Cementing Services

Reliable zonal isolation for North American operations

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Cementing Services

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Deep roots in North America

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360-degree well integrity

In well cementing, the costs of compromise are clear: microannuli, gas migration, sustained casing pressure, shallow water flow-induced corrosion, and more. Even in cases where problems are detected early, remediation costs can siphon your well’s profitability. Building on our philosophy of achieving “more with less,” Schlumberger combines industry-leading technologies with comprehensive best practices to help you reduce risk, time, and costs.
Our consistent success in oilfield cementing extends far beyond mix, pump, and bump. Schlumberger cement jobs begin with solid designs built on proven methodologies that use advanced software and extensive regional expertise. Schlumberger cementing engineers are equipped with the industry’s most advanced technologies for detecting gas migration risks and avoiding potential threats to zonal isolation.

**Optimize Execution and Cost**
CemCADE® software enables you to plan, simulate, and optimize operations, ensuring well security before, during, and after the job.

**Enhance Mud Removal**
The WELLCLEAN II® simulator uses computational fluid dynamics to predict the efficiency of mud removal for a given job design and identify whether a mud channel will be left. Downhole mud properties fed into the simulation can be fine-tuned using the VIRTUAL HYDRAULICS† software suite from M-I SWACO, a Schlumberger company.

**Ensure Long-Term Sheath Integrity**
CemSTRESS® software provides analysis of radial and tangential stresses to determine cement sheath performance in compression, tension, or both, enabling engineers to optimize properties of the set cement behind the casing.

**Mitigate Gas Migration Risk**
GasMigrationAdvisor® software determines risk severity based on the zone with the highest risk level, helping Schlumberger engineers make risk reduction recommendations regarding placement process design, pumping schedules, and slurry additives.

**Optimize Cement Plug Placement**
PlugAdvisor® software uses well geometry, fluid rheology, and operational inputs in a fluid interface mixing simulation that predicts top of cement while mapping plug quality. This special-purpose software constructs a virtual window into the wellbore that allows our engineers to select and optimize cementing solutions—and execute them successfully.

Schlumberger provides cementing services in all major North American oil and gas plays, including the Bakken, Marcellus, and Eagle Ford shales.

Each job design is reviewed and tested at one of 13 district laboratories across North America, supported by a state-of-the-art Client Support Laboratory in Houston. Experts at dedicated product development centers worldwide provide direct support to regional field staff through our online support and knowledge management system. Collaboration between scientists, engineers, and operators helps

- optimize job design
- rapidly deploy technology
- disseminate best practices to the field
- ensure all equipment complies with operator requirements and objectives
- test solutions beyond the capabilities of local laboratories.
Execution per plan

Wellsite operations demand efficient, reliable service.

From rig-up to rig-down, Schlumberger people, processes, and technologies deliver the results you expect. Our engineers apply industry-best practices to cement system selection, placement process design, pumping schedules, and slurry additives—reducing operational risk and providing long-term zonal isolation.

**Seal Microannuli and Resist Well Stresses**

FlexSEAL flexible expanding cement system helps ensure well integrity by resisting stresses encountered throughout the well lifecycle. Unlike conventional cement systems, it expands after setting, improving cement bonding and blocking hydrocarbon migration. Low Young’s modulus allows it to absorb cement sheath stresses without cracking.

In its 11th year of honoring the upstream energy industry’s top innovators and innovations, the 2012 World Oil Awards paid tribute to “Innovations for the Future.” FlexSEAL advanced flexible expanding cement was named the Best Drilling & Completions Fluid.

**Flexible cement eliminates sustained casing pressure**

After facing environmental risks and new regulations, many Marcellus shale wells suffered from sustained casing pressure and annular surface gas production. High-stress laboratory testing was performed with FlexSEAL flexible cement compared against conventional cements. The FlexSEAL system survived where conventional cements could not and was applied for intermediate and production casings. The expansion properties of the FlexSEAL cement reduced microannuli and improved cement bonding. Wellbore pressures reached 9,000 psi during stimulation, and no sustained casing pressure was observed after more than a year.

**CemCRETE engineered cement conquers shale gas**

For horizontal wells in the Haynesville shale, an operator needed a cement system with stable rheological properties over a wide range of temperatures. Schlumberger implemented CemCRETE concrete-base oilwell cementing for particle-size distribution, which reduced the need for polymeric extenders. This case in the Haynesville is one of more than 300 production jobs successfully cemented using the particle-size technology, which has a 99.5% placement success rate.
CemNET fiber technology stops losses and saves USD 3.3 million

Drilling in the San Joaquin Valley in California, US, Chevron experienced problems circulating cement to surface. Depleted zones, natural fractures, and unconsolidated sandstone led to severe circulation losses, delayed operations, and inflated costs. Chevron switched from traditional foamed cement to CemNET advanced fiber technology in a low-rheology cement slurry, which plugged the losses and attained the required top of cement. The switch generated approximately USD 3.3 million in value, and Chevron extended its CemNET use to improve the effectiveness and efficiency of cement jobs in other fields.

CONTROL LOST CIRCULATION
CemNET engineered inert fibers form a network across many types of loss zones, allowing you to maintain circulation and save cement costs. In wells with visible fractures, PressureNET* fiber- and solids-based lost circulation treatment improves cement returns. Both of these lost circulation solutions can be applied while cementing or pumped through drill bits on qualified BHAs and float shoes.

IMPROVE MUD REMOVAL WHILE MINIMIZING FOOTPRINT
The unique rheological properties of ScavengerPlus* slurry stabilizer improve slurry stability and fluid displacement while eliminating flow stratification in deviated and horizontal sections. When wellsite footprint mandates efficient operations, MUDPUSH Express™ stable, continuously mixed mud removal system uses an innovative, rapid-hydration polymer that can be mixed on the fly, slashing equipment and manpower requirements.

MIX AND PUMP SLURRIES FASTER
Our flagship double-pump cementing trailer is a fully redundant mixing system capable of producing fluid rates up to 17 bbl/min and withstand pressures up to 10,000 psi. For increased operational flexibility, our new-generation, self-contained cementing blender can deliver our most advanced slurry systems to any high-pressure pump by combining the high rate of a SLURRY CHIEF® recirculating mixer with the slurry quality of a 50-barrel batch blender.
Continuous, responsive service

Cementing challenges don’t end once the casing is set.

Schlumberger remains ready after each job with a comprehensive suite of well evaluation and remediation solutions and services.

**WELL INTEGRITY EVALUATION**

Schlumberger provides cement bond evaluation, long-term monitoring, and well integrity consulting for any cement job regardless of the service provider.

Our Isolation Scanner® cement evaluation service provides early detection of gas migration risk by combining pulse-echo technology with flexural wave imaging for real-time assessment in a wider range of conditions than possible with conventional evaluation technologies.

**Operator confirms cement integrity without zonal isolation test**

A Canadian operator could not reliably interpret cement integrity from conventional cement bond logs due to fast formations near TD. As a result, the operator was spending USD 200,000 per well on zonal isolation tests to determine the integrity of the cement job. Isolation Scanner service combined classic pulse-echo technology with a new flexural wave imaging ultrasonic technique, conclusively evaluating annulus materials and bond quality. Isolation tests confirmed Isolation Scanner results.
CEMENTING IN NORTH AMERICA

Whatever the cementing challenge, wherever in North America, Schlumberger has the custom solutions and regional expertise to support optimal well production and integrity.