

# Preserving Cement Sheath Integrity for the Life of the Well

OMV Petrom, S.A., uses FUTUR self-healing cement technology to mitigate the risk of future gas leaks in Totea field

## CHALLENGE

Achieve long-term isolation for gas wells in Romania where sustained casing pressure (SCP) and gas leaks are common.

## SOLUTION

Apply an integrated solution including FUTUR\* self-healing cement technology for long-term well integrity, GASBLOK\* system for short-term gas migration control, and CemNET\* advanced fiber to control losses.

## RESULTS

Detected no SCP or surface leaks and achieved good bonding across the gas interval, even though the job was performed in severe conditions where total losses were encountered during cement placement.



## Sustained casing pressure in Romania's Totea gas field

Operated by OMV Petrom, S.A., the Totea field in Romania is divided into six assets, which are split further into field clusters. Cementing operations for clusters Ticleni, Mamu-Otesti, and Bradesti occurred over 15 years, after which 49 gas wells were determined to have SCP ranging from 3 to 50 bar. Cement sheath damage or debonding can allow hydrocarbon gas to migrate to surface, resulting in SCP. Identifying such damage and its location can be difficult, and fixing the damage to restore well integrity can be expensive or impractical.

## Combination of technologies

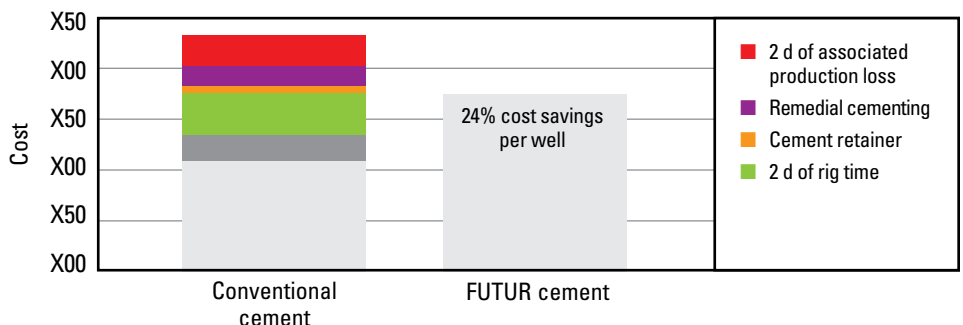
OMV Petrom, S.A., chose to use FUTUR self-healing cement to address SCP in a Totea well. Optimized for gas composition, this cement technology self-heals to prevent long-term gas migration and effectively seal the gas reservoir. Any hydrocarbon that comes into contact with FUTUR cement activates the self-healing properties of this unique sealant material. Once activation occurs, cracks, fissures, or microannuli in the cement sheath are healed, and the hydraulic seal is reestablished, eliminating the need to suspend production in order to perform remedial operations. The Totea well was cemented with 1,670 kg/m<sup>3</sup> of the FUTUR technology as the lead slurry.

To prevent the short-term gas migration that occurs immediately after cementing, the company implemented the D600G GASBLOK system for the tail slurry at 1,900 kg/m<sup>3</sup>. The D600G GASBLOK cement additive created an impermeable barrier that prevented gas migration into the slurry during its hydration phase.

CemNET advanced fiber cement was used in the slurry to cover low-fracture-gradient zones to minimize the losses. CemNET cement is composed of an inert, fibrous material capable of forming a network across the loss zone. Pressure analysis and cement bond logging were performed to measure the effectiveness of these services.

## Well integrity for producing wells

The wells showed good bonding across the gas interval after cementing, indicating that no gas migration had occurred. The combination of FUTUR, D600G GASBLOK, and CemNET technologies allowed OMV Petrom, S.A., to prevent SCP. More than 8 months after implementation, the well showed no signs of pressure buildup in the annulus or at surface.



Using FUTUR self-healing cement saved 24% in cementing operation costs per well.

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