The solution for controlling the pumping of process liquids into wells

Challenge

The customer of this project is engaged in support services for oil companies in the Tomsk region, Russia. The works include pumping process liquids into wells during their underground and major maintenance.

When performing such works, it is essential to comply with technological requirements. However, the process was often violated in practice:

- an operator pumped liquid at a higher pressure than required, which resulted in the disruption of the oil-bearing layer. This led to a drop in the amount of extracted oil;
- an operator violated the working technology: increased the pumping speed (if they wanted to complete the job quicker and leave) or reduced it (when paid by the hour, they could earn more);
- an operator could pump salty water into the well instead of an expensive acid solution, which, of course, didn't comply with the technological map;
- there was a possibility to steal pumping liquid, which caused damage to the company.

As a result, due to poor execution of works and the violation of technological discipline, the customer was losing income – contracting parties were refusing to pay for such services, imposing fines.

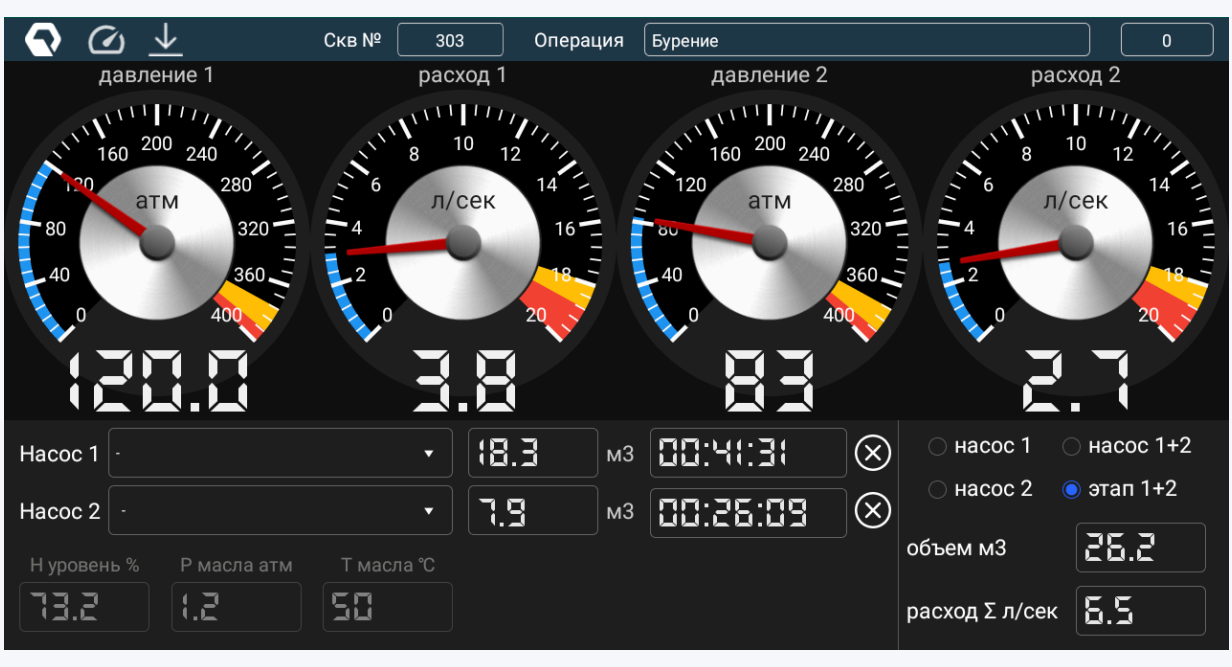
The customer turned to Quantor-T, a manufacturer of telemetry systems, to develop a solution. The main task was to provide real-time control of the operation parameters of pumping units.

Solution

Upon the customer's request, Quantor-T developed a comprehensive solution – a technological discipline control system, consisting of two main components:

- the Quantor-5tms software and hardware complex;
- the Wialon platform.

The complex is mounted on the vehicle chassis, and the receiving and processing unit is installed in the driver's cab.



