

Aspects for the Design of Gas Caverns in the Border Region of Salt Domes – Initial Conditions and Assumptions

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Abstract

For several reasons the demand for storage capacity for natural gas has increased drastically during the last years. Existing gas cavern fields have been extended and new storage locations have been explored. In order to obtain a high degree of exploitation there is a need for creating caverns close to the boundaries of the salt formations.

For the design of such caverns it is important to get sufficient knowledge of the geometry of the interface between rock salt and cap rock as well as the initial conditions with respect to rock mass stresses and rock mass temperatures. Within the rock mechanical calculations these assumptions are crucial for the determination of sufficient spacing without influencing the stability or the tightness of the storage cavity.

The paper describes by the way of example the situation for a salt dome cavern configuration. By three-dimensional calculation models the initial state of stress is assessed especially in the transition zone between rock salt mass and overburden. Important assumptions for the layout of the caverns will be compiled and discussed.

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