

## CEMFIT HEAL SYSTEM COUNTERS SUSTAINED CASING PRESSURE IN UNDERGROUND GAS STORAGE WELLS

Self-healing technology repairs itself on contact, helping to withstand cement sheath stresses

The CemFIT Heal\* flexible self-healing cement system is helping to ensure well integrity from drilling to abandonment on 14 underground gas storage wells onshore Italy. By providing a competent annular pressure seal and protecting against unwanted hydrocarbon migration, including sustained casing pressure (SCP) at the wellhead, the CemFIT Heal system is overcoming the challenges of poor gas reservoir isolation.

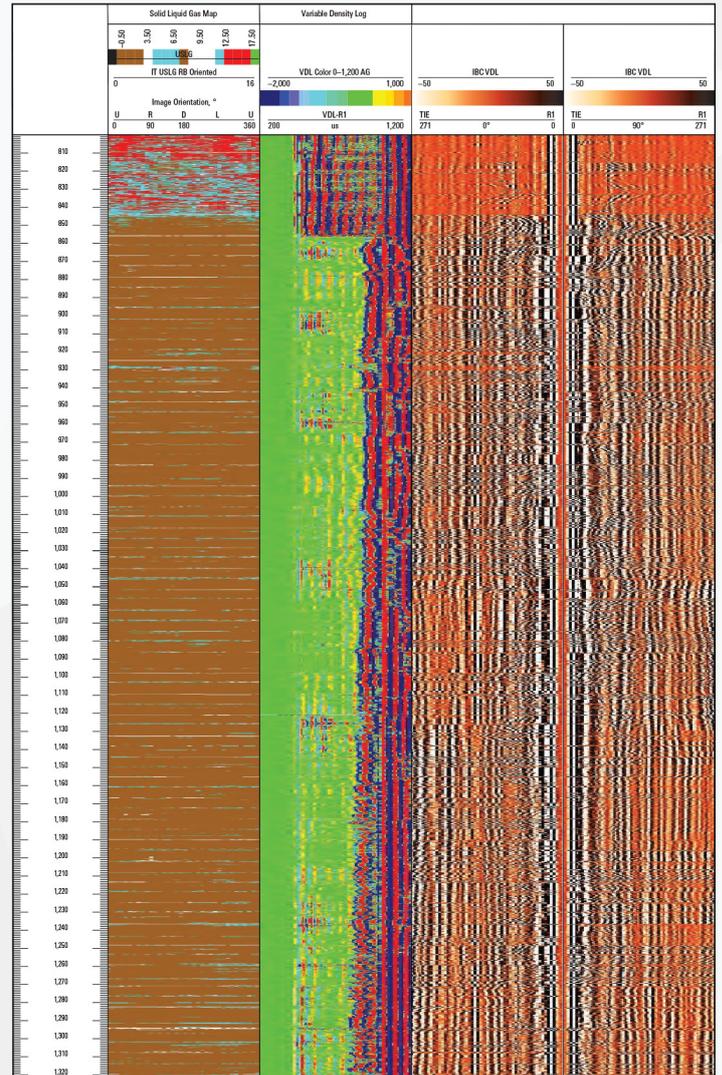
### OPERATOR CONCERNS

For the drilling and construction stage, concerns over lost circulation above and within the reservoir, plus reactive shales pushed efforts to maximize hole quality for the critical cementing operation. The production casing would be acting as the secondary containment for the reservoir fluid, so avoidance of gas migration and cement damage were high on the operator's list of concerns. Regulatory pressure envelopes were small and presented a significant challenge to ensure the wells remained gas tight. The production casing was the most exposed casing to reservoir pressure.

### SELECTION OF PROVEN TECHNOLOGY

Field-proven CemFIT Heal system technology, in use for more than 10 years, was selected for a large project in the north of Italy that would exploit a depleted gas field by conversion to a gas storage field with the drilling of 14 wells from two clusters above the reservoir.

The CemFIT Heal system helps ensure well integrity from drilling to abandonment, providing a competent annular pressure seal and protecting against hydrocarbon leaks and SCP at the wellhead. With conventional cement, a cement sheath failure such as a crack or microannulus can result in a hydrocarbon leak or SCP at the wellhead. The CemFIT Heal system is a specialized adaptive cement system that not only withstands wellbore stresses but, should any isolation defects appear, repairs itself on contact with hydrocarbons irrespective of methane content.



The CemFIT Heal system performed successfully, indicating good cement from total depth and a high degree of bonding.

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## MAXIMIZED ZONAL ISOLATION

Real-time and postjob evaluations opened the way forward for the execution of the 14 wells of the gas storage cluster in an optimal way in both operational and engineering aspects. Within this optimization process, several casing joints (100 m for each well) were sent to be sand blasted, which further enhanced cement bond quality to cover the operator contractual requirements of 50 m of good cement from total depth. The quality of the bonded sections also indicated the affinity of the CemFIT Heal system to bond to casing and be responsive to the bond logging signals. The logging results showed the high degree of bonding achieved using the CemFIT Heal system, that in turn indicated a high degree of zonal isolation as demanded for the life of underground gas storage wells.

## MORE TECHNICAL DETAILS

[Click here to read IPTC-19399.](#)