

Drillbench Dynamic Well Control

Advanced well control engineering for planning and operations

APPLICATIONS

- Assess well control procedures and casing setting depths
- Study kick tolerance
- Evaluate surface equipment limitations
- Analyze kicks after incidents occur
- Train personnel prior to challenging drilling operations
- Obtain operational decision support through “what if” analysis

BENEFITS

- Visualize process to improve understanding and awareness
- Obtain realistic evaluation of maximum drilling depth
- Optimize well control procedures
- Assess and manage risk

FEATURES

- Intuitive interface
- Multiple simulations that can run simultaneously, supporting sensitivity assessment
- Interactive, batch, and sensitivity modes
- Determination of
 - Maximum pressure loads
 - Free-gas-breakout depth
 - Water-based gas migration
 - Gas dissolution in oil-base mud
 - Horizontal kicks
- Mud-gas separator capacity evaluation
- Planning, training, and postanalysis of operations

A module of Drillbench* dynamic drilling simulation software, Drillbench Dynamic Well Control helps you plan successful well control operations—enabling you to make the right decisions during operations and minimizing downtime by understanding the physical processes that occur during a well control incident.

The Drillbench software is built around the well control workflow, covering pressure control, well control, and blowout control. This allows you to couple your well planning to operations workflows and provide essential input to deliver safe and efficient well construction.

Generate a realistic kick model

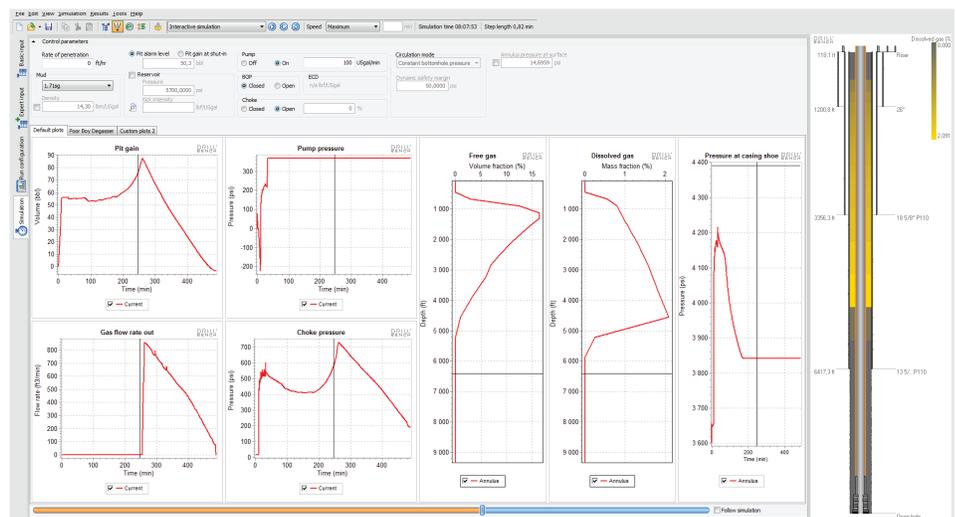
Challenging wells with tight windows between pore and fracture pressure require a dynamic multiphase model to reach well targets with reasonable kick tolerance. With a realistic kick model, you can better understand safety factors.

During a kick, the influx will interact with the mud and, in many cases, be completely dissolved in the oil phase of the mud until it reaches the bubble point. At that stage, the influx gas rapidly boils out of the oil and quickly starts to expand. With water-base mud, the influx will not dissolve and will instead start to expand as soon as it enters the well. Frequently used single-bubble models cannot represent these dynamic processes—often giving unrealistic results, particularly in tight-margin wells.

Obtain vital information

Based on 25 years of R&D within well control modeling, our transient multiphase model simulates these processes and provides vital operational information, including the following:

- kick size that can safely circulated out of the well
- arrival time at surface
- maximum gas rate at surface
- whether surface equipment is large enough to handle well flow rates
- depth at which free gas forms in the well.



Simulation showing the dissolution of methane in a synthetic mud. This is a unique feature in Drillbench Dynamic Well Control that has significant impact on kick tolerance.