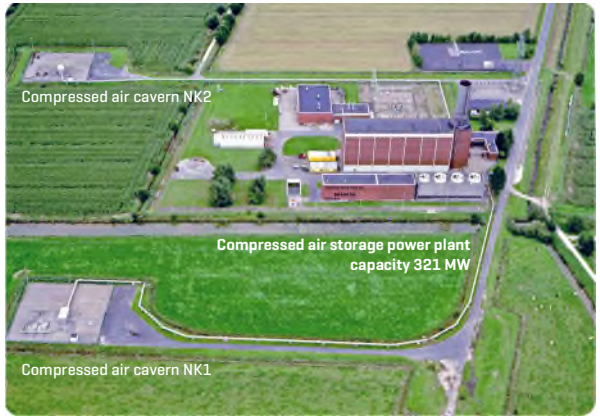
OUR SERVICES

We offer you a wide range of services for geological renewable energy storage using compressed air and hydrogen. Our interdisciplinary approach involves specialists in geology, drilling technology, completion, plant technology, thermodynamics and rock mechanics.

- Location search and evaluation depending on the renewable energy storage strategy
- Technical viability studies for cavern storage facilities within an overall plan for storing renewable energies
- GIS (geographical information system)-based storage capacity assessment
- Design studies for energy storage underground on a grid scale (compressed air storage, hydrogen storage, hydraulic storage)
- Development and implementation of demonstration projects
- Project management for extraction projects and combination projects
- Research and development in the field of



The world's first compressed air storage power plant in Huntorf near Oldenburg, Germany

DEEP.KBB GmbH

Convincing Competence

DEEP.KBB specializes in engineering and geoscientific services relating to consulting, planning, construction and operation of underground energy storage facilities, as well as brine and salt extraction. Our competence is based on the extensive technical and scientific know-how that comes from many years of experience. Our goal is to find innovative solutions that are safe and economical.

We are continuously expanding our competence in hydrogen storage by conducting studies for underground hydrogen storage worldwide – both onshore and offshore. Additionally, we are actively involved in various operative pilot projects for the construction of new or the conversion of existing underground storage facilities for hydrogen storage. Examples include Uniper Energy Storage GmbH's pilot project Hydrogen Pilot Cavern (HPC), the H2CAST Etzel project of Storag Etzel Service GmbH or Gasunie N.V.'s HyStock project.

HPC Krummhörn
H2CAST Etzel
hystock
power to hydrogen
uniper
STORAG ETZEL
Energy Storage Solutions
gasunie

Within our strong network of various stakeholders, we work closely with the public domain, the energy industry and official authorities, participate in various working groups and are represented in relevant publications.

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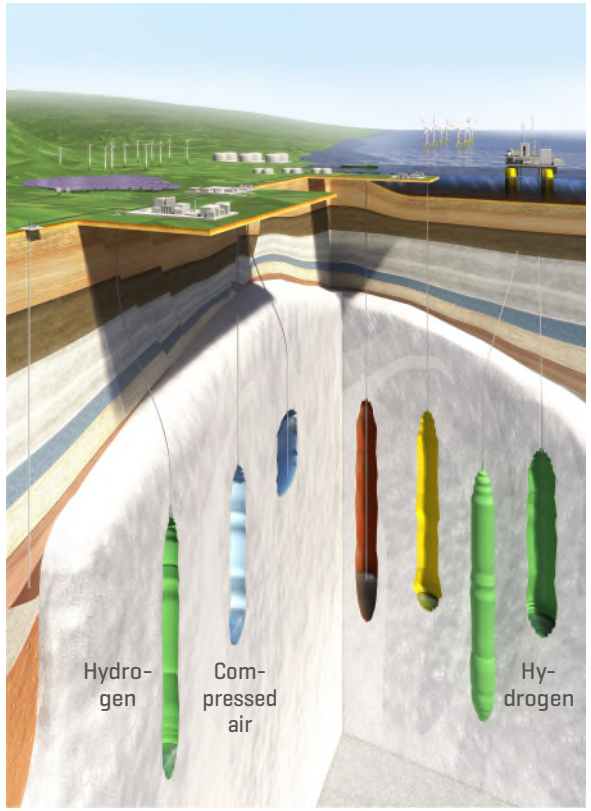
STORAGE OF RENEWABLE ENERGY



INNOVATIVE ENERGY STORAGE.

