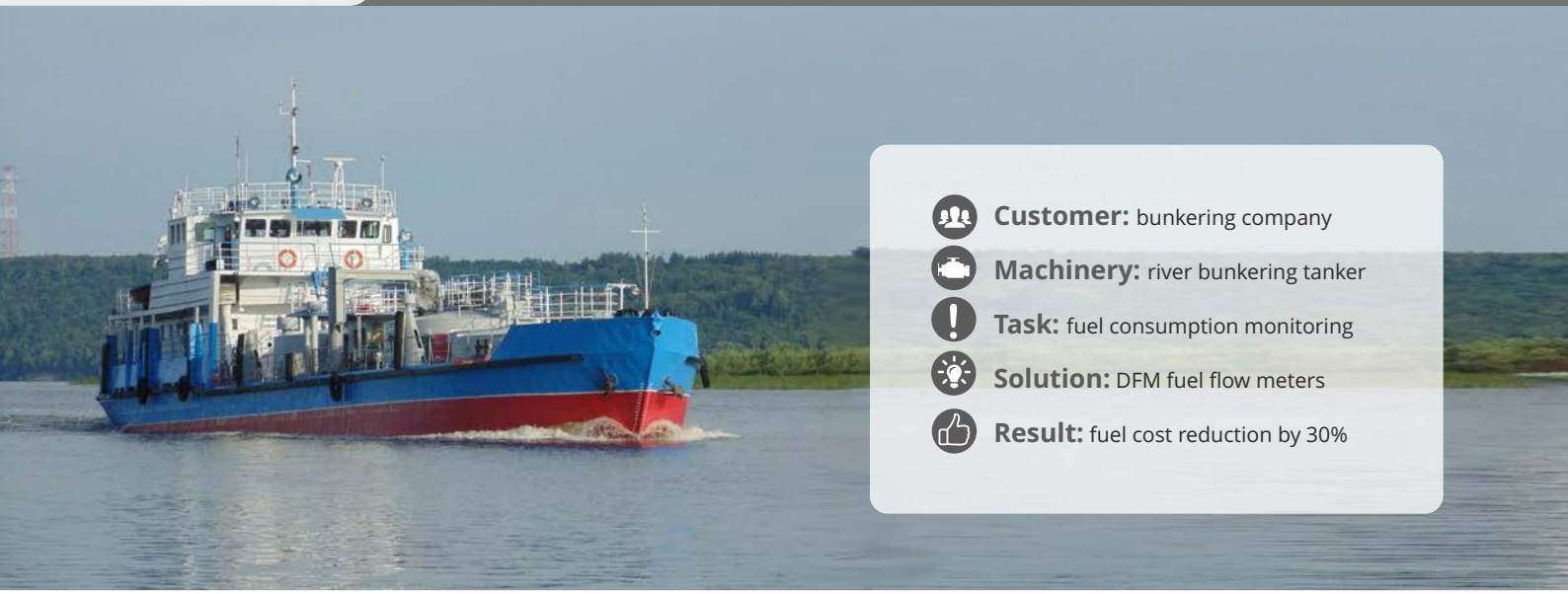
TECHNOTON

Bunkering tanker



Customer: bunkering company

Machinery: river bunkering tanker

Task: fuel consumption monitoring

Solution: DFM fuel flow meters

Result: fuel cost reduction by 30%

CUSTOMER

Bunkering company has been trading petroleum products for many years. It owns 60 petrol stations and a fleet of tanker trucks.

Company has been providing refueling services for river vessels. Specialized bunkering tankers perform the refueling.

MACHINERY

Bunkering tanker

6CSPN18/22 engine

Vessel specifications:

- length / width / height – 60.0 / 9.5 / 10.7 meters.
- displacement: 638 tons.
- diesel fuel consumers – two main engines of type 6CSPN18/22 (4 cylinders, 165 kW each), three generators, boiler.

Bunkering tanker is a twin-screw single-deck river vessel with three insertable vertical cylindrical tanks, with aft positioning of the engine compartment and superstructure. Vessels of this type were designed as self-propelled cleaning stations and bunkers.

TASK

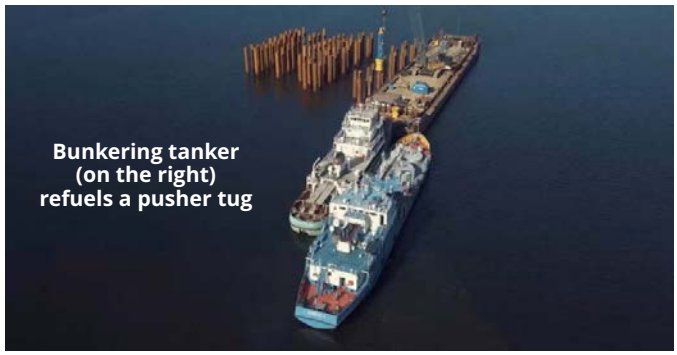
The approved fuel consumption norms have been followed since the start of operations in 1989. The monthly norms are as follows:

- main engine 1: 11,000 liters
- main engine 2: 11,500 liters
- diesel generator 1: 1,000 liters
- diesel generator 2: 1,000 liters
- diesel generator 3: 500 liters
- boiler: 2,500 liters

Total monthly normative consumption is 27,500 liters. Actual fuel consumption over entire period of operation has not been measured.

