storengy

saltHy

PIONEERING HYDROGEN STORAGE PROJECT

Vision meets proven storage technology

A company of ENGIE

STORENGY - PIONEER FOR HYDROGEN STORAGE

With the SaltHy project, Storengy Deutschland is expanding its existing Harsefeld natural gas storage facility to include salt caverns for the underground storage of hydrogen. SaltHy is therefore a flagship project on an industrial scale in the emerging hydrogen market.

Storengy is Europe‘s leading storage company. The expertise gained from many years of experience in constructing and safely operating salt cavern storage facilities for natural gas can be applied to hydrogen storage facilities.

WHY HYDROGEN?

Hydrogen is a crucial cornerstone of the energy transition. As a versatile energy carrier, the gas can be transported over long distances and used in a wide range of industries. It also has the advantage of being able to be stored permanently and in large quantities. Surplus renewable electricity can therefore be used for industrial applications and the energy supply as required.

> *“Without hydrogen, we cannot achieve the EU’s climate targets. In order to exploit the gas's potential efficiently, the transport and storage infrastructure must be expanded.”*
>
> **Gunnar Assmann |** Project Manager Hydrogen Storage, Storengy Germany

EU HYDROGEN BACKBONE

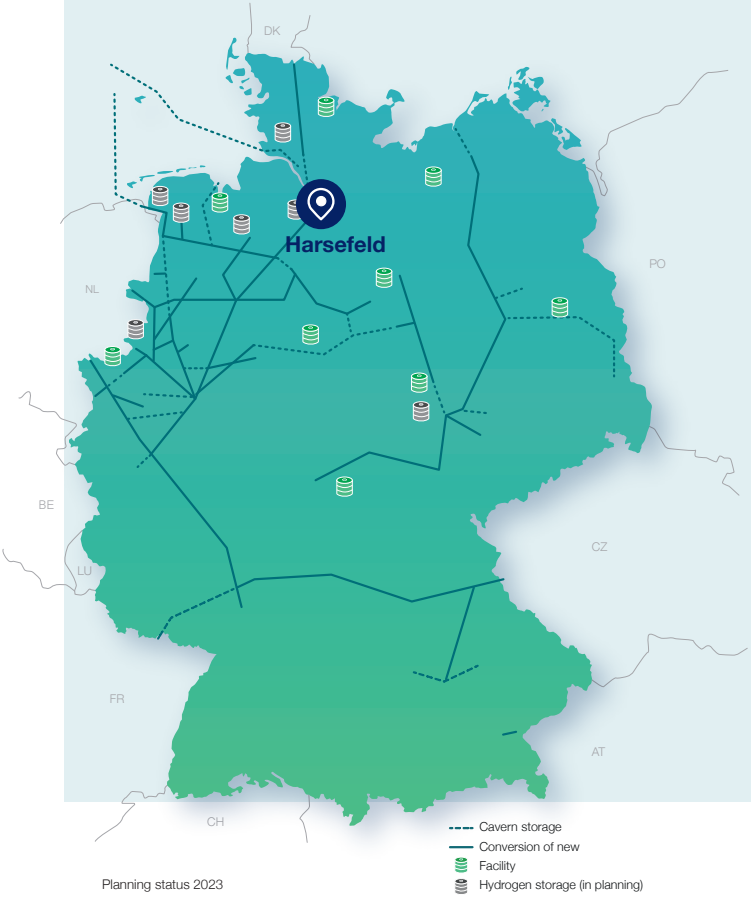
In order to optimise the production, import, transport and storage of hydrogen in the European Union, a Europe-wide network of hydrogen pipelines is to be created – the so-called EU hydrogen backbone.

This will enable the seamless integration of hydrogen into the energy system. In addition to the transport pipelines, sufficient storage capacity is needed above all to unleash the potential of hydrogen as a storage medium for surplus renewable electricity.

NORTHERN GERMANY AT THE CENTRE

Northern Germany and the Stade region are playing a key role in the European hydrogen network:

- The region is already a hub for many gas pipelines, many of which can be converted for hydrogen transport.
- With 80 % of Europe‘s salt cavern storage capacity, northern Germany is home to Europe‘s “hydrogen battery”.
- In Stade, a hydrogen hub is currently evolving for:
  - import and production,
  - transport and storage,
  - the use of hydrogen in energy-intensive industries.