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ENERGY STORAGE
Facts and figures

Typical dimensions of a salt cavern

Depth	approx. 600 - 1,400 m
Height	approx. 100 - 500 m
Diameter	approx. 30 - 80 m
Volume	approx. 200,000 - 1,000,000 m³

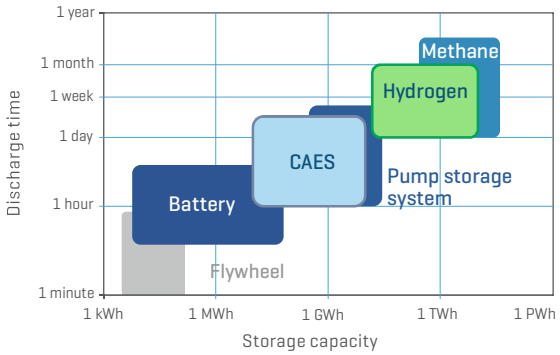
Energy densities

	Material use
Crude oil *	9,500 kWh/m³
Methane **	1,100 kWh/m³
Hydrogen **	280 kWh/m³

	Reconversion into electricity
Hydrogen (η=0,6)**	170 kWh/m³
Compressed air (adiabatic)***	2.4 kWh/m³
Pump storage system ****	0.7 kWh/m³

* Relating to the heating value
** Relating to the heating value and a pressure difference of 120 bar
*** Relating to a pressure difference of 20 bar
**** Relating to an effective drop height of 300 m

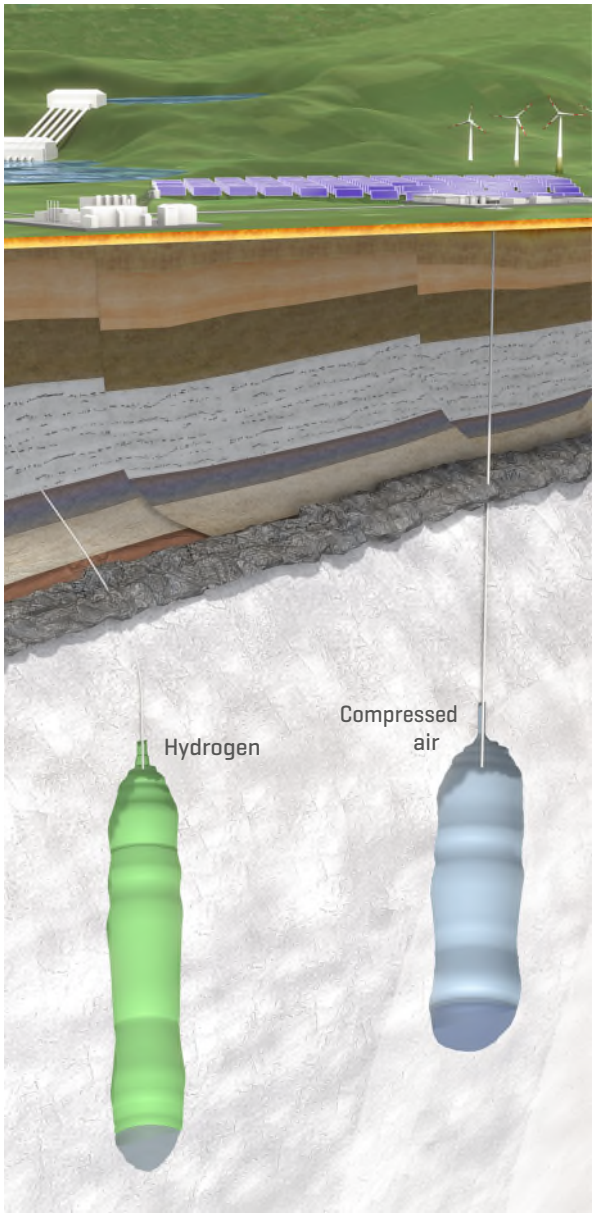
Use of various storage technologies



Stored energy in Germany

Crude oil	> 200,000 GWh
Natural gas	> 200,000 GWh
Compressed air (diabatic)	0.64 GWh
Pump storage system	40 GWh

COMPRESSED AIR AND HYDROGEN STORAGE IN SALT CAVERNS –
A major component in the integration of renewable energies into the energy system



The high power supply reliability historically achieved mostly with fossil fuels such as coal, oil and natural gas is inconceivable without extensive storage systems to balance out short-term or seasonal fluctuations in availability and demand. For this purpose, Germany today holds reserves of oil and natural gas sufficient for several weeks. These reserves are almost exclusively stored in geological formations such as depleted gas and oil fields, aquifers and artificial salt caverns.

The current transition to the renewable energy types wind and solar result in completely new requirements for balancing generation and demand in order to secure adequate power supply: from short-term forecast deviations to calm periods lasting several days to seasonal fluctuations. Particularly suitable for short-term demand are compressed air energy storage systems [CAES] with high degrees of electricity-to-electricity effectiveness. Large energy volumes can be stored by converting electric power to hydrogen which is then fed as a high-quality raw material into various uses within the framework of sector coupling.