



Project Summary

Organization:

LLC Volgogradnefteproekt

Solution:

Offshore

Location:

Astrakhan, Astrakhan Region,
Russia

Project Objective:

- Prepare 2D and 3D documentation for the construction of seven facilities within the Vladimir Filanovsky gas and oil field in the Caspian Sea.
- Create an as-built digital model for asset lifecycle information management, consolidating engineering data from contractors who used disparate applications.
- Design a unit-conductor that conforms to Russian Federation standards.

Products used:

AECOSim Building Designer, AssetWise ALIM, Bentley Raceway and Cable Management, MicroStation®, Bentley Navigator, Navigator Mobile, OpenPlant Modeler, ProjectWise®, Promis.e®, ProSteel, ProStructures, STAAD®

Fast Facts

- Bentley's asset information management application was used for trusted information exchange and 3D digital engineering modeling.
- AssetWise leveraged a connected data environment to facilitate interoperability of multiple data sources from various file formats.
- Increasing the quality and accessibility of its asset information will reduce human error and industrial disasters.

ROI

- Bentley solutions decreased project costs by enabling met deadlines and reducing rework.
- Search and data exchange time was cut by 30 and 70 percent, respectively; document coordination increased 25 percent.

LLC Volgogradnefteproekt Reduces Annual Operations Cost of Offshore Oilfield Project by 30 Percent

Volgogradnefteproekt Delivers As-built 3D Information Model, Unifying Project Data in a Connected Data Environment With AssetWise

Creating a Single Source of Information

A leading independent design firm serving the oil and gas industry in southern Russia, LLC Volgogradnefteproekt was retained to deliver an as-built 3D digital model for the seven platforms commissioned for the Vladimir Filanovsky offshore field in the Caspian Sea. Volgogradnefteproekt implemented Bentley's AssetWise platform to create a connected data environment that would support asset lifecycle information management and provide a single source for project and asset information from six different companies involved in designing the oil field infrastructure. By using the digital model of the oil field during all stages of this RUB 125 billion project, Volgogradnefteproekt expects that the field's annual operating costs will be reduced by 30 percent.

Consolidating Engineering Data

The Vladimir Filanovsky field is located about 50 kilometers off the northern shore of the Caspian Sea at depths of 7 to 11 meters. LUKOIL discovered the multi-reservoir field in 2005 and put the first stage of development into operation in 2016. As one of Russia's largest offshore fields, the oil-gas-condensate reservoirs hold 153.1 million tons of oil reserves and 32.2 billion cubic meters of gas reserves.

The field's second stage of development involves the construction of seven complex facilities, designed by six different companies. The client needed a process for managing engineering and technical information at all stages of the project, from verifying that the technical designs met project requirements, through planning construction schedules, and managing the logistics of materials and equipment delivery. With multiple contractors and subcontractors participating in the project, the client also needed to produce high-quality construction documents and monitor as-built work against the plan.

Volgogradnefteproekt was tasked with preparing 2D and 3D documentation for each of the seven platforms and consolidating the engineering data to create a unified, as-built 3D digital model of the field. To streamline collaboration and data management, the project team created a single source of

data that provided information mobility for the client's multi-office design team. In addition to the as-built data model, Volgogradnefteproekt was also responsible for the technical design of a unit-conductor to be used for oil well drilling and extraction.



The risk of human errors and industrial accidents that could endanger workers during construction was reduced as a result of the accessibility to operational information.

Managing Asset Information

Working with a tight deadline imposed by the client and regulated by the government of the Russian Federation, project participants simultaneously did their design work on the various infrastructure assets for the second stage of development of the oil field. Volgogradnefteproekt used AssetWise ALIM to consolidate the engineering data from the different contractors, each of whom were using a variety of different engineering applications from different software vendors, including AVEVA, Autodesk, and Bentley.

Creating the connected data environment enabled trusted information exchange among the dispersed project teams. From the collected data, the project team built an information-rich 3D digital model of the oil field infrastructure that corresponded with the as-built facilities. This solution provided accurate decision-support for the engineering, construction, operations, and maintenance teams.

Seamless Data Exchange

Volgogradnefteproekt also used Bentley design applications for the unit-conductor. Engineers from multiple disciplines exchanged data seamlessly using AECOSim Building Designer,

“Using Bentley software solutions for design purposes produces a higher level of work organization and implementation”

— Vasily Vasilievich Kalinin,
First Deputy,
LLC Volgogradnefteproekt

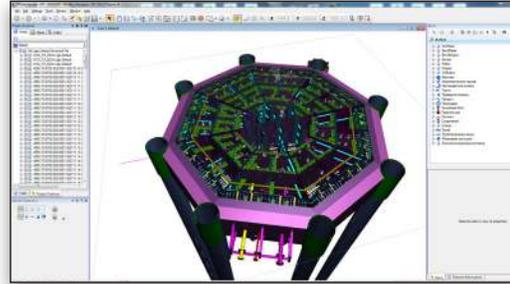
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Bentley Raceway and Cable Management, OpenPlant Modeler, ProSteel, Promis.e, and other Bentley applications. The software provided access to Russian databases of equipment, codes, and standards, helping designers meet the Russian government’s technical standards.

The connected data environment allowed team members to exchange information and collaborate effectively with access to a central source of trusted data, regardless of their location. The team used iModels to provide an information-rich view of the design for the client, improve the workflow, and offer a reliable way to capture feedback.



Bentley Navigator was used to review and share 3D models for the seven platforms commissioned for the Vladimir Filanovsky offshore field in the Caspian Sea.

Time and Cost Benefits

Bentley applications contributed to lower project delivery costs by helping Volgogradnefteproekt meet tight deadlines

for construction and startup. The team not only completed the project in less time but also delivered higher quality documentation. The accurate construction documents resulted in further savings as contractors performed less rework.

During operations startup, the accuracy and completeness of the asset information model ensured the integrity of the project’s as-built documentation. Commissioning, turnover, and authorization documentation are expected to be similarly accurate and trustworthy. Once operations are underway, the owner will use intelligent data from the connected data environment to schedule maintenance, solve problems, and repair and replace equipment over time.

The ongoing use of AssetWise ALIM as the data source will deliver a 30 percent reduction in information search time, a 70 percent reduction in data exchange time, and a 25 percent increase in document coordination efficiency. Using the 3D digital model from design through construction and commissioning to operations and maintenance is expected to reduce construction costs and annual operations costs for the field by 30 percent.

With ongoing access to operational information, the owner also expects to reduce the risk of human errors and industrial accidents that could jeopardize the health and welfare of workers and the marine environment. Encouraged by the positive results achieved on this project, the owner plans to implement the AssetWise platform on future field development projects to attain similar goals for information asset management and documentation quality.