

Ecuador

Reduced Portland system helps reduce carbon emissions

NeoCem™ system helps reduce cement operation carbon footprint and improves shear bond and wellbore integrity

CHALLENGE

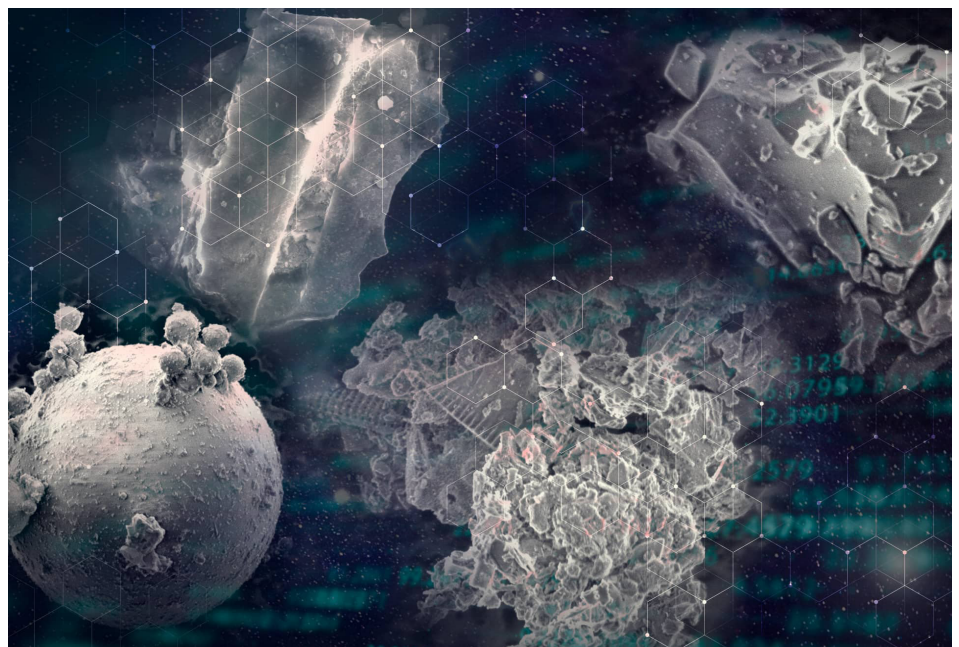
- Reduce cement slurry carbon footprint and deliver effective zonal isolation

SOLUTION

- Deploy NeoCem™ system; provides up to a 50% reduction in mass Portland compared to conventional cement systems

RESULT

- Achieved cement placement and zonal isolation
- Reduced cement slurry carbon emissions footprint



Halliburton's innovative tailoring process engineers the NeoCem™ system to deliver high-performance compressive strength and ductility at a lower density than conventional systems for improved barrier dependability.

Overview

Portland cement is the main contributor to CO₂ emissions associated with oil well cement operations. This is largely because of the energy-intensive process of its manufacturing and CO₂ generated during the calcination reaction of limestone. As the industry transitions to a lower-carbon future, it is crucial to design cement barriers with reduced Portland content.

Challenge

Andes Petroleum in Ecuador wanted to improve drilling efficiency in mature fields and minimize CO₂ emissions from cement operations. A lighter-weight

slurry was required to help prevent lost circulation, maintain stability at bottomhole circulating temperatures (BHCTs) and bottomhole static temperatures (BHSTs), and provide adequate compressive strength and cement sheath ductility.

Solution

Halliburton proposed the NeoCem™ system, a reduced Portland system with improved mechanical properties compared to conventional systems. The NeoCem system delivers up to a 50% reduction in mass Portland cement of the blend to help operators lower carbon emission baselines. Through an innovative tailoring process, the NeoCem system is engineered to deliver high-performance compressive strength and ductility at a lower density than conventional systems for improved barrier dependability.

Result

Andes Petroleum was the first operator to deploy the NeoCem™ system in Ecuador, which has reduced carbon emissions of the cement blend by 33.2%. The system provided enhanced mechanical properties, reduced the

risk of induced fractures, improved wellbore integrity, and helped achieve increased zonal isolation reliability and cement bonds compared to conventional slurries.

The NeoCem system could play a pivotal role to help the energy sector meet sustainability goals and maintain the efficiency and safety of wellbore operations, as indicated by the success achieved in Ecuador.

“The NeoCem™ system is engineered to provide a reliable solution in complex well conditions and minimize the risk of failure.”

Andes Petroleum Ecuador Drilling and Completions Manager,
Moisés Cevallos

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