



Challenge

A big agricultural company from Central Asia grows crops and deals with dairy farming. It has a fleet of 80 vehicles and special agricultural equipment. Also, the company has its own gas station and several fuel tankers that transport fuel to machinery in the field.

For a while, the client managed their fleet in manual mode, with no [fuel management](#) solution in place. This caused multiple complexities:

- regular fuel theft from tankers and gas stations;
- shortfalls on the part of the fuel supplier, as well as the supply of fuel of inadequate quality;
- problems with timely detection and prevention of theft and fraud;
- lack of operational information about fuel reserves.

The estimated cumulative losses were up to 20% of the total fuel volume, which means tens of thousands of US dollars per year.

The importance of integrating a high-quality fuel control solution into daily operations was obvious. At the same time, certain factors added to the challenge:

- a wide variety of processes around fuel supply and distribution which made it a multi-layer problem;
- a large fleet of equipment from different manufacturers;
- imperfect work processes that eroded responsibility of employees and corrupted fuel consumption control;
- insufficient tracking of access to the tanks; consequently, third parties could drain fuel from the tanks without being caught red handed.

The agroholding wanted to implement a fuel management solution that would help revisit fuel supply and consumption processes and eliminate frequent cases of fuel theft.

Solution

Cifrovaya bezopasnost', Wialon's partner from Central Asia, offered and designed the following product to control fuel consumptions in the most comprehensive way. It consists of several layers:

- a fuel consumption control system based on electronic seals installed directly on the tanks;
- an Exotron electronic fuel management solution. It uses contactless UHF tags and fuel level sensors that have been installed at gas stations and on tankers;
- Wialon-based custom fuel control application. It collects data from every connected device, processes it and shows fuel volume numbers as a whole and per gas station and fuel tanker. The app detects cases of underfilling, as well as cases of refueling into an unauthorized container.

The custom part is developed as a Wialon fuel management app so that the client would access all the data needed within a single application.

Here's how the system works:

- Data from the installed hardware at gas station counters and fuel tankers, including time, coordinates, and volume, is collected in the solution.
- The solution automatically compares the volume of fuel issued with the estimated amount of fuel to be filled, taking into account the fuel numbers at the beginning of the operation, the amount received in tanks from suppliers, and the total fuel balance at the end of the period.

N	Авто	Тип топлива	Заправлено по ДУТ	Считано	Пробег	Разница в л	Разница в %
12	АЗС ДТ	Дизель	0	4.44	2022-07-13 06:46:50	4.44	100
13	Бензовый Общий	Дизель	0	29.3	2022-07-13 06:58:11	29.3	100
11	Бензовый Общий	Дизель	0	33.23	2022-07-13 06:17:34	33.23	100
10	Бензовый Общий	Дизель	0	26.8	2022-07-13 06:16:00	26.8	100
14	МТЗ	Дизель	0	27.8	2022-07-13 06:17:19	27.8	100
1	ТАН Газ	Дизель	59.0	64.4	2022-07-13 07:28:24	5.4	8.99
2	ТАН КамАЗ	Дизель	130.0	129.7	2022-07-13 06:03:37	-0.3	-0.23
3	ТАН КамАЗ	Дизель	155.0	146.4	2022-07-13 06:44:36	-8.6	-5.87
4	ТАН КамАЗ	Дизель	125.0	137.4	2022-07-13 07:20:38	12.4	9.02
6	ТАН МТЗ	Дизель	88.0	93.2	2022-07-13 07:22:39	4.2	4.51
7	ТАН МТЗ	Дизель	77.0	78.7	2022-07-13 06:53:30	1.7	2.16
8	ТАН МТЗ	Дизель	88.0	86.5	2022-07-13 07:12:10	-1.5	-2.26
5	ТАН МТЗ	Дизель	66.0	78.8	2022-07-13 06:22:09	10.8	14.06
9	ТАН УАЗ О	Дизель	24.68	30.65	2022-07-13 10:03:13	6.0	19.58
	Итого		793.68	948.42		154.77	

A single interface for fuel consumption control across the client's gas stations and vehicles

At the start of the system implementation, the client relied on RFID cards. Soon enough, they noticed that some drivers and machine operators were unwilling to use the cards and this way abused the system to compromise its efficiency. In order to eliminate the human factor, it was decided to supplement the fuel management solution with an identification friend or foe (IFF) radar system and install contactless UHF tags on the equipment.

After the product launch, there have been cases of failure of UHF antennas on tankers, which lead to the temporary inability to identify fueling during repairs. To tackle the issue, an algorithm of double control has been integrated into the product. According to the algorithm, the fuel management solution tracks both data from UHF tags and the location of a vehicle by their GPS coordinates. A third-party vehicle can no longer get access to the company's gas station.

The telematics service provider has a dedicated employee who is assigned to technical support tasks on working days.

Results

The implementation of the fuel management solution has made it possible to digitize highly efficient and transparent fuel control procedures and eliminate regular undersupplies. Now, all the fuel movements are recorded, and any deviations are detected by the fuel theft control system regardless of the point where they occurred or a person who's responsible for the shortage.

- About \$50,000 saved**

The client reduced fuel consumption from 644 to 582 tons for the same amount of work – all over 12 months. The further projections for reduction of fuel costs are at least 20%.
- Quick profit**

The system implementation paid off in the first season.
- Revisited fuel supply**

Fuel is issued under personalized preset limits.
- Fuel balance now available**

The client has operational information about the current fuel amount and can quickly refill the reserves.

Company profile

IoT project of the year nomination: Fuel transportation and storage

Industry: Agriculture

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