TYING IN THE UNDERGROUND THERMODYNAMIC SIMULATION OF GAS STORAGE CAVERNS WITH THE SURFACE PROCESS ENGINEERING

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Abstract
Commissioned by EGS E.ON Gas Storage and in cooperation with EGS and OGE Open Grid Europe, SOCON Sonar Control Kavernenvermessung GmbH has developed a software package that extends the CavBase Gas Storage software by including features for the above ground facilities. This software, which can also be used independently of the cavern software, enables pressure and temperature calculations to be made from the cavern head all the way to gas transport pipelines. In doing this the various individual components are considered, for instance the station piping, separators, boilers, heat exchangers, pressure reduction streams , compressors, coolers, gas drying units and meter streams. Heat exchanger, boiler and compressor capacities are likewise indicated. In addition the calculations reveal how many heat exchanger and compressor components are needed for a planned gas nomination. Nominations are made on an hourly basis and assimilated by the NomiX software created by GreyLogix GmbH. The data is then made available to CavBase. The entire CavBase system is embedded in NomiX and its purpose is to provide a rapid thermodynamic and rock mechanics check of the gas nominations to enable permanent online access to the information on capacity and availability of the cavern storage. The system has been implemented in the EGS's Holford gas storage. Installation and initial tests of the software were carried out and assessed in May/June 2012.

Key words: Caverns for gas storage, Above ground facilities, Computer modeling, Gas cavern trading tool, History match, Prediction of gas production scenarios, Thermodynamics.