

ANSYS Professional Services helped National Oilwell Varco automate their drill bit CFD analysis process



Background

- NOV is a leading provider of drilling tools and equipment.
- They have engaged with Ansys Professional Services to streamline and automate their drill-bit hydraulic analysis workflow.
- Goals included improving their design process time and efficiency while reducing CFD expertise requirements, user errors and computational expenses.

“The Ansys consulting team went above and beyond to understand our needs and architect a unique solution that perfectly met those requirements. They were flexible with planning and timing. The output is a fully automated CFD analysis on NOV Drill Bits to optimize and improve the design process, while the user does not require any knowledge of software and they can focus only on post-processing of results. This has already saved NOV time and money in the first 6 months of release and we have plans to add more capabilities to it.”

Navid Omidvar, Engineer, National Oilwell Varco

ANSYS Solution

ANSYS employed a multidisciplinary team of five experts in meshing, CFD, customization (ACT), and ANSYS EnSight to analyze and improve NOV's workflow.

ANSYS Professional Services developed and tested a fully automated, end-to-end solution with a customized graphical user interface. Automated steps include:

- Collection of user inputs
- Geometry prep
- Mesh generation
- CFD Setup
- Solution
- Report generation

Key Results

- Enables non-experts to perform complex CFD analysis
- Improves solution accuracy
- Automates meshing with high-quality prism mesh
- Adds heat transfer and shear stress analysis capabilities
- Lets you resume partially completed analyses
- Requires just a single click to run all steps
- Speeds post-processing using ANSYS EnSight
- Automates custom report generation with enhanced flexibility
- Includes fully customized graphical user interface (GUI)

- **AUTOMATE AND OPTIMIZE**
- **REDUCE ERRORS**
- **ENSURE CONSISTENCY**

