



Customer: [redacted]



Machinery: tractors



Task: fuel consumption and machine-hours monitoring



Solution: DFM D fuel flow meters



Result: fuel consumption reduced by 35%

CUSTOMER

Company [redacted] was founded in 2020. The company is a cotton cluster, covering the entire process from growing raw materials to manufacturing finished garments.

It has its own cotton fields in [redacted]. It produces yarn, fabrics, and various types of sewn products on 10 production lines.



1300+ employees



12,000 hectares of cotton fields



25 units of machinery



450,000 products are sewn per month

MACHINERY

The fleet of machinery used in the cotton fields consists of:

- Universal tractors Claas Arion, 160 hp - 3 units.
- Universal tractors Case Puma, 220 hp - 2 units.
- Universal-plow tractors MTZ-80, 80 hp - 5 units.
- Cotton-specific tractors TTZ LS100, 78 hp - 5 units.
- Universal tractors New Holland TD5, 110 hp - 5 units.
- General-purpose tractors Kirovets, 300 hp - 1 unit.



Tractor Fleet

TASK

Reducing costs in cotton cultivation is a top priority for the management of [redacted]. A significant portion of these costs is comprised of fuel for the machinery and the salaries of tractor operators and combine harvester operators.

Fuel consumption quotas were established based on the manufacturer's specifications. Consumption was calculated based on machine-hours, which included actual work and numerous transitions between fields. **Actual fuel consumption was not measured.**

Operators' salaries were calculated based on the standard working hours. In order to increase their salaries, tractor operators manipulated the machine-hours counters by leaving the engine running idle.



Fuel consumption on tractors was accounted for according to established quotas

The management of [redacted] decided to implement a machinery monitoring system that allows them to:

- Determine machine-hours by engine modes – load, idle.
- Measure fuel consumption – both overall and by engine modes.
- Assess the quality of work in field and record departures from fields.

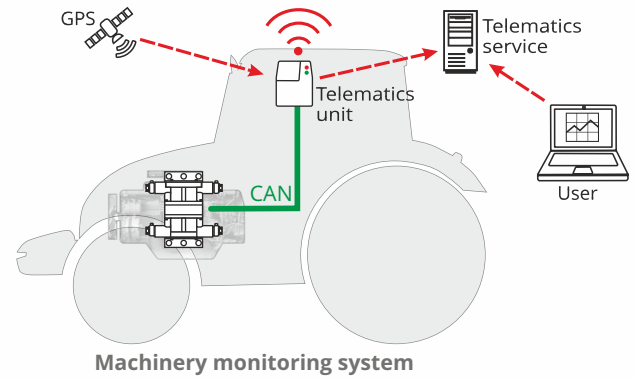
SOLUTION

Components of the machinery monitoring system:

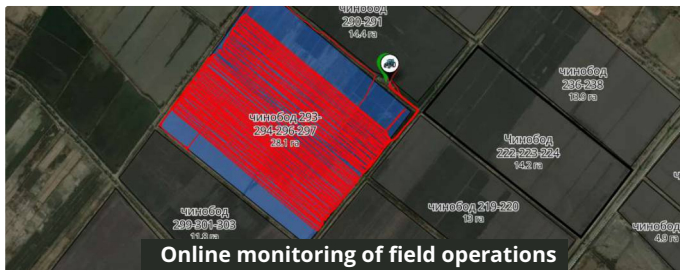
- DFM D fuel flow meter with CAN interface,
- Bitrek telematics unit with CAN input,
- Cropio telematics service.

The DFM D fuel flow meter directly measures fuel consumption in the engine's feed and return lines. Instant fuel consumption, **fuel and working time counters for different engine modes (idle, under load, overload)** are transmitted via the CAN J1939 interface. The fuel flow meter also detects attempts to manipulate fuel consumption using air or magnetic interference and sends alerts accordingly. The data is transmitted to the monitoring terminal and further to the telematics service.

The telematics service provides the customer with online data on fuel consumption and the vehicle's position, as well as generates reports on fuel usage, engine performance, and machinery movement.



It determines the area covered, distance traveled, displays fuel consumption and working time during field operations and tractor transfers. The management of the company analyzes the reports and makes decisions to optimize operations and enhance agricultural process productivity.



Result		TOTAL AREA		FUEL CONSUMPTION		
NET AREA	16.12 ha			TOTAL	IN FIELDS	ON ROADS
				60.13 l	58.3 l	1.82 l
				3.62 l/ha		
				66.96 l/100km		
DISTANCE		IN FIELDS	ON ROADS	ENGINE OPERATION		
TOTAL	74.1 km	71.4 km	2.7 km	TOTAL	IN FIELDS	ON ROADS
	8.3 km/h	8.3 km/h	8.1 km/h	09:27:16	08:29:59	00:57:17

Example of an analytical report

Tamataev Vitaliy, Technical Director, Technoton GPS, Uzbekistan

"For fuel and engine runtime monitoring, we proposed to the client a monitoring system based on the DFM D fuel flow meter. The flow meter provides accurate data on fuel consumption and engine runtime based on different engine modes. These data will help client to optimize agricultural processes. The installation of a differential fuel flow meter has pleasant advantages such as simplicity (no need to change the engine's fuel system) and speed (minimal downtime for the machinery during installation)."



RESULT

- After the installation of the machinery monitoring system, fuel consumption was no longer based on quotas but on actual usage. **Fuel costs decreased by 35%.**
- Idle running of machinery for prolonged periods ceased, as the operators' salaries now directly depend on the actual work performed.
- Analysis of data regarding machinery transitions between fields allowed for the optimization of movement routes. **Transit time was reduced by 70%.**
- Detailed analytical reports led to a **40% increase in agricultural process productivity.**



Ismailov Temur, Director,

"The DFM fuel flow meters provide reliable information on fuel consumption and engine runtime. The expectations we had for the machinery monitoring system have been fully met. The system's analytical reports provide us with the necessary information for optimizing agricultural processes. Once we accumulate data on engine operation in various engine modes, we will be able to implement a predictive maintenance system instead of scheduled maintenance."

