



BILFINGER

FROM BASIC TO DETAILED ENGINEERING

BILFINGER ENGINEERING SUCCEES IN DELIVERING A DETAILED BLUEPRINT FOR UNDERGROUND HYDROGEN STORAGE.

Project Scope

Gasunie is currently in the process of establishing a hydrogen network in the Netherlands. While storage facilities already exist for natural gas, Gasunie is now expanding to accommodate the transport and storage of hydrogen. This involves creating both storage facilities and a network for hydrogen, a pioneering endeavor that has not been done before. The HyStock project focuses on the use of empty salt caverns for hydrogen storage in the northern region of the Netherlands.

Bilfinger Engineering has played a crucial role in this initiative by developing a basic design for the aboveground compression station. Carefully considering the layout of the desired setup, addressing aspects such as how to organize pipelines to ensure safety, determining optimal pressure levels, and outlining the overall structure. After finalizing the basic design, Bilfinger Engineering was selected to continue the HyStock project and provide the detailed engineering.

Services Provided:

- Basic Engineering
- Detailed Engineering



Client: Gasunie

Location: Zuidwending, the Netherlands

Energy source: Hydrogen

Key feature: A pioneering project for underground hydrogen storage.

Capacity: Total injection and production capacity of 80 ton/h nett Hydrogen.

Cavern volume: The anticipated volume is approximately 1.000.000m³ per cavern.

Navigating from Basics to Detailed Precision

What has not been covered in the initial stages is addressed in the detailed design in exact detail at a micro level. Working with hydrogen at this scale is relatively new; introducing new safety considerations as established practices for smaller pipelines are not fully applicable to projects of this magnitude.

Details are worked out and a comprehensive package is developed for contractors to effectively begin construction. The key aspects involve ensuring required permits are in order, materials are specified, and providing precise drawings.

Agile Engineering for Hydrogen Integration

At Bilfinger Engineering, in-house expertise efficiently leverages core knowledge in Gasunie projects, emphasizing flexibility and effective communication to address uncertainties in integrating something not yet in existence. Unlike natural gas, hydrogen's uncertainties prompt discussions on balancing robustness and practicality.

Bilfinger Engineering values changes that enhance outcomes, earning acknowledgment from Gasunie as a flexible and trusted partner. To boost the efficiency of communication, Bilfinger Engineering employs 3D visualization, engaging the customer early in the process and providing visibility into the design before final documentation, departing from the previous practice of presenting information only at deadlines.

Sustainability & Efficiency

Utilizing salt caverns for large-scale hydrogen storage stands out as a promising solution, both economically and technically. The caverns serve as a "lung" in the hydrogen network, enabling the energy systems in the Netherlands and Europe to reach ambitious sustainability targets.

Ultimately, the customer makes choices that influence usage and maintenance, but experts from Bilfinger Engineering guide and encourage them to make sustainable choices. Bilfinger Engineering takes pride in playing a crucial role in this initiative, contributing both a basic and detailed design to enhance the future of sustainability.

"The transportation and storage of green energy via hydrogen is key for the energy transition in the Netherlands. Given our longstanding relationship with Bilfinger, we are pleased that they are supporting us going new ways in this HyStock project." - Bert Stouwie, Project Manager HyStock at NV Nederlandse Gasunie.

