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CEMENTICS

Zonal isolation software

APPLICATIONS

- Design and evaluation of cementing jobs for
  - complex deepwater wells
  - highly deviated and horizontal wells
  - P&A operations

BENEFITS

- Achieve better cementing simulation in complex well configurations and challenging environments
- Create realistic simulations using enhanced models
- Minimize risk and increase confidence through total zonal isolation

FEATURES

- Integrated simulation capabilities provided in a single platform, including hydraulics, temperature, cement centralization, mud displacement, cement plug placement, and contamination
- Consistent method of addressing well integrity issues
- Realistic centralization simulation
- 3D-aperture mud displacement simulator that couples in-pipe mixing with annular displacement, now capable of simulating casing rotation or reciprocation effects
- Hydraulic simulation that handles the change in fluid density and rheology as pressure and temperature vary
- Integrated cement plug design workflow
- External licensing to enable customers access to critical modules for review and optimization

CEMENTICS* zonal isolation software is a full suite of advanced cementing design and evaluation tools that delivers accurate simulations and successful cement jobs to achieve total zonal isolation.

Realistic simulation, even in challenging environments

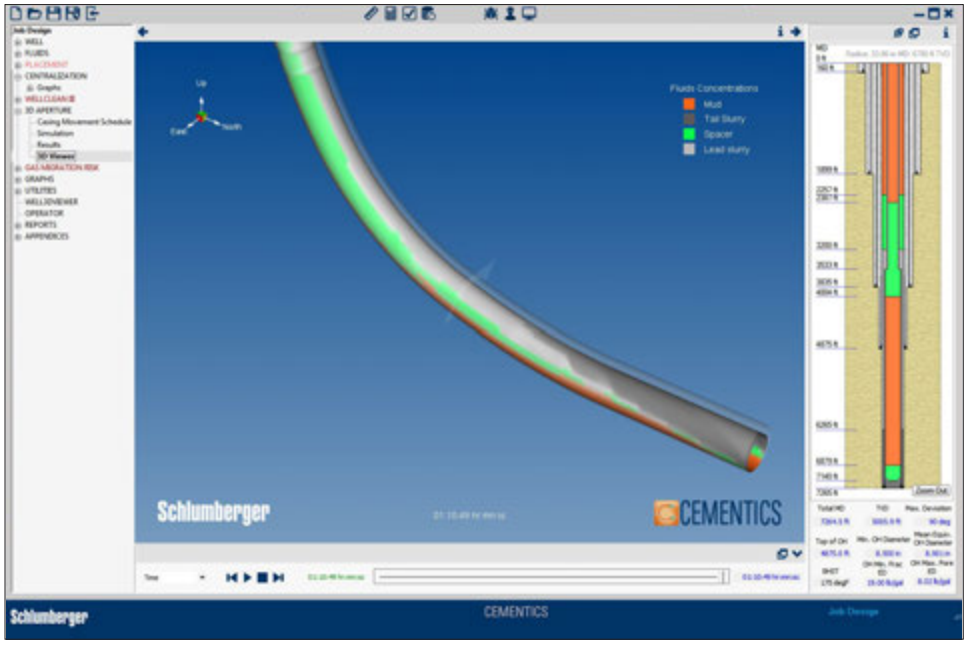
Using both established and newly developed models, CEMENTICS software enables accurate cementing design and simulation in challenging environments such as deepwater wells, highly deviated and horizontal wells, and complex cement plug placement operations.

Based on a finite-element method solution, CEMENTICS software offers a realistic approach towards casing centralization and the calculation of forces. The software is able to simulate fluid property changes as pressure and temperature vary, and to model casing temperature evolution from deepwater wells to surface.

In addition to primary cementing simulation, CEMENTICS software designs optimal cement plug placement, minimizing contamination risk and increasing cement job success. CEMENTICS software also features a 3D-aperture mud displacement simulator that couples in-pipe mixing with annular displacement and accounts for casing rotation, reciprocation, and the azimuthal gradient effect, which is critical in deviated and horizontal wells. The 3D-aperture module incorporates a stiff-string centralization model that simulates angle orientation in the wellbore.

Complete cementing simulation package

By integrating a complete suite of cementing simulation capabilities, CEMENTICS software provides a comprehensive cementing simulation solution in a single user-friendly interface.



CEMENTICS software integrates cementing design and evaluation workflow into one software application.

CEMENTICS

Modules

CEMENTICS software features a variety of modules, and these integrated features help Schlumberger engineers and customers† review and create optimized cementing designs tailored to their unique conditions.

Job evaluation†

- Import and play back a previously executed job
- Evaluate job execution and improve future cement placement

Cement plug placement†

- Predict and minimize fluid interface movement
- Reduce slurry contamination
- Optimize and sensitize under-displacement volume
- Analyze risk, optimize design, and improve placement success

Mud removal simulation

- Model cement placement in the annulus with maximum acuracy using the 3D-aperture mud displacement simulator, accounting for casing rotation, reciprocation, azimuthal gradient effects, and fluid mixing in the annulus
- Present results in 3D, showing string position in the wellbore and fluid concentration maps

Cement fluid design†

- Optimize slurry design based on type, density, pressure, and temperature
- Calculate material operational requirements
- Calculate laboratory test requirements
- Import fluids from local or worldwide fluid databases

Well planner

- Define complex well geometry
- Import directional plan, formation properties, and caliper data
- Define casing collars and various downhole restrictions

Laboratory automation

- Seamlessly integrate with cementing laboratory test management platform
- Use results of hydraulics and temperature simulator to automatically generate pressure and temperature ramps for testing.

Foam design†

- Update foam quality continuously as a function of dynamic pressure and temperature
- Accurately predict downhole foam volume and position

Centralization

- Choose between classic casing string model and advanced new model based on the finite-element method
- Calculate casing standoff at different fluid positions
- Simulate centralization in washed-out sections or tortuous wellbores

Hydraulic and temperature simulation

- Handle compressible simulation as pressure and temperature vary
- Estimate better displacement volume

Gas migration analysis

- Analyze and minimize gas migration risk for each potential flow zone

† Available to customers in externally licensed CEMENTICS software.

slb.com/cementics

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