CAVERN SIMULATION TOOL
OPERATIONAL EEDBACK FROM FIRST YEAR

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1. Abstract

A non-typical cavern simulation tool has been developed combining physical and statistical modelling methods. Encouraging precision in pressure and temperature calculations has been obtained in both situations, history matching and forecast scenarios.

While an initial presentation was given at the SMRI 2014 Spring technical session in San Antonio [1], the present follow-up paper provides feedback from the first year of operation with the simulation tool including model revisions.

Indeed, as currently observed in western European gas storage plants, a general trend towards less gas volume turn-over rates potentially affects accuracy of the here developed simulation tool.

Re-trimming on modified history matching periods might become necessary to maintain the obtained simulation precision. Less gas movements may also let heat exchange phenomena between salt rock and gas in place gain relative significance on the otherwise driving gas flux thermodynamics.

In addition, to share our experience in PVT modelling, main achievements realised in the field of surface gas plant process modelling as well as some optimisation case studies will be presented.

Key words: gas storage caverns, forecast and monitoring of underground gas storage, computer modelling, time series simulation, cavern pooling, surface process modelling