Solution Mining Research Institute Fall 2022 Conference

Chester, United Kingdom, 26-27 September 2022

The HyKeuper Storage Project

Planning a Large Hydrogen Storage in the United Kingdom

Richard Applewhite, INOVYN

Robert Beresford, Costain

Bruno Colcombet, Geostock

Abstract

The HyKeuper hydrogen storage project planned by INOVYN as part of the HyNet project aims at storing, by 2030, 1.3 TWhr (387 MMSm^3, 33,000 tons) of hydrogen in nineteen solution mined cavities, with peak deliverability of 6.3 GW (45 MMSm^3/d, 3,840 ton/d) and peak injection rate of 2.1 GW (15 MMSm^3/d, 1,280 ton/d). The bulk hydrogen storage will be required for seasonal and daily network supply and demand balancing and yearly maintenance of the production facilities of the HyNet hydrogen system. Each cavern will be approximately 350,000 m^3 in volume and can store approximately 72 GWhr (21.3 MMsm3 or 1815 tons) of hydrogen. The FEED engineering is contracted out and consenting is already underway; some construction work has already begun on site with civil contract. Detailed design could start later in 2022 and a scale up in site construction in 2023.

INOVYN's Holford Brinefield in Cheshire already hosts two of the UK's largest natural gas storage facilities. The project will bring significant regional benefits, with a large investment (>£500M) in engineering and technical skills; well-paid construction jobs and supply chain opportunities (both specialist engineering and typical civil/mechanical/process construction).

COSTAIN and GEOSTOCK have been contracted for developing the studies for the surface and subsurface facilities.

Gas volumes are reported in Standard condition 15°C and 1.01325 bar.

Key words: HyKeuper, Keuper, KGSP, Hydrogen, Holford, HyNet, Cheshire, Gas Storage, Salt Caverns, Planning Consent