



Kazakhstan

Challenge:

- High speed of transfer of production parameters data from the facilities to the monitoring center
- Full compatibility of the network solutions with the existing hardware and software
- 100% wireless network coverage of the field area

Solution:

- Onsite, the base stations Mmxb/5 .300.2x500.2x16 and subscriber terminals Smnc/5 .300.2x300.2x19 of the Point-to-Multipoint topology were installed which enabled to cover the area of more than 175 square km
- The connection between the production facilities is provided by InfiLINK 2x2 LITE Smn/5 .300.2x300.2x23 of the Point-to-Point topology

Benefits:

- Continuous operation of the data links between the ICS and the monitoring centers at the speed of up to 100 Mbps in full duplex mode
- The network with the total capacity of 1960 Mbps secures connection of 50 video cameras and 600 ICS and provides over 100 subscribers with Internet and telephony access
- Compatibility with ICS of any manufacturers
- Reduction of possibilities for theft and damage of property due to the stable operation of the video surveillance systems
- Ability to secure data and voice communication for field teams

First step toward a digital oilfield future

One of the largest oil producing companies in Kazakhstan has a facility remote monitoring system powered by InfiNet Wireless solutions

JSC Karazhanbasmunai is a Kazakh oil producing company that develops the Karazhanbas field located in Mangistau region, near the city of Aktau. Karazhanbasmunai produces more than 2 million tons of oil per year, meaning it is one of Kazakhstan's top ten major oil producing companies, as well as being one of the three leading oil producers of the Mangistau region.

In 2018, within the framework of the Digital Kazakhstan program, it was decided to introduce real-time control and accounting of oil production at the fields. The goal of the Digital Oilfield project was to automate oil production processes and reduce illegal oil turnover.

As it was necessary to introduce Digital Oilfield, **Karazhanbasmunai** required a reliable system of facility remote monitoring (SFRM) allowing transmission of real-time data on the volume of oil produced, the number of different impurities, the condition of the equipment and other parameters of the automated system from the intelligent control stations (ICS) installed at each well.

The telecommunication company KRIS-Service was responsible for the development and implementation of SFRM onsite at the Karazhanbas field. The main requirements of the customer were reliability, functionality and high network throughput with the possibility of the simultaneous transfer of a big volume of data from all ICS. Due to the large distance to production, transportation and processing facilities, as well as the constant movement of heavy machinery in the field territory, the deployment of wire links was not possible. KRIS-Service chose InfiNet Wireless solutions for the implementation of the project as they are the most reliable solutions and are able to operate in the most severe climatic conditions.



The first stage of the project was implemented in November 2018. Based on InfiNet solutions, wireless data links in full duplex mode were deployed between the ICS and the central control units. 114 existing wells and 100 new wells were equipped with InfiNet devices. Data from each of them was transmitted online to the operator's console to enable full control of the oil production process, as well as remote management of the equipment operation by sending commands to the ICS.

Based on the results of the experimental tests, it was decided to employ InfiNet devices as the only wireless equipment to be used for deployment in a network with 100% coverage of the Karazhanbas field area. In total, the project includes a planned upgrade of 370 wells and installation of new ICS for 2,500 wells.

In the future, it is planned to organize data transfer from video surveillance cameras and build a fully automated production control system on the basis of the InfiNet network. InfiNet Wireless infrastructure will be able to ensure fire alarm data transmission, management and control of the processes of drilling, repair, mineral extraction, movement of transport and more. It is also possible to use the network to organize voice communication with field teams.

The InfiNet solution enabled the reduction of the time expenditure of the employees who previously had to collect data and prepare reports. Now, data accessing and reporting are both fully automated and protected from potential human error risks. SFRM enables the company to save electricity, fuel and lubricant materials, as well as motor capacity. Due to the stable operation of video surveillance systems, possibilities of theft and voluntary damage of equipment are reduced.

"When working on this project, we were once again convinced that InfiNet devices are not only reliable and high-performing, but also are completely versatile," said Igor Polyakov, Commercial Director for KRIS-Service. "At all stages of the project InfiNet solutions were fully compatible with any devices or software. InfiNet equipment seamlessly integrates with control stations of all manufacturers. SFRM powered by InfiNet solutions proved to be so effective that potential customers are already preparing requests for deployment of backbone long-distance communication links."

"Automation of the production process is one of the essential prerequisites for sustainable growth of the company," said Valerian Ishmaev, Director of the Production and Information Automation Department at JSC Karazhanbasmunai. "We are very pleased with the way in which the Digital Oilfield project is being implemented at our enterprise. InfiNet Wireless solutions fully meet our requirements and have been ensuring seamless operation of the remote monitoring system for over six months now. The reduction of the time spent on collecting information and the rapid response to deviations in the operation of production facilities allowed us to reduce the loss of the oil produced. We will continue to use InfiNet equipment at further stages of Digital Oilfield implementation."

