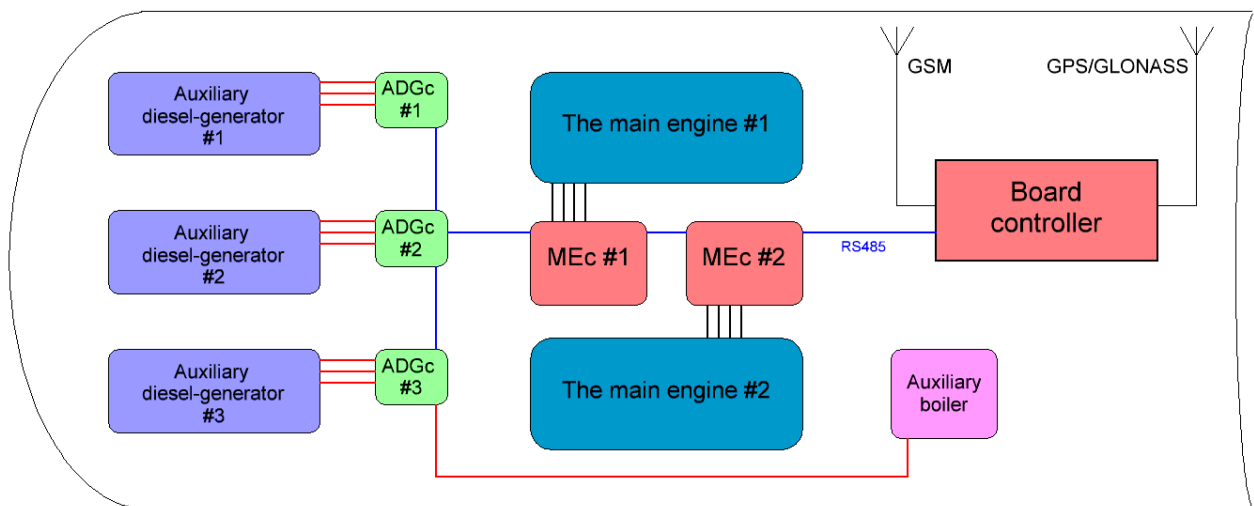


Remote monitoring system of operational parameters of ship diesel power plant with WEB-access “ShipMonitoring”

NPP «DATASPACE» (DATASPACE Research-Production Company) offers solution of following tasks:

- Remote control of ship power plant operational parameters;
- Remote control and registration of fuel consumption;
- Calculation of fuel consumption;
- comparison of report data (according to crew`s) and calculated (measured¹) data of fuel consumption.



1. **MEc** - main engine (ME) controller provides:

- determination of crankshaft`s rotating speed (frequency) by signals of inductive sensor,
- determination of rotor`s turbocharger rotating speed (frequency);
- calculation of effective power, producing by engine.

As an option, it`s possible to connect second inductive transmitter for determination of direction of main engine crankshaft`s rotation (reverse) or to connect fuel flowmeter².

2. **ADGc** – auxiliary diesel-generator (ADG) controller provides:

- determination of electric power by current of 3 phases for each ADG;
- determination of auxiliary boiler operation time.

¹ Calculated on the base of ship`s power plant operational parameters, measured - by means of fuel flowmeter

² Fuel flowmeter need to be bought separately.

3. **Board controller** (BC) is constructed based on modern ARM-processor and contains embedded GPS/GLONASS receiver and modular GSM-modem, memory card microSD. **BC** produces regular collection and accumulation of ship`s power plant operational parameters at nonvolatile memory. If the vessel is mostly operated out of GSM-network coverage, GSM-modem can be changed on interface connection with terminal INMARSAT-M, INMARSAT-FB. Boarding controller is also provided by LAN-connector, which allows its integration into existing vessels LAN-network, as for example Inmarsat Fleet Broadband.

A distinctive feature of BC at comparison with similar systems is in existence of HDMI-port for monitor screen connection, two USB-ports for keyboard and mouse connection, and SATA-port for hard disk³ connection as for auxiliary informational saver.

4. Powering of all system modules is provided by one uninterruptible power supply.

“ShipMonitoring” system registers following parameters:

- Main engine crankshaft`s rotating speeds (frequencies);
- Calculated effective power, producing by main supercharged diesel engine;
- Main engine time of work;
- Calculated (measured¹) fuel consumption of main engine;
- Electrical load of auxiliary diesel-generator (ADG);
- Calculated fuel consumption of auxiliary diesel-generator;
- Auxiliary boiler time of work and its consumption;
- Position and movement of the ship (time, geographical coordinates, speed by GPS, passed distance).

³ Monitor screen, keyboard, mouse and hard disk need to be bought separately

For access to reports **“ShipMonitoring”** system work, it needs to be a personal computer or tablet with installed browser and internet connection.

Reports look like charts, tables, plots containing information about ship`s power plant work for the reporting period. **“ShipMonitoring”** provides operational remote control of ship power plant operational parameters and registration of fuel consumption. The shipowner can plan repairs based on the mechanisms operating time.

For combined engine (with supercharging) it was experimentally determined the existence of connection between effective power and rotor`s turbocharger rotating speed. For system installation it`s enough to provide results of trial tests (Sea Trials or Shop Trials). During the system installation for each engine on the vessel, the graph of the relationship between effective power, rotor`s turbocharger rotating speed and temperature of supercharging is creating. In calculation of fuel consumption take part such parameters as specific effective fuel consumption and rotor`s turbocharger rotating speed. Shown method provides 5% inaccuracy.

Unless the ship-owner providing results of trial tests the data for system`s installation it could be taken when connected to the fuel flowmeter. In this case fuel consumption calculation`s inaccuracy for each engine will be equal to flowmeter inaccuracy twice multiplied.

Test account:

URL: <http://www.shipmonitoring.org/ui>

NAME: test_en

PASSWORD: test_en