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MAXIMUM PRESSURE IN GAS STORAGE CAVERNS

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Abstract

To allow storage of large masses of gas, the maximum admissible pressure in a gas cavern must be high, but it must be not too high in order to prevent gas leakage. The empirical approach consists of calculating the weight of the overburden (the “vertical stress”) and selecting a maximum pressure, which is 80-85% of the vertical stress. In addition, a Mechanical Integrity Test (MIT) must be performed. This approach is robust and is supported by decades of safe operation of dozens of gas caverns worldwide. Over the past 20 years, research, much of which is supported by the Solution Mining Research Institute (SMRI), has been performed to obtain better insight in the mechanisms of gas leaks. The research suggests that the empirical approach is basically sound; however, it must be completed by numerical computations that take into account the geological, geomechanical, geometrical and operational conditions of the actual cavern.

Key words: Caverns for Gas Storage, Maximum Gas Pressure, Rock Mechanics

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