Rock Mechanical Aspects of Gas Cavern Interaction
for non-axisymmetric Conditions

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Abstract

During the last years the demand for storage capacity for natural gas has increased drastically. For this reason existing gas cavern fields have been extended and new storage locations have been explored. Within these projects a couple of aspects lead to gas storage caverns configurations and locations, where neighboured caverns had to be created at different depth levels or at boundaries of the rock salt structure.

From rock mechanical point of view the application of the common axisymmetric modelling in most of these cases cannot give realistic dimensioning data. Therefore three-dimensional modelling is necessary with respect to geometry as well as to different pressure histories in the two caverns.

The paper outlines by the way of example the interaction of two neighboured gas caverns in rock salt mass situated at different depth levels. The aspects and criteria of recommending minimum and maximum permissible internal pressures will be discussed. The sensitivity of the dimensioning variables will be shown for different distances between the adjacent caverns.

Keywords: *rock mechanics, numerical analysis, gas cavern design*