The management of company has decided to install a fuel monitoring system on the vessel. The objectives of the system are :

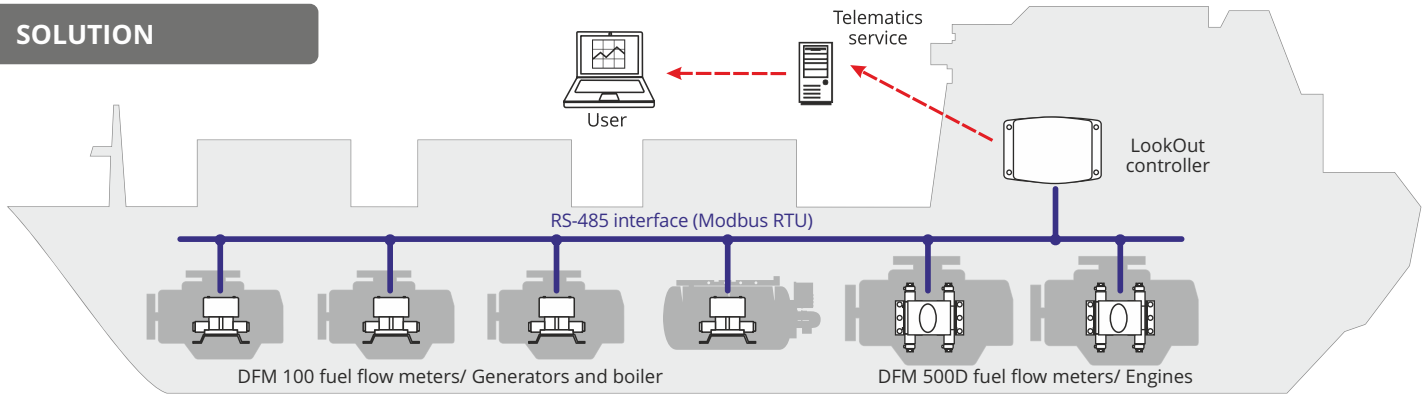
- to **accurately measure the fuel consumption** of each consumer,
- provide **real-time fuel monitoring** in a telematics service,
- facilitate **fuel consumption analytics.**



Bunkering tanker (on the right) refuels a pusher tug

River Register has its own safety requirements for the fuel monitoring system. The fuel system of the main engines cannot be modified. The fuel measurement equipment should be installed in an easily accessible location, away from the engines, generators, and boiler.

SOLUTION



Fuel monitoring system consists of:

- DFM fuel flow meters with an RS-485 interface,
- LookOut vessel controller with an RS-485 input,
- ServiceMarine telematics service .

Fuel flow meters are mounted on separate panels and connected to the fuel system with flexible hoses. Fuel consumption in the main engines is measured by DFM 500D flow meters. **Installation of the flow meters does not require any modification to the engine's fuel system.**

DFM 500D flow meters have a reinforced brass housing that resists corrosion, making them suitable for high humidity conditions, and provides reliable operation even when exposed to vibrations.

Data from all flow meters are transmitted via the RS-485 interface (Modbus RTU) to the controller, and then sent through GSM to the telematics service.

Telematics service displays real-time data on the current fuel consumption of each consumer and generates reports on actual fuel consumption for any period.

DFM 100 (on the left) and DFM 500D (on the right) fuel flow meters, installed on separate panels

Channel	Initial total fuel consumption	Initial total fuel consumption	CONSUMPTION
Engine 1 - Total fuel consumption	27 274 l (11 sep 2023 00:00)	28 728.6 l (15 sep 2023 12:16)	1 454.6 l
Generator 1 - Total fuel consumption	4 744.9 l (11 sep 2023 00:00)	4 837.1 l (15 sep 2023 12:16)	922 l
Engine 2 - Total fuel consumption	35875.5 l (11 sep 2023 00:01)	37 691.7 l (15 sep2023 12:17)	1 816.2 l
Generator 2 - Total fuel consumption	2 614 l (11 sep 2023 00:02)	2 859 l (15 sep 2023 12:17)	245 l
Generator 3 - Total fuel consumption	7.3 l (11 sep 2023 00:03)	7.3 l (15 sep 2023 12:17)	0 l
Boiler - Total fuel consumption	2 333.4 l (11 sep 2023 00:00)	2450.3 l (15 sep 2023 12:16)	116.9 l
–//–	–//–	–//–	**3724. 9 l**

Data displaing in telematics service

Andrey Gavrosh, sales department head at Technoton

«Implementation of the fuel monitoring system on the vessel addresses several important tasks, including updating fuel consumption norms, preventing theft, optimizing fuel costs, and planning voyages. That's why the installation of DFM flow meters on each fuel consumer on the vessel is in demand among vesselowners and companies that install vessel analytics systems."

RESULT

The fuel monitoring system shows the actual fuel consumption. Over the course of a month, all engines, generators, and the boiler consume approximately 19,000 liters of fuel, which is **8,000 liters or 30% less** than the normative consumption.

Installation costs of the system were covered in less than a month. Based on data obtained from the fuel monitoring system, the management of bunkering company optimized the fuel consumption norms.

Sales Director of integration company*

"DFM fuel flow meters with an RS-485 interface are fully compatible with LookOut vessel controllers. Fuel monitoring system operates without failures, and the data is transmitted in full to the telematics service. Client achieved fuel savings that exceeded their expectations. System equipment fully meets the safety requirements for river transport, as confirmed by representatives of the River Register."

**Data is hidden from public access to comply with GDPR requirements. Details on the project can be disclosed upon signing NDA and with the consent of our partner.*