Project partners

Co-operation partners

The project will receive funding from the Austrian Climate and Energy Fund established by the Ministry for Transport, Innovation and Technology, as part of its energy research programme.

Company RAG

RAG Austria AG is a long-established innovative energy company. Its core business is gas storage, and it uses its extensive expertise in underground operations to develop sustainable energy solutions for the future. In particular, RAG develops new energy technologies through research into and production of renewable gas.
With storage capacity now totalling around 6 billion cubic metres, RAG makes a major contribution to security of supply in Austria and Central Europe as a whole, and is one of Europe's biggest storage operators.
RAG is clearly focused on gas, an energy form that is highly versatile and has a bright future. Conventional natural gas, which will play an indispensable role in energy supplies in the future, is only one aspect of this focus. The other comprises green gas – such as synthetic gas produced using power-to-gas technology or other biogas (or biomethane).
Gas already has a broad range of applications, underpinning safe, efficient and sustainable supplies of energy: gas is used to generate electricity and heat, and in transportation as compressed natural gas (CNG) and liquefied natural gas (LNG).

Schwarzenbergplatz 16, 1015 Vienna, Austria
www.rag-austria.at, office@rag-austria.at

UNDERGROUND SUN.STORAGE

Underground Sun Storage

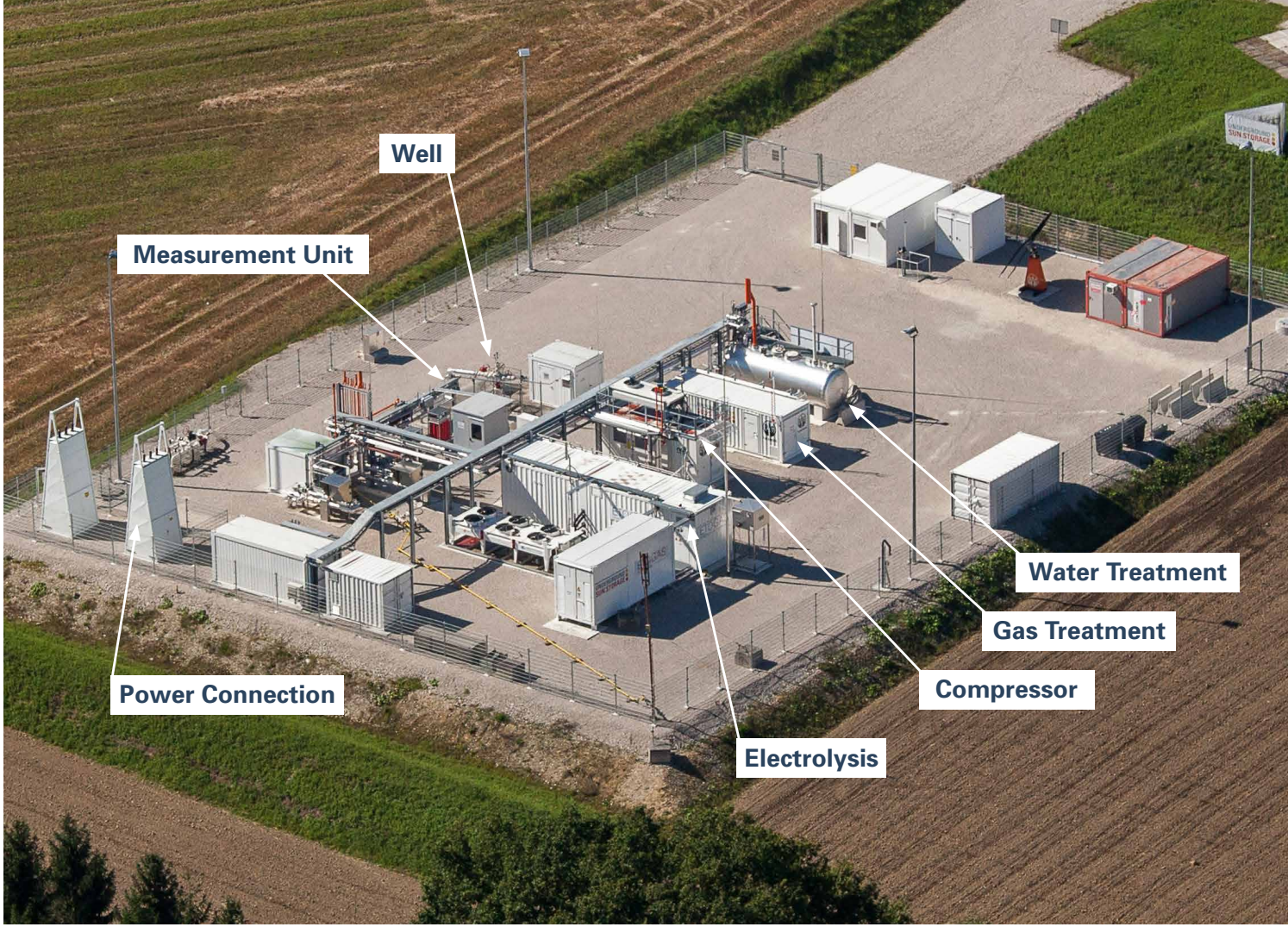
Storing sunshine

Underground Sun Storage

Harvesting, storing and supplying solar energy: an unprecedented pilot project run by RAG has tested this groundbreaking approach to energy production and storage.
Storage of Hydrogen produced using solar energy has been trialled at a small depleted gas reservoir in Pilsbach, Upper Austria.
The main focus of the project was to find out if underground gas storage reservoirs tolerate Hydrogen (up to 10% in gas). The results were positive, the role of such facilities and their enormous storage capacity (more than 8 billion cu m in Austria, equivalent to 92 TWh – whereof 66 TWh operated by RAG) in the energy system of the future has changed significantly, since they can be used to store and balance out seasonal supplies of renewable energy.
The results enable similar investigations for many other storage facilites, all over the world.

Storing renewable Hydrogen in porous gas storages

- Electricity can't be stored but Hydrogen can
- Huge quantities of sun and wind power needs seasonal and large-scale storage
- Sustainable use of gas infrastructure is possible
- Renewable energy becomes baseload capable



Results

- Subsurface storage of Renewables via Hydrogen is possible
- Last part of gas infrastructure successfully tested on Hydrogen applicability for RAG's facilities
- No negative influence on existing storage facility
- Integrity of porous gas storages is not threatened
  - – No migration out of the reservoir
  - – No alteration of the reservoir rock
  - – Microbial processes can be handled

Outcome

- Sustainable use of existing infrastructure in a renewable energy future proved
- Synergy of storing and generating renewable gas found
- Positive response from national and international storage operators and stakeholders
- Follow ups:
  1. Sun Conversion Project - production and storage in an extisting underground facility
  2. Testing the storability of up to 100% Hydrogen in a field test

Technical specifications of the facility / reservoir

Max. pressure	107 bar(a)
Temperature	40 °C
Depth	1,027 m
Working gas volume	1.7 mn cu m
Gas Initially in Place	6.2 mn cu m
Reservoir volume	58,000 cu m

www.underground-sun-storage.at