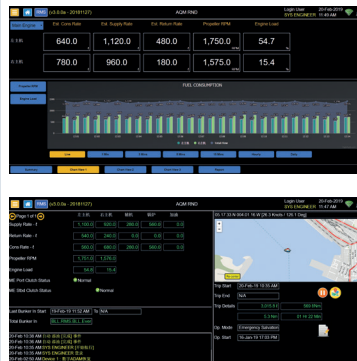


Example system design, actual system may differ.

Remote Monitoring System

Open / full flexible web based system configuration

- » Data packing / storage
- » Data interface to:
 - Ship management - on board
 - Fleet management - on shore
- » Multiple dashboards for monitoring
- » Trend - process performance
- » Plausibility check / alarm control
- » Flexible reporting pre configuration



FMCC on shore

- » Real time monitoring in the office or on the moves



- » Data server on shore ship / fleet management



- » Stationery or mobile devices



FUNCTION

- » Industrial PC based fuel monitoring and performance system RMS expandable for all available datapoints and interfaces.
- » Customized pre-configuration of the real ship operation system on board (engines [ME's / AE's], boilers, 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.
- » Performance charts and reports are available.
- » 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.
- » 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 CONCEPT

Hardware concept

- » Industrial PC with class type approval certificate
- » Web based configuration and data visualization
- » Data history on board & data export on shore
- » Standard data interface to communicate with other systems on board to collect and send data
- » Modular design to configure according customer request

Software concept

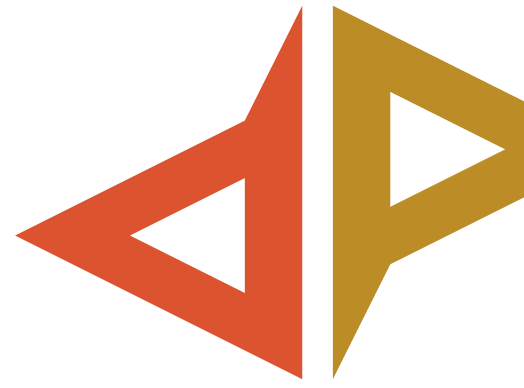
- » Pre configurabled in and outputs, reporting
- » 0-20 mA, 4-20 mA, 0-10 V, pulse, NMEA, Modbus Slave
- » Engine performance or report of available data

Data collection / Reporting / Notification

- » Trend curves
- » Fuel consumption and bunker monitoring
- » Time series
- » Engine performance
- » Data reporting
- » Additional parameter for logging
- » Alarm indication