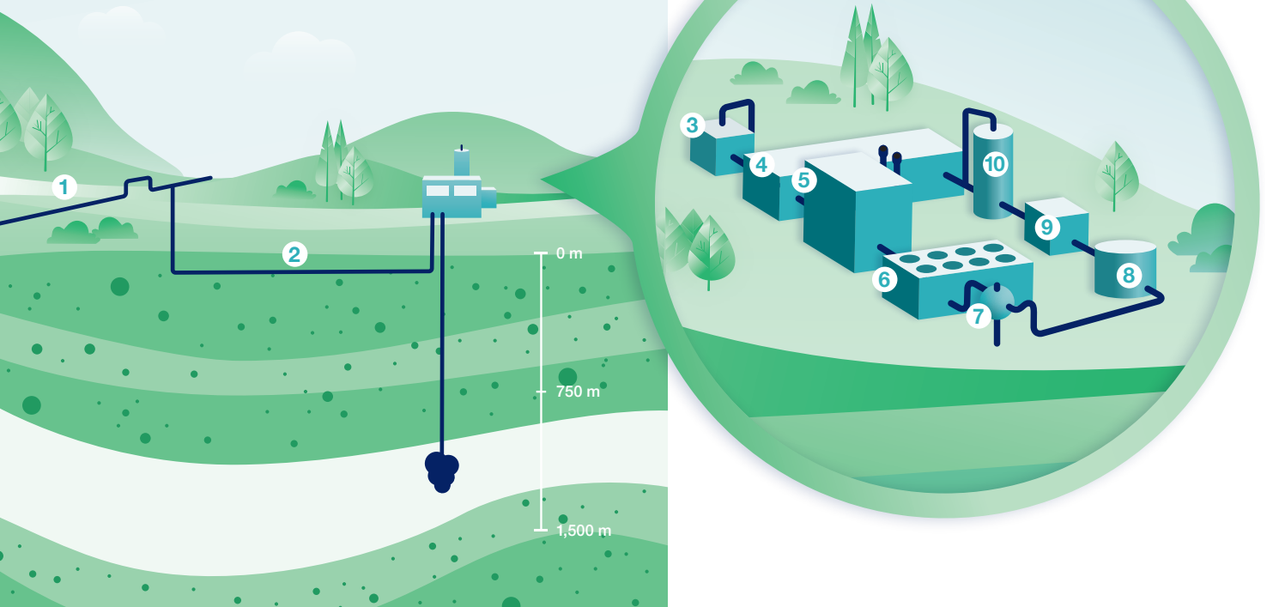


OUR H_2 STORAGE IN SALT CAVERNS

The energy supply of the future will rely heavily on hydrogen: for decarbonising the economy and as a storable energy source to compensate for fluctuations in the electricity grid. Numerous studies show that the storage requirements in Germany will significantly exceed the potential offered by converting existing natural gas caverns as early as 2030.

