

Magnesium-chloride Brine Production through Cavern Convergence

by

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Abstract

Billiton Refractories are currently - as a test - reducing the well head pressure of one of their solution mined caverns, to investigate the resulting cavern convergence and surface subsidence. Through this, brine saturated with magnesium salts is being produced. By adopting this method for all caverns, the drilling and development of new caverns can be postponed, which leads to large savings on investments and operational costs. The magnesium salts have a very low creep resistance and allow a fast cavern volume reduction. A clear disadvantage is the associated surface subsidence mainly resulting in problems related to the ground water table. Research has indicated that surface subsidence is to be expected anyway in the future as a result of density driven fracture and leakage through the cavern roof (bleeding off of fluid excess pressures).

This paper describes the experiences and views of Billiton Refractories concerning cavern operations and stability, fluid tightness, surface subsidence and abandonment.

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