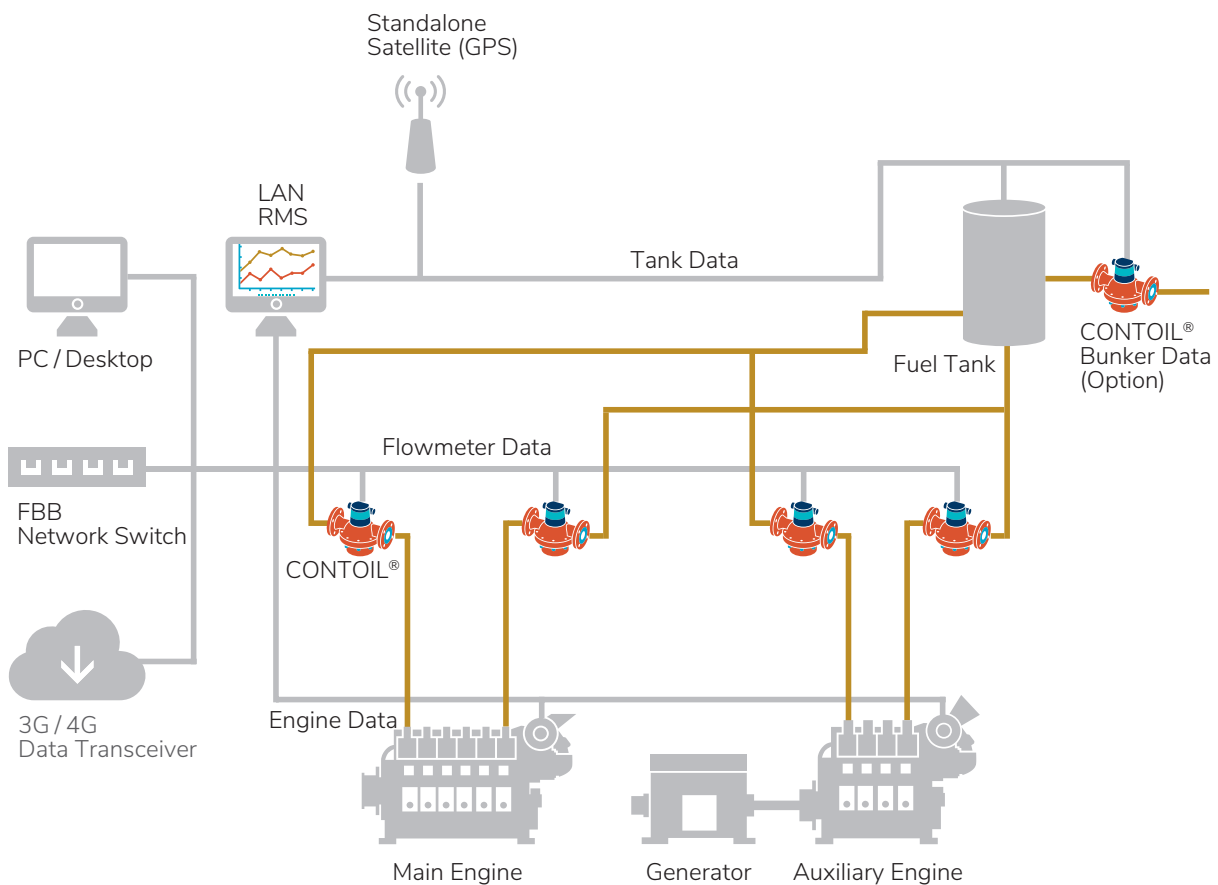
Ship and Fleet Monitoring

- » Monitoring, reporting, verification
- » Web portal for onshore user to closely monitor their authorize fleet of vessels
- » Provide up-to-date (hourly) reported fuel consumption, bunkering flow and monitored analog signal in graphical charts
- » Detailed events are also listed for easy reference
- » Able to perform historical data query on fuel consumption and analog reading for data analysis purpose
- » Daily summary report will be email (start time and interval period is selectable)
- » Adhoc events monitoring with email notification
 - Individual fuel consumption threshold
 - Individual vessel daily fuel consumption threshold
 - Geofencing
 - Bunkering event
- » Support multiple fleet assignment per vessel
- » Support individual fleet and vessel notification mailing list



Interface Ship Automation - different measurement transmitter signals

- » Fuel Data of M / E, A / E and Boiler
 - total consumption
 - consumption per time
- » Engine operation / performance data
 - Data of propulsion (power / torque / shaft rpm)
 - Data of electrical generators (power of shaft generator, A / E's)
 - Digital data (alarms / status information)
- » Ship operation data
 - Speed over ground
 - GPS position
 - Trip information



MONITORING SYSTEM HIERARCHY

FMCC on shore

Office

Web access for **Fleet Management**

- » Vessel history
- » Detailed events
- » Alter to user
- » Summarized data

RMS on board

Bridge

Monitoring / Ship Management

Engine Control Room

Monitoring / Ship Operation

Web based visualization and reporting

Data collection,

- » Monitoring and reporting data according engine log book
- » Bunker reporting
- » Tank level reporting
- » Consumption reporting
- » Event reporting

