



**Customer:** Transmet, Russia



**Task:** fuel consumption monitoring of river vessels



**Machinery:** Diesel engines of vessels, generators, boilers



**Solution:** DFM CAN fuel flow meters and vehicle monitoring unit



**Result:** reduction of fuel cost (real consumption was 100 L per hour lower than quota)

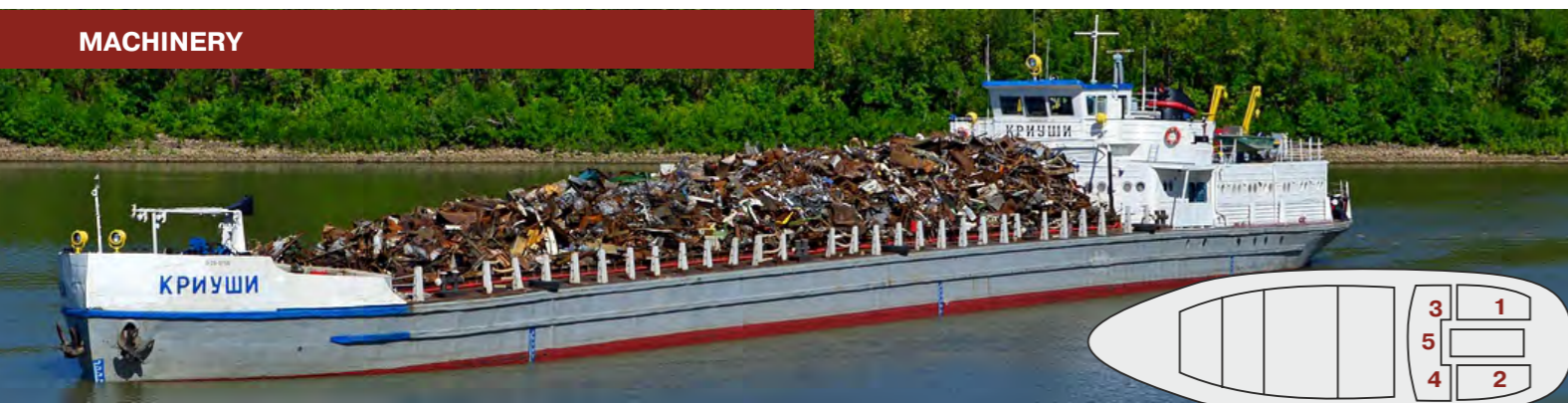
## CUSTOMER

“Transmet” company has several directions of operation. One of them is transportation of goods by river vessels.

Company owns dry-cargo vessels, such as “Kriushi”, “Kozmodemiansk”, “Ochakov”. Vessels belong to “6th five-year plan” type: four cargo compartments and a superstructure on stern. Vessel’s length is 94 meters, carrying capacity – 2000 tons, fuel tanks volume – 50 tons, crew – 9 people. Vessels were produced in 1956-1967 in shipyards of USSR and Romania.

Vessels are operated in Volga-Kama river basin and Northern Dvina river basin, also on Ladoga and Onega lakes.

## MACHINERY



Vessels of “6th five-year plan” type are quipped with: two engines, left **(1)** and right **(2)**, main diesel generator **(3)**, auxiliary diesel generator **(4)** and boiler **(5)**.

Engines (6 NVD48 model) are in-line, six-cylinder, with water cooling and direct injection. Engine displacement is 232 L, engine power – 368 kW.

Diesel generators are in-line, four-cylinder, with water cooling and direct injection. Engine power – 43 kW and 21 kW.

## TASK



**Vessel's diesel engine NVD48**

Fuel consumption is accounted using calculation method. Fuel consumption quota is registered in regulatory documentation, which hasn't been updated for a long time.

According to current specification, fuel consumption of each NVD48 engine is 175 g/h.p.\* hour. Total fuel consumption quota for both engines is about 200 l/h, quota for generators and boiler – about 25 l/h.

The customer believes that these values are highly overstated. The task was to implement fuel consumption monitoring system that would provide accurate information on hourly and total fuel consumption of each engine in real time.

Kriushi dry-cargo vessel became the first to be equipped with fuel monitoring system.

## SOLUTION

Fuel monitoring system of autonomous hybrid units includes 5x DFM CAN fuel flow meters and 1x Galileosky Glonass/GPS v.5.0. online telematics unit. All units work within S6 Telematics interface.

DFM 250CCAN are mounted into fuel supply line of running engine. DFM 100CCAN are mounted into direct supply line of diesel generators and boiler.

Online telematics unit receives the following data from fuel flow meters via CAN/S6 interface:

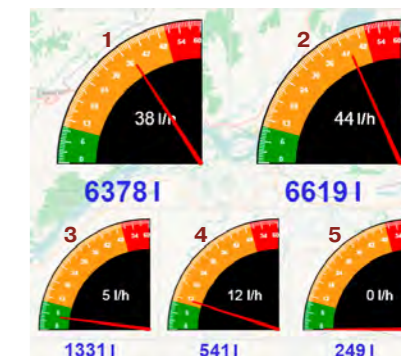
- hourly fuel consumption of every engine,
- total fuel consumption of every engine,
- operation time of every engine.

Also, tracking device receives additional data – fuel temperature and engine speed (from tachometer).

Information from tracking device is sent to dispatch service's computer in real time. All data is represented clearly on virtual dashboard of ORF4 telematics service. Dashboard's flexible interface allows to display data in any convenient form: charts, figures, arrow indicators, scales.



**Расходомер топлива DFM 250CCAN**



**Hourly and total fuel consumption:**  
**1 – left engine;**  
**2 – right engine;**  
**3 – main diesel generator;**  
**4 – reserve diesel generator;**  
**5 – boiler.**



### Nikolai Turetskov, Mercury NN (Technoton's partner)

“Technoton manufactures a wide range of DFM fuel flow meters for all kinds of vehicles.

On “Kriushi” vessel we mounted DFM CCAN fuel flow meter and a tracking device with CAN input. All devices work within S6 Telematics interface. This is the most practical, simple and reliable solution for fuel consumption monitoring of vessel with several diesel engines.”

## RESULT

After implementing fuel monitoring system (5 fuel flow meters and online telematics unit) the customer receives reliable data in real time. Based on information about operation modes (engine speed, temperature) and fuel consumption of every engine, it became possible to define real average fuel consumption of:

- each engine – 39,5 l/h;
- each generator - 6,8 l/h;
- boiler – 5,9 l/h.

Average total fuel consumption when vessel is moving is about 100 L per hour. This is two times lower than regulatory documentation states. Fuel economy per one working hour is 3700 rubles (in June 2017 prices). Total costs for purchasing and mounting fuel monitoring system paid off twice during the first trip of the vessel.

### Anatolii Ponomarev, Transmet

“We are completely satisfied with how Technoton products are working. Data about fuel consumption of every engine and generator is available in real time. We also like the format of getting reports – simple and clear virtual dashboard.

All costs for equipment and its installation paid off several times on the first trip!

We plan to install fuel consumption monitoring system on “Kozmodemiansk” and “Ochakov” dry-cargo vessels and other vessels of our company.”

