



Development of solutions for underground hydrogen storage in salt caverns – H2SALT.

PROJECT DESCRIPTION - PRH2CVAL4-C1- 2022-0072

The H2SALT project aims to develop the knowledge and technologies required for the storage of green hydrogen in underground salt caverns, as a large-scale energy management solution for use in industrial environments. The project focuses on assessing the technical, economic, geological, and environmental feasibility of this type of storage, as well as its integration into the hydrogen value chain. This includes structural analysis and gas behavior within the cavern, the design of tubular products for injection and extraction, the implementation of auxiliary facilities for gas treatment, and the definition of a specific business model. Geotechnical studies, simulations of hydrogen behavior in the caverns, material compatibility analyses, associated infrastructure design, and industrial use cases are all considered. H2SALT aligns with industrial decarbonization strategies and the consolidation of an energy ecosystem based on renewable hydrogen.

Specifically, TUBACEX INNOVACIÓN will be involved in the design of the tubular systems responsible for filling and emptying the reservoir, as well as in studying the hydrogen embrittlement sensitivity of the steels used in this design. To this end, laboratory tests specifically designed to simulate the real service conditions of tubular systems in the salt cavern will be carried out, including the presence of H₂, CO₂ as a representative cushion gas, H₂S as a by-product of the reaction of hydrogen with the reservoir, and chlorides resulting from the brine remaining in the cavern. These sensitivity and metallographic characterization studies are considered essential for selecting the most suitable material and optimal condition, enabling the design of an efficient and safe injection and extraction system throughout its service life.

- Total TTI budget: €670,010.41
- Duration: 2022 – 2026

CONSORTIUM

Coordinator:

- TEAM INGENIERÍA Y CONSULTORÍA S.L.

Partners:

- TUBACEX TUBOS INOXIDABLES S.A.U.
- TUBOS REUNIDOS GROUP, S.L.U.
- TAMOIN S.L.U.
- IBERDROLA CLIENTES S.A.U.
- ASOCIACIÓN CLÚSTER DE ENERGÍA
- SIDEREX

Agents of the Basque Network of Science, Technology and Innovation (RVCTI):

- TUBACEX INNOVACIÓN
- FUNDACION TECNALIA RESEARCH & INNOVATION

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