INTEGRATED ASSET MODELING AND PRODUCTION OPTIMIZATION AT OIL FIELDS
PROCESS FRAMEWORK INCREASES PRODUCTION UP TO 4%

A leading oil and gas company invested in Digital Oil Field (DOF) technologies to transform upstream operations. The Subsurface Technology Group and DOF Upstream Technology Group of the company identify cutting-edge technologies, select Systems Integration (SI) partners to implement DOF programs, and evangelize DOF technologies and tools.

The company used diverse tools from vendors to model assets. However, the tools were not integrated, leading to substandard asset performance as well as a low level of adoption by production and reservoir engineers. The oil and gas company sought an integrated approach to asset modeling for superior asset performance through advanced simulation of systems and collaboration across the enterprise.

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Taking informed decisions

The company partnered with Infosys to develop an Integrated Asset Modeling (IAM) solution for prompt business decisions using real-time data. The solution was rolled out across the company's assets in Africa, Asia, the North Sea, and the Gulf of Mexico.

Asset modeling addressed critical operational issues such as gas lift optimization of wells, clearing production bottlenecks, discovery of capacity constraints, identification of potential production enhancements, continuous monitoring of equipment, uninterrupted flow assurance, and optimizing operating parameters across production units.

Infosys combined expertise in petroleum engineering and production operations with experience in data modeling, simulation, automation, and workflow integration to develop the IAM solution. We collaborated with stakeholders within the organization as well as external vendors to implement the solution.

Making business sense of data

Infosys undertook a pilot program to assimilate output from different tools. We analyzed the output to optimize operational parameters and reduce variance in production. We developed the IAM solution for modeling enterprise assets and production optimization after successfully rolling out the pilot program.

Infosys created new models of wells, flowline networks, and facilities, and enhanced model convergence to ensure data integrity. Fine-tuning of asset models ensured data quality, while enabling offline analysis and predictive analytics.

Our IAM solution creates a holistic modeling environment through easy integration of engineering modeling products and third-party, real-time optimizers. It supports data historians such as Aspen IP.21 and OSI-PI, modeling tools such as Petex GAP and PROSPER, and process simulation software such as Aspen HYSYS. Our object-oriented modeling solution also facilitates the monitoring and maintenance of assets.

Asset data drives performance

Our solution supports operations for 10-12 assets of the company, including monitoring of asphaltenes and wax deposition. The integration of worldwide facilities and networks addresses production challenges and guides operations, resulting in reduced capital and operational expenditure. Our modular approach facilitated the beta launch of a large IAM program covering critical assets across regions. We developed automated workflows to reduce the time taken for managing asset models and performing scenario analyses.

Standardized data configuration and automated workflow ensure easy modeling of complex assets. Our virtual metering solutions enable early diagnosis of metering errors, thereby delivering significant cost savings. The Infosys IAM solution helps the oil and gas company manage production deferrals, and achieve 1%-4% increase in production across oil fields.

For more information, contact askus@infosys.com

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