HyCARE

Hydrogen Storage Tank

The HyCARE project aims at developing and testing a hydrogen storage tank with use of a solid-state hydrogen carrier in large scale.

The tank is based on an innovative concept that couples hydrogen and heat storage for stationary storage of excess renewable energy.

HyCARE

Hydrogen Carrier for Renewable Energy Storage

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Helmholtz-Zentrum Geesthacht Centre for Materials and Coastal Research
Germany

Institute for Energy Technology
Norway

HyCARE

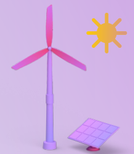
Hydrogen Carrier for Renewable Energy Storage

Download the app Artivive to see the picture in augmented reality

This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No 826352. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation program, from Hydrogen Europe and Hydrogen Research Europe.

The HyCARE concept is based on four key elements

HyCARE

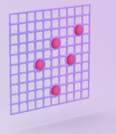


RENEWABLE ENERGY

wind, solar and hydroelectric energy to be used as alternative sources for carbon-free energy systems

HYDROGEN

an energy carrier produced from other energy sources for long-term storage of renewable energy



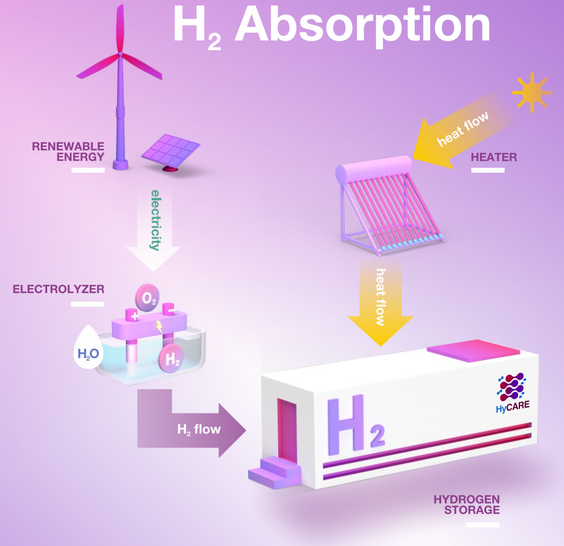
METAL HYDRIDE

for absorbing and releasing hydrogen under moderate pressure and temperature

PHASE CHANGING MATERIAL

for managing heat due to hydrogen absorption and desorption in metal hydrides

H_2 Absorption

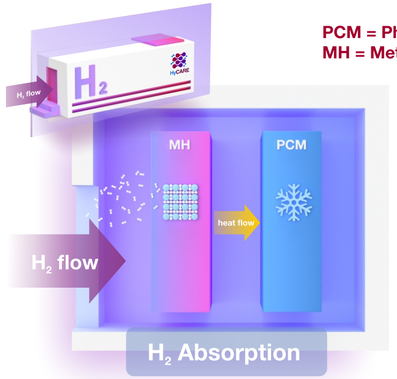


Concept

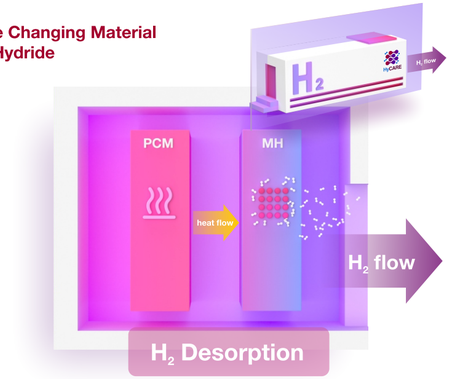
Hydrogen storage

HyCARE will be integrated to renewable energy, a PEM electrolyzer and a PEM fuel cell.

The tank will be installed in the site of ENGIE Lab CRIGEN.



PCM = Phase Changing Material
MH = Metal Hydride



https://hycare-project.eu/

HyCARE

Quantity	Safety	Safety	Efficiency
50 kgH_2	< 30 bar	< 70 °C	< 70 %
High quantity of stored hydrogen	Low pressure storage	Low temperature storage	Total round trip energy efficiency

Environmental impact	Cost
< 5.0 kWh/kg H_2	Lower
External energy source with innovative design for large scale storage and use of non-critical raw materials	Activation time material degradation need of purification system

H_2 Desorption