

Xpandable Patches to extend the life of corroded CSG Wells in Queensland, Australia

Full-covered Xpandable Patches successfully isolated bacterial corrosion in coal seam gas wells

BRUZ, FRANCE, March 27, 2019 /<u>EINPresswire.com</u>/ --Over 20 years, Australia's production of coal seam gas (CSG) has risen from zero to 30% of the country's overall gas production. CSG also called coal-bed methane is natural gas, trapped in underground coal seams. The method of extraction consists in drilling numerous vertical wells, then in "dewatering" the coal seam to produce the gas. This industrial boom mainly took place in Queensland, actively pushed the State government. As a result, today, not only Queensland exports CSG to Asia (1.8 million tons

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of gas/month), but almost all natural gas used in Queensland comes from coal seams, and CSG now provides about a third of the gas used across the eastern Australian gas market (which includes South Australia).

> Saltel Industries was approached in 2016 by one of Australia's leading natural gas producers, to tailor a solution for their unusual problem: in some of their CSG wells in Queensland, the 7in production casing must cope with severe and localized external corrosion, developing at shallow

the region, and other operators might encounter similar issues in their CSG wells." — Charles Albouy	 depth. These corrosion cases are suspected to be caused by bacteria growing under specific pressure and temperature environments. To address this issue, the client was requesting a mechanical repair method which would meet three critical requirements: 1. The solution had to resist Microbiologically-influenced corrosion. 	2 2 4 2
	This particular type of corrosion can progress rapidly, even through corrosion-resistant alloys. A simple casing Patch would not work.	

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2. The solution had to be installed gently.

The corrosion damage can occur at very shallow depths (e.g., as little as a few meters below the wellhead), and corrosion damage can leave less than 80% of the casing metal thickness. In this situation, traditional patch setting methods that require high-pulling or explosive alternatives are complicated and risky for the casing, and involve serious HSE downhole hazards.

3. The solution had to provide long-term and gas-tight seal.

The particularity of CSG wells is that gas is produced through the annulus between the tubing and the production casing. The integrity of the 7in production casing is critical, since it is the first barrier for gas containment.

Saltel Industries designed full-covered patches to meet the above requirements. The total sealing concept meant covering the whole external surface of the patches with Hydrogenated nitrile butadiene rubber (HNBR) elastomeric skin, to avoid any contact between the Patch's Stainless Steel structure and bacteria. These patches were tested and qualified in compliance with ISO-14310 V0, to offer internal gas-tight protection. The new patch design, combined with Saltel hydraulic setting method guaranteed the selection for a Field-trial. Two Xpandable patches were installed in two wells to assess the technology efficiency. The patches, 'full-covered', 19.68 and 26.24 ft [6 and 8m] long, successfully restored integrity in the 7in production casings. The patches were run and installed in less than average 7 hours, capitalizing on a workover rig already onsite before the operations, therefore requiring no additional mobilization costs to the client. The setting went as per job program, and post-setting pressure tests confirmed the new barriers efficiency (1,000 psi [6.9 MPa]), less than 2% pressure loss over 10 minutes).

This problem seems to be systemic in the region, and other operators might encounter similar issues.

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