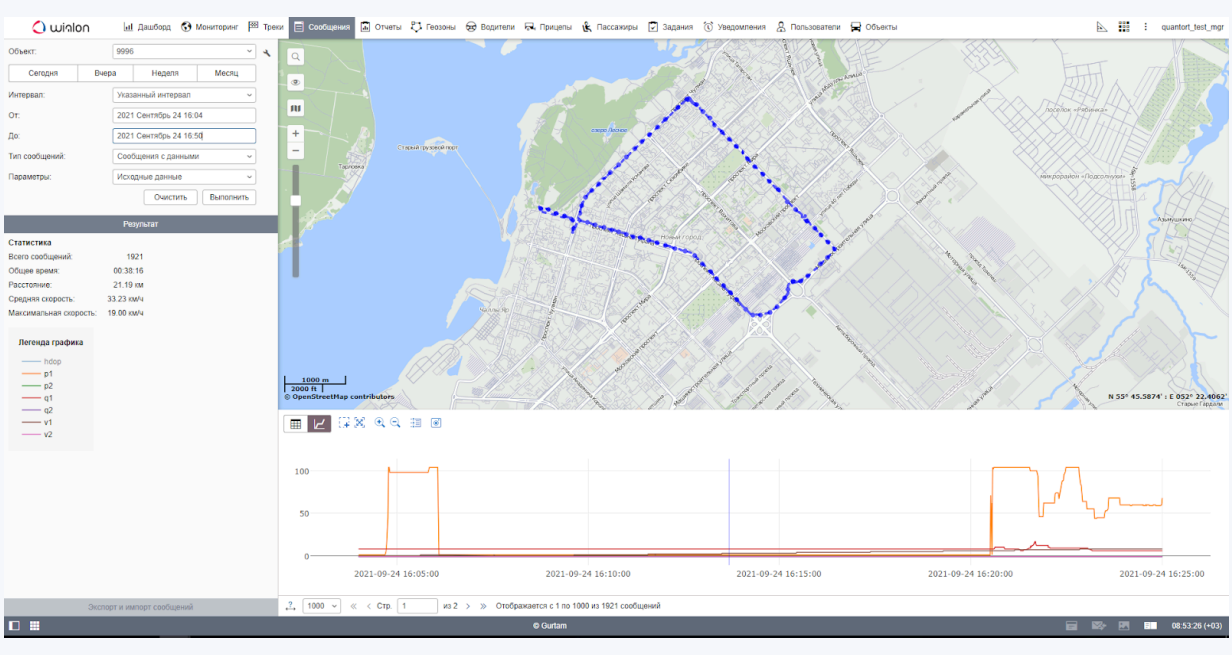
Controlling the process liquid parameters

The software and hardware complex registers the following parameters of the pumping liquid:

- pressure;
- instant consumption;
- volume;
- temperature;
- density.

In addition, the complex allows you to monitor oil temperature and pressure in the pump lubrication system, as well as the number of pump shaft rotations.

The receiving and processing unit has a screen that displays these values. Then they are transferred via the cellular network to the Wialon server.



Wialon shows data on the process liquid parameters

The monitoring system **tracks any deviation of controlled parameters** from the set values and notifies about it. As a result, company employees quickly respond to poor-quality work or suspicious manipulations with the process liquid.

In addition, the customer got the opportunity to **control fuel consumption** with reference to the pump operation. The system receives data on fuel consumption and compares it with standards in this operational mode. This allows you to determine what operation and at what time the unit performs, control the dependence of fuel consumption on the operation complexity, and detect thefts.

Results

The technological discipline control system allows the customer to monitor the performance of support services at wells, evaluate their quality and keep discipline at a high level.

Full control

The customer has full control over the operations and, in case of force majeure, receives notifications, which allows them to resolve the issue quickly.

Work quality assurance

The solution guarantees the detection of violations. The work is performed as intended, which helps the customer avoid penalties.

Fuel theft prevention

The control of pump operation and fuel consumption excludes fuel and lubricant thefts.

Company profile

Industry: Mining and processing

Solutions

Wialon

Hardware

QUANTOR-tms

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