

Hydraulic effects during large-scale hydrogen storage in porous formations

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Abstract

Hydrogen storage in porous geological formations could be employed in future energy systems to mitigate shortages due the fluctuating power production from renewable sources. In this work, hydraulic effects of a hypothetical large-scale hydrogen storage site using 11 wells are investigated using numerical scenario simulations. It is found that, the storage site can sustain a power output of 700 to 1140 MW for one week depending on storage permeability. The storage operation is associated with a regional pressure increase of up to 3 bars in 5 km distance to the storage wells.