



UNDERGROUND
SUN.CONVERSION

FLEX
STORE

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Underground Sun Conversion – Flexible Storage

Sustainable storage for the renewable energy system of the future

Consortium Partners

RAG Austria AG

RAG Austria AG is Austria's largest energy storage company and one of Europe's leading gas storage facility operators. Our focus is on storage, conversion and demand based conditioning of energy in the form of gaseous energy carriers. With storage capacity of more than 6.2 billion cubic metres of natural gas RAG Austria AG has already converted large parts of its natural gas reservoirs into storage facilities. These can supply the stored energy at any time and at high capacity. RAG is living the vision of „sustainable energy mining“ and makes a major contribution to security of supply of Austria and Europe.

The company develops innovative and pioneering energy technologies around „green gas“ that act as partners to renewables. RAG Austria AG is playing a vital role in achieving Austria's ambitious climate goals, and in the sustainable stewardship of the country's raw material and energy supplies. RAG's goal is to provide its customers with safe, efficient, environmentally friendly and affordable energy and gas storage services – sustainably and responsibly.

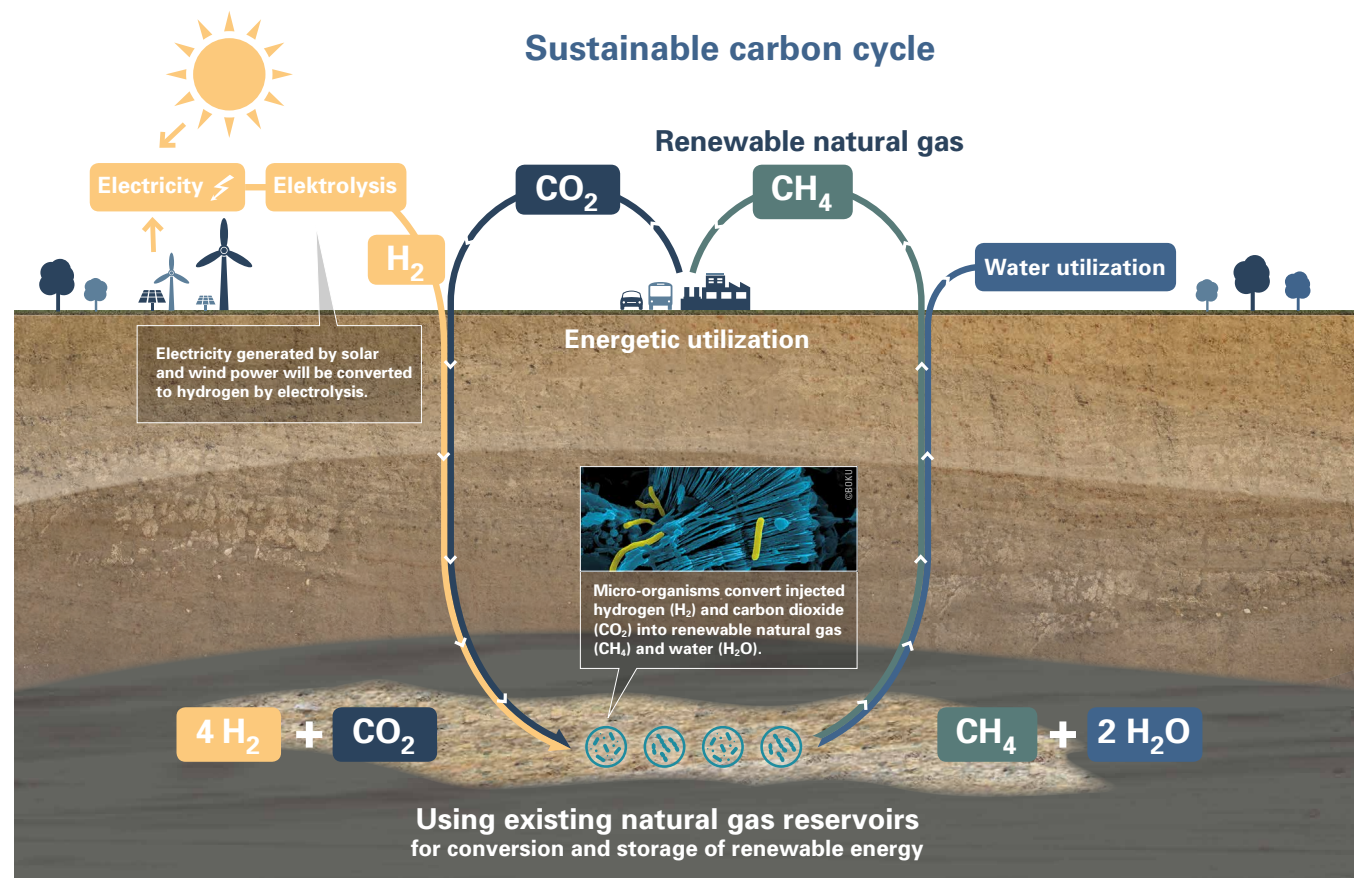
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Underground Sun Conversion – Flexible Storage

From December 2020, the “Underground Sun Conversion – Flexible Storage” (USC-FlexStore) project will investigate seasonal storage of large quantities of renewable energy to be made available year round. This innovative international project is aimed at developing a seasonal, high-volume transformation and storage solution for erratic renewable generation. Energy will be stored safely in gaseous form in underground facilities at depths of over 1,000 metres. The aim of the project is to take RAG Austria AG’s patented “Underground Sun Conversion” (USC) technology (which involves methanation of CO₂ and green H₂) to the next level, and to design services based on it. Field tests are planned at RAG’s research facility in Pilsbach (Upper Austria).



Project information

This project is based on the “Underground Sun Conversion” (USC) technology developed by RAG Austria AG in collaboration with the University of Natural Resources and Applied Life Sciences, Vienna (BOKU), and represents the next step in implementing this new, innovative and unique storage technology.

“Underground Sun Conversion” involves injecting CO₂ and H₂ into a porous underground gas storage facility (a depleted gas reservoir), where microbial methanation has been found to occur, meaning the biological conversion of CO₂ and H₂ to methane, the main component of natural gas. This storage technology which is based on renewable gas enables seasonal storage of large volumes of energy,

which will not only enhance the stability of European energy networks and energy supply, but is also essential for ensuring that the continent’s energy mix includes a higher proportion of (gaseous) renewables.

The project will provide a first estimation of the potential for geological storage of energy in Switzerland using the „USC FlexStore“ approach. This process serves as a blueprint for future expansion to other regions around the world, and in turn as a model for the internationalisation of the concept.