

MPD Well Engineering and Project Management

APPLICATIONS

Closed-loop drilling operations including

- MPD
- Underbalanced drilling (UBD)
- Pressurized mudcap drilling

BENEFITS

- Lowers well construction costs by enhancing control of downhole pressure
- Develops drillable well designs based on drilling targets and well architecture
- Identifies optimal combination of hardware and software to achieve drilling objectives

FEATURES

- Experienced engineers and operators at the wellsite to deploy MPD solutions
- Collaboration based on project need, from major design revision to minor changes
- Remotely connected personnel with deep well construction expertise
- Proven simulation and measurement software

If pressure-related challenges are expected on a drilling campaign, M-I SWACO MPD well engineering and project management services can help optimize drilling performance to lower well construction costs.

Experienced M-I SWACO MPD engineers offer analysis, planning, and execution support, independent of the equipment being used on your project. On the basis of years of successfully supporting a wide range of drilling projects, M-I SWACO recognizes that drilling success lies in the execution of the job—not just the technology used. The optimization of MPD and UBD operations across the industry is critical in ensuring the sustainable application of closed-loop drilling.

Well analysis

For an in-depth solution, MPD engineers providing well engineering services first establish an understanding of the needs and risks present in a planned well. Based on customer input, M-I SWACO personnel consider a wide range of parameters to ensure drilling success.

It all begins with the customer's well design. Knowing the desired drilling targets and planned well architecture, M-I SWACO MPD engineers evaluate the pore pressure, fracture pressure, and stability pressure requirements of the well. Understanding the degree of certainty around these boundaries enables the development of a drillable well design. Implementing a few small changes, such as adjustments to hole size and casing depths, may make drilling a well significantly easier.

After analyzing various drilling scenarios, MPD engineers determine the optimal pressure limits, fluid hydraulics, and mud weights for an MPD or UBD operation. This forms an engineered basis for the well design and drilling plan, including the required degree of control and hardware, drilling and pressure control procedures, contingencies, and training.

For instance, in UBD applications, proprietary multiphase flow simulation software and Drillbench* dynamic drilling simulation software are used. If drilling data from offset wells are available, detailed drilling analysis with PERFORM Toolkit* data optimization and analysis software can be executed. Engineers investigate offset drilling data in time and depth with PERFORM Toolkit software, ensuring that offset conditions are understood properly prior to offering a suggested alternative.

System engineering

After thorough evaluation, if an MPD or UBD solution is required, well engineering services can be used to optimize the equipment best suited to not only execute the job but to integrate economically with the selected rig.

M-I SWACO MPD engineers design these customized systems on a well-by-well basis. Taking into consideration customer requirements, we map out the specific hardware and software necessary to achieve maximum performance. Our well engineering services help operators move from the theoretical to the actual by creating systems geared to achieve specific drilling objectives for each well.

Project execution

Once the components of the MPD system are in place, engineers set out to execute the plan using dedicated resources. Part of the superior functionality of our project management services is the ability of onsite and offsite personnel to respond rapidly and knowledgeably if circumstances change. At the wellsite or through remote connectivity, M-I SWACO personnel leverage PRESSPRO RT* real-time downhole performance measurement software and PERFORM Toolkit software to carefully manage the pressure window throughout the drilling, tripping, and cementing process. With powerful software and years of experience, M-I SWACO enables operators to turn many MPD decisions from reactive to proactive.