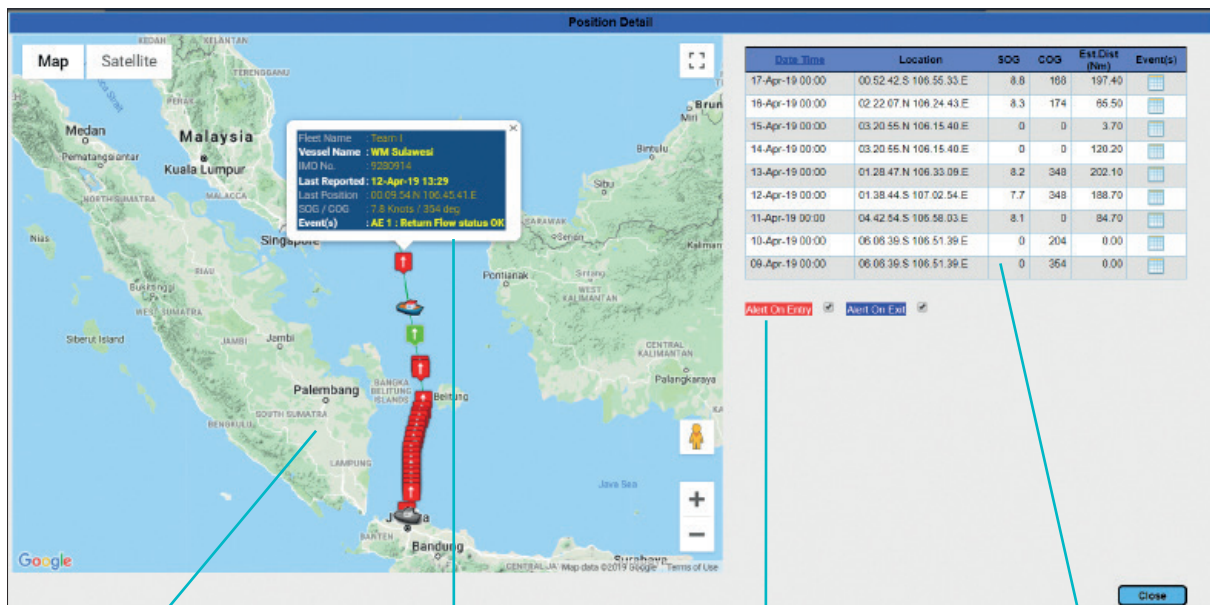
Engine Room

Interface (flow meter level switches GPS) /
Ship Data

Depth of information



SYSTEM OVERVIEW ON SHORE



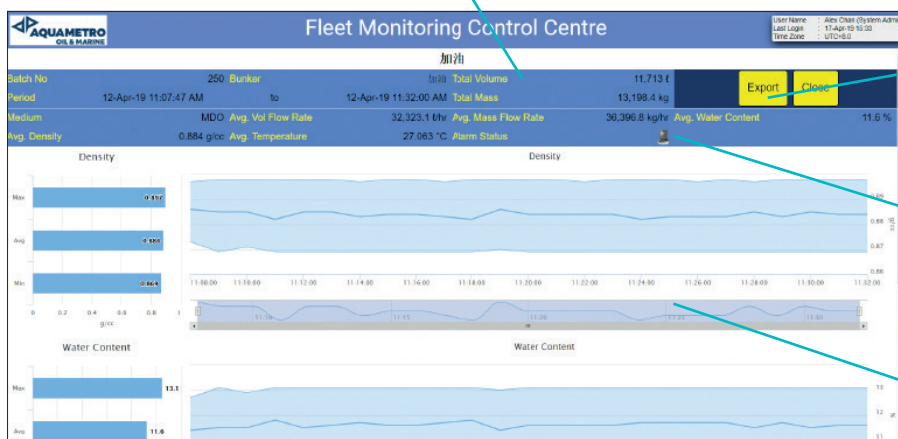
Map to show vessel history with directional arrow to show its path

Hover over red / green icon to view details and events during recorded time

Alert to users when entry into or exit out of geo fence

Table that shows daily-summarized data and their estimate distance travelled

Bunkering summary detail for the batch



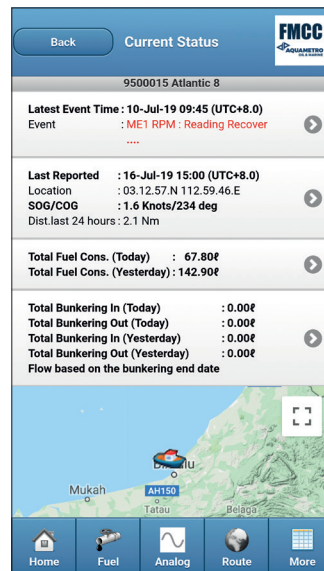
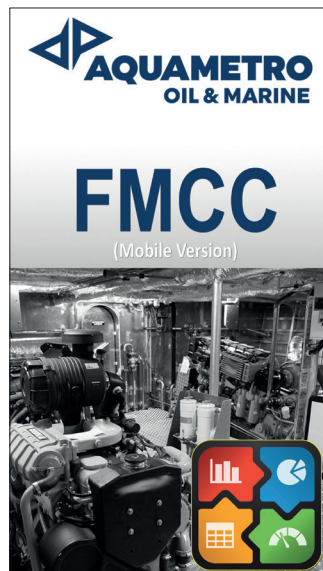
Export to PDF

Alarm indicator

Down to minute readings (max, avg, min)

MONITORING ON SHORE

Free to download for authorize users from individual app store



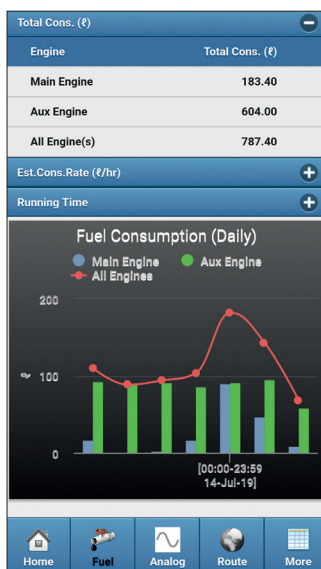
Latest event reported

Latest position reported

Total fuel consumption reporting for yesterday and today possible

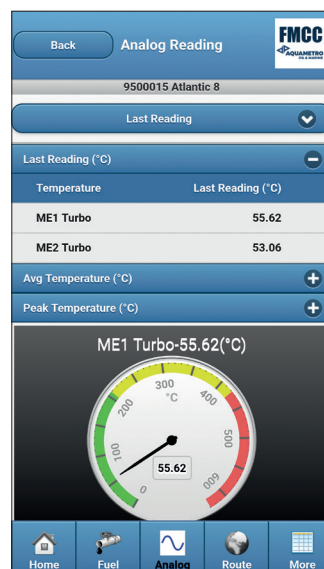
Total bunkering volume for yesterday and today

Latest position reported



Fuel consumption breakdown by engine type

Regular reported fuel consumption for the vessel



Monitor analog signal readings

Latest reported signal readings

OPTIONAL COMPONENTS

Satellite terminal (ST 6100)

Best sensors for highest system accuracy, as good input results in good output.

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



CONTOIL® VZF/A II, DN 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, DNV, RR and 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)
- » Integrated temperature sensor
- » Mass & massflow calculation
- » Compareable to Coriolis meter



For all other sensors onboard we are able to integrate them with standard signals like fire alarm, bilge alarm, engine trip, etc.. Please contact Aquametro Oil & Marine for more information.





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