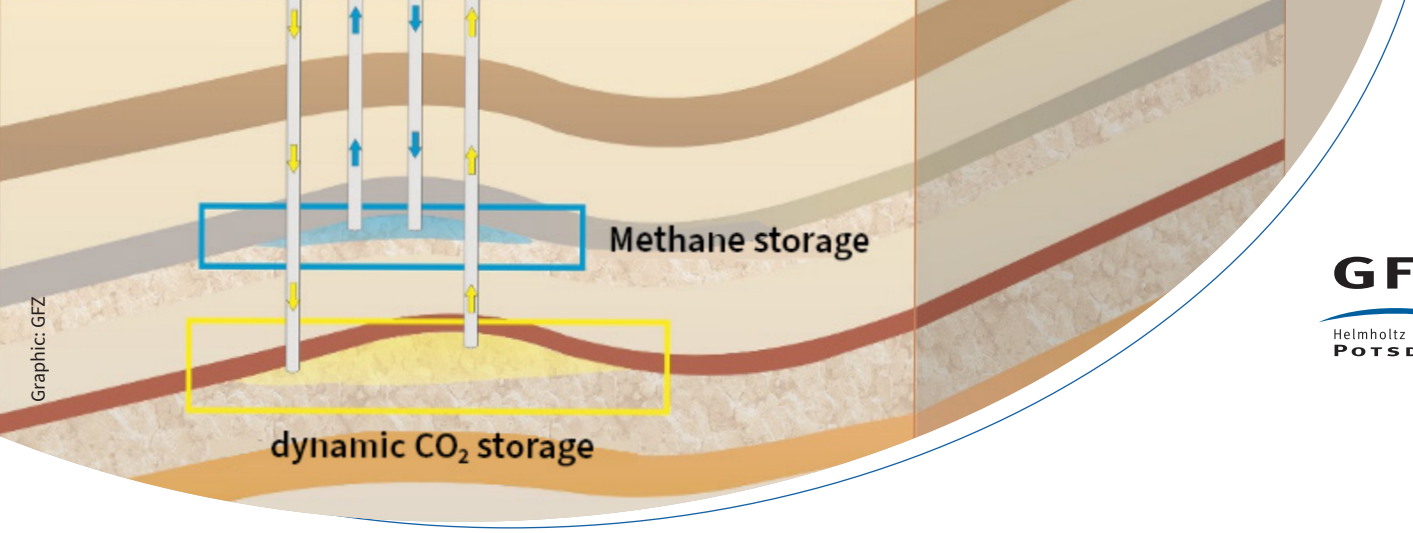

Graphic: GFZ

GFZ Helmholtz Centre Potsdam

TECHNOLOGY OFFER

Power-to-Gas-to-Power

Geological storage of surplus electricity as synthetic methane

In order to balance out fluctuations in the feed-in of renewable energies and to be able to fully utilize the potential of wind power and photovoltaics, the development of tailor-made local energy storage technologies for different temporal and spatial scales is necessary. In order to balance out seasonal fluctuations, the conversion of renewable electrical (surplus) energy into the material energy carriers hydrogen and/or methane with subsequent storage in geological units is particularly suitable.

The system proposed here is aimed at the extraction, storage and conversion of energy with the purpose of providing electrical energy as needed. The specific feature is that renewable energy (wind, sun) is intended as the primary source.

The concept uses surplus energy to electrolytically generate hydrogen, which is methanized with CO_2 from a geological storage facility and stored in a second storage facility. If applicable, the methane is used in a combined cycle power plant, which separates the CO_2 and stores it again.

Unique selling points

- can be implemented promptly
- closed carbon cycle
- sufficient underground storage potential is available
- contributes to delocalization and thus to the controllability of power generation with regard to the smart grid
- uses established power plant technology to convert methane back into electricity
- also profitable for smaller municipal utilities
- patented technology

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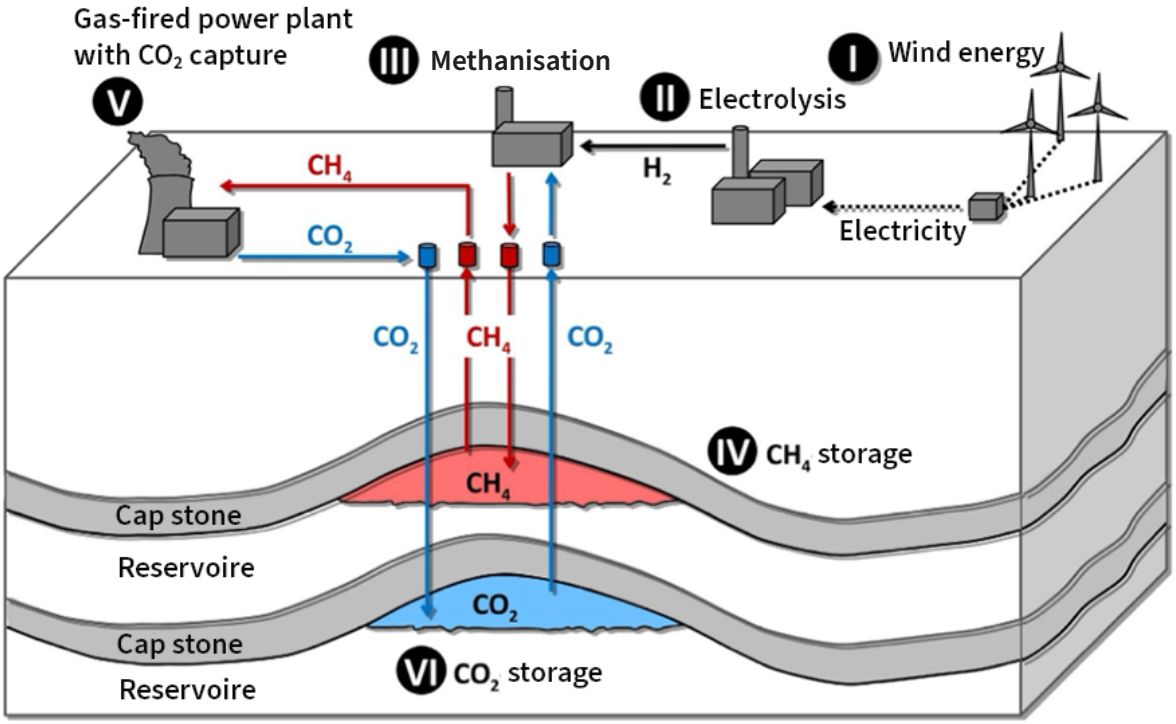

Image: GFZ

Users / customers

Suitable for industrial customers with (intended) presence in the relevant markets. We are particularly looking for partners who want to test and use the technology in practice in cooperation with the GFZ.

Development status

The concept has been completed and also has been tested in stages. The GFZ can provide technical support for further testing in practice. There is a granted German patent (DE 10 2012 103458 B4) with a maximum term until 2032.

Offer

Licensing of the technology to interested companies. A cooperation with a practical partner to set up a pilot plant is also possible.

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