Storage of Renewable Energies

- Storage for renewables
- Wind and solar energy
- Short-term and long-term storage
- Optimal operation
- Simulation
- Optimal design
- Business models
- Detailed Engineering
- Hydrogen technology
- Electrolysis and fuel cells
- Permission procedures
- Feasibility studies

Ihr Ansprechpartner

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Energy Turnaround and Storage

As part of the German Energy Turnaround, the proportion of renewable energies and particularly offshore wind energy will increase, making additional transport lines and energy storage facilities a necessity. Due to its large potential and low marginal costs, surplus wind energy is especially well-suited for long-term storage to bridge the gap between time periods with reduced supply from renewable energy sources.
Hydrogen-based storage systems - consisting of electrolysis, hydrogen storage and subsequent usage - will contribute an important part to the further development of energy systems with large amounts of renewable energies.

Applications

Several goals are achieved with the help of the above storage systems:
Supply peaks can be taken out of the grid and utilized meaningfully; the system can offer balancing power directly and the stored hydrogen can be used either to compensate for lulls in power production or in the area of transportation. In addition, hydrogen can be used in Power-To-Gas systems via CHP .

Project HyWindBalance

As part of the HyWindBalance Project led by Overspeed and PLANET, a system was developed, investigated and tested which combines wind farms with the storable energy source hydrogen.
Essential elements of HyWindBalance facilities are electrolyser, hydrogen strorage, fuel cells, and an intelligent control unit which optimises the operation of the entire system on the basis of load forecasts and the production of wind-generated electricity.
In HyWindBalance, a wind-hydrogen-system was developed and tested which, in its role as a "virtual power plant", makes production planning possible which reduces the demand for conventional balancing power and offers its own balancing power. It should be highlighted that this wind-hydrogen system can provide balancing power free of CO2.

Going past conceptional work, the developed concepts were realized and tested as hardware in a research system.

Our Services

On the basis of our experience with HyWindBalance and our longstanding work in the area of wind energy and the energy economy, we offer wide ranging services for storage systems:
Conception and design of storage systems of any size.
Simulation of storage systems
Optimal operational management taking both wind and solar power forecasts into account
Energy Management of hydrogen and markets
Coordinating the usage of the stored hydrogen (transport, Power-to-Gas, admixing natural gas, technical usage)
Conception and management of the respective research and development projects
Business plans for projects and commercial systems
Feasibility studies for storage systems.

Together with our partner PLANET, we offer:
Approval Procedures for hydrogen storage systems
Supervision of detailed engineering
Supervision during the realization of storage systems

Hydrogen cavern systems for surplus wind energy

For our customer IVG Caverns GmbH, we designed a large hydrogen storage facility on the basis of underground caverns such as those already in use for stockpiling oil and natural gas.