Development of an Integrated Model of the Eastern Section of the Orenburg Oil and Gas Condensate Field at Gazpromneft-Orenburg LLC

Sector: Oil and Gas

Region: Russia

Year: 2021

Client: Gazpromneft-Orenburg LLC

Task:

1. Development and implementation of an integrated asset model (IM) for the Eastern section of the Orenburg Oil and Gas Condensate Field based on the image and concept of an integrated production control system.
2. The introduction of functionality offering forecasting of hydrocarbon production levels on medium and long-term horizons, optimization of gas lift gas consumption, calculation of the oil collection system capacity, and technological regimes of wells.
3. Integration of production elements into a single information environment for the effective selection of technological regimes of well operation to increase production volumes, increase the efficiency of geological and technical measures, and consider infrastructure constraints.
4. Improving the quality of forecasting production indicators. Ensuring effective interaction between the production and organizational structures of the enterprise.

Result:

- The created digital twin is the primary tool of the Gazpromneft-Orenburg Production Control Centre, which controls the operation of more than 600 wells and is used to increase the rate of hydrocarbon extraction and the efficiency of operational activities in the field, taking into account the operation of all systems in the complex.
- The implemented functionality provides forecasting of hydrocarbon production levels on medium and long-term horizons, optimization of

gas lift gas consumption, calculation of the throughput capacity of the oil collection system, and the technological regimes of wells.

- The project implementation made it possible to maintain the necessary volume of extracted hydrocarbon raw materials and perform timely optimization.
- The recommendations for improving the source data quality have been developed and implemented.
- Forecast and optimization calculations were performed for the technological regime with a 14% reduction in gas lift gas consumption and an increase in oil production and forecast calculations for changes in production during the construction of the new pipelines (loop lines).
- The launch of the digital twin will allow the company to additionally extract over 800 000 tons of oil and 1.3 billion m^3 of gas. The expected economic effect is 3.3 billion rubles until 2030.

The Production Control Centre also plans to control the processes of oil collection and preparation, which will allow achieving maximum efficiency in the development of the largest producing asset in the region. In the future, digital twins will be created for all Gazprom Neft fields in the Orenburg region.

Line of activity: Intelligent Oilfield

Review: "The digital twin of the Eastern section of the Orenburg field combines data on the structure of deposits, the operation of hundreds of wells, and ground infrastructure facilities. The launch of an innovative model will help us to fully unlock the potential of the field, as well as ensure a high level of industrial and environmental safety during the development of one of the largest and most complex oil and gas assets of the Orenburg region".

General Director of Gazpromneft-Orenburg Evgeny Zagrebelny

News on the Gazprom Neft website