When working on high-pressure, high-temperature (HPHT) wells, the fewer unplanned events there are, the smoother the operation runs. An ideal cement system offers simple, robust design, lower viscosity, and the ability to easily increase slurry density on location.

**An ideal system**
DensCRETE® cementing slurry system produces high-density cements—normally up to 2,876 kg/m³ [24 lbm/galUS]—with low, constant viscosity. Because of higher compressive strength (CS) and lower permeability, DensCRETE slurries outperform conventional-density slurries to isolate high-pressure zones for the life of the well. The primary applications for DensCRETE technology include high-pressure primary cementing operations, well control plugs, and whipstock plugs. DensCRETE slurries have an operational temperature range of 38 to 232 degC [100 to 450 degF].

**High-performance solution**
High-pressure drilling can require sudden adjustments in mud weight. With DensCRETE technology, increase the slurry density by 120 kg/m³ [1 lbm/galUS] on location, just as quickly as at the blending plant. DensCRETE eliminates reblending and saves remote and offshore operations time and money. The DensCRETE system offers a high-density cementing alternative with higher performance than conventional heavyweight systems.

**Applications**
- HPHT primary cementing operations
- Well control and whipstock plugs
- Heavyweight slurry applications

**Benefits**
- Easier slurry placement in narrow fracture-pressure and pore-pressure margins
- Reduced risks associated with long waiting-on-cement times
- Faster, easier, and more robust HPHT cementing designs

**Features**
- Stable systems at high temperatures without special additives
- Lower additive concentration requirement
- Resistance to mud contamination
- Continuous mixing of high-density cements
- Greater fluid density differentials achievable with high-density drilling fluids
Case study—Texas

In a well in northeastern Texas, the client was preparing to perform a primary cementing job at 2,347 m [7,700 ft]. The job challenge was that the well had an overpressured zone and a low fracture gradient zone at the same interval to be cemented. Additionally, the drilling mud used was an oil-based fluid with density increased to 2,181 kg/m³ [18.2 lbm/galUS] to maintain well control across the overpressured zone.

The DensCRETE cement slurry system was selected to address the challenges because it offered a high and stable density, mixed at 2,253 kg/m³ [18.8 lbm/galUS]. It was coupled with CemNET® advanced cement fibers to mitigate the risk of losses across the low-pressure zone. The design also used GASBLOK® gas control additive to minimize gas migration during the cement setting phase.

To avoid contamination between the DensCRETE cement slurry and the oil-based mud during the job placement, a spacer system was designed to act as a buffer. The designed spacer density was 2,205 kg/m³ [18.4 lbm/galUS]. WELLCLEAN II® software was used to optimize the mud removal design.

The DensCRETE cement slurry was placed with no losses occurring during the operation. The cement evaluation logs indicated a good cement bond across the entire cemented section, which provided the required zonal isolation.

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**DensCRETE slurry density can be adjusted by 120 kg/m³ [1 lbm/galUS] on location, allowing flexibility for last-minute adjustments.**

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**DensCRETE slurries require lower concentrations of additives, such as GASBLOK gas migration control, than standard cements at equal density, reducing their cost and making them more environmentally friendly.**

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[Diagram showing slurry density and GASBLOK concentration]