

Cavern Integrity and Performance Management at Geomethane Underground Storage

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Abstract

Located in Manosque, France, Geomethane gas caverns are used for seasonal and peak gas storage since the early nineties. These caverns have been monitored by a comprehensive survey program including gas inventory follow-up, sonar survey, well pressure and temperature logging, cavern bottom sounding, micro-seismic monitoring and subsidence survey.

The gas inventory follow-up method applied on Geomethane caverns consists in thermodynamic simulation of gas operations together with downhole measurements such as cavern sonar and pressure/temperature logging. Many advantages can be taken of this follow-up method:

- A more accurate continuous assessment of stored gas volume, without requiring a permanent downhole measurement tool.
- Prediction of cavern capacity and performance
- Coupling thermodynamical behavior of cavern with rock mechanical modeling to assess the cavern stability
- Optimization of storage performance

In this paper the Geomethane caverns monitoring and surveys are presented. Thermodynamic simulation of gas operations is introduced and some results are discussed.

Key words: Geomethane natural gas storage, Cavern follow-up, Monitoring program, Gas operation, Inventory verification, Thermodynamic simulation