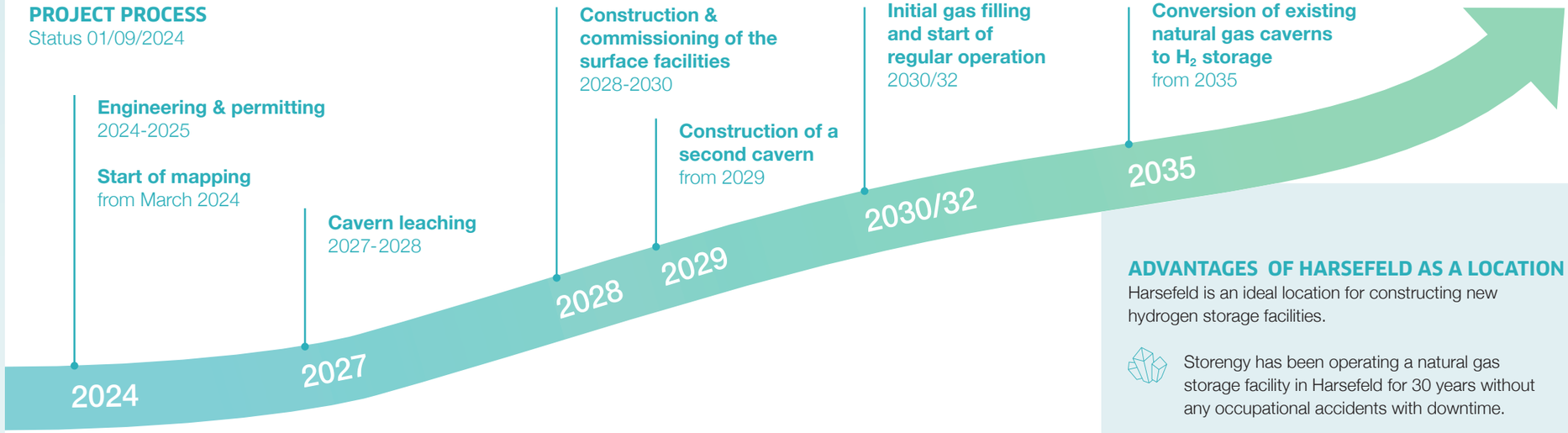
> *"We will have to secure the supply of natural gas via existing storage facilities for a long time. This is why we need new hydrogen storage facilities for ramping up the emerging hydrogen market."*
>
> **Gunnar Assmann |** Project Manager Hydrogen Storage, Storengy Germany

Storengy is expanding the Harsefeld site with two new salt caverns for storing 100 % hydrogen. According to current plans, from 2030/32 onwards approx. 7,500–10,000 tonnes of hydrogen can be stored in each cavern.



PROJECT PROCESS

Status 01/09/2024



Engineering & permitting
2024-2025

Start of mapping
from March 2024

Cavern leaching
2027-2028

Construction & commissioning of the surface facilities
2028-2030

Construction of a second cavern
from 2029

Initial gas filling and start of regular operation
2030/32

Conversion of existing natural gas caverns to H_2 storage
from 2035

HOW DOES HYDROGEN STORAGE WORK?

Gas pipelines (1) transport hydrogen (H_2) throughout Europe. A shorter connecting pipeline (2) connects our storage facility directly to this network. When H_2 is taken from the network for storage, it first flows through an inlet filter (3) to separate out any impurities. The H_2 then passes through a gas quantity measuring facility (4), in which its quality is also recorded. The downstream compressor station (5) compresses the H_2 to the current cavern pressure, whereby it is heated and cooled (6) before being transported onwards. Via the cavern head (7), the H_2 finally reaches the salt cavern deep underground, where it is safely stored.

If required, the H_2 is restored. To do this, it flows out of the cavern via the cavern head and first passes through a filter separator (8) to separate out any impurities. In order to depressurise from the cavern pressure to the pressure of the connecting line, the H_2 must then be cooled (9) as it heats up during depressurisation. The H_2 then flows through a drying system (10) to ensure that the quality requirements of the gas pipelines are met.

ADVANTAGES OF HARSEFELD AS A LOCATION

Harsefeld is an ideal location for constructing new hydrogen storage facilities.

Storengy has been operating a natural gas storage facility in Harsefeld for 30 years without any occupational accidents with downtime.

Storengy endeavours to work closely with local partner companies in order to benefit from synergy effects. The cooperation with Dow, for example, ensures the sustainable use of the salt obtained during the leaching process.

SaltHy will be connected directly to the first expansion stage of the international hydrogen pipeline network and will therefore be available at an early stage to secure customer requirements.

Stade is developing into the energy region of the future and a hydrogen hub. Its geographical location with an adjacent harbour makes Stade an important hub for trade, logistics and industrial development.

HOW DOES THE COMMUNITY BENEFIT FROM THE PROJECT?

Storengy is investing locally in future-proofing the existing Harsefeld storage facility. This will secure jobs at the site in the long term. The inclusion of SaltHy on the EU list of "Projects of Common Interest" (PCIs) emphasises the European significance of the project. As a result, investments will flow into the region, from which Harsefeld will also benefit.

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