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

The HyCARE project aims at designing, 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 the excess renewable energy.

The HyCARE concept is based on four key elements:

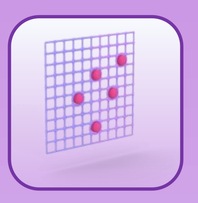
RENEWABLE ENERGY

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 MATERIALS

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

Erika M. Dematteis, Jussara Barale, Paola Rizzi, Marcello Baricco, Camel Makhloufi, Nils Bornemann, Bettina Neumann, Carlo Luetto, Holger Stühff, Matteo Testi, Chiara Pellegrini, Luigi Crema, Giovanni Capurso, Klaus Taube, Bjorn Hauback, Monica Risso, Sabina Fiorot, Davide Damosso, Fermin Cuevas, Michel Latroche

HyCARE

Hydrogen CArrier for Renewable Energy storage

to demonstrate on a large scale hydrogen capacity to harness power from renewable and support its integration into the energy system

We care about:

- Clean Transport
- Green H_2 Production
- Heat & Electricity Production
- H_2 Storage for Grid Balancing
- Low Critical Raw Materials

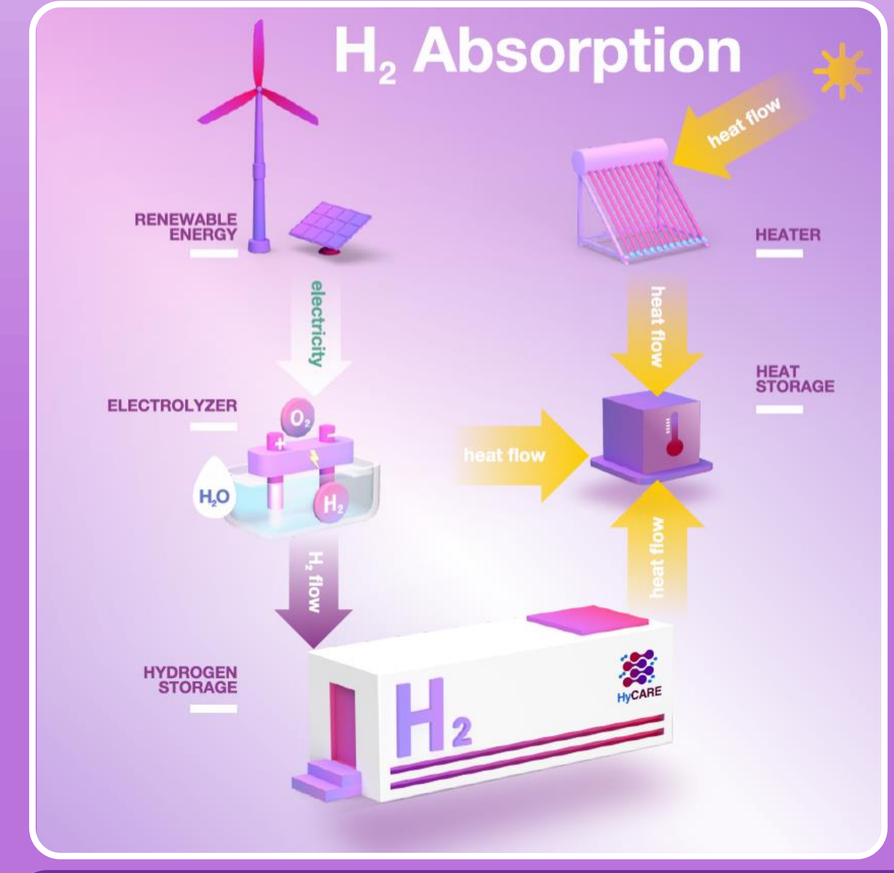
http://hycare-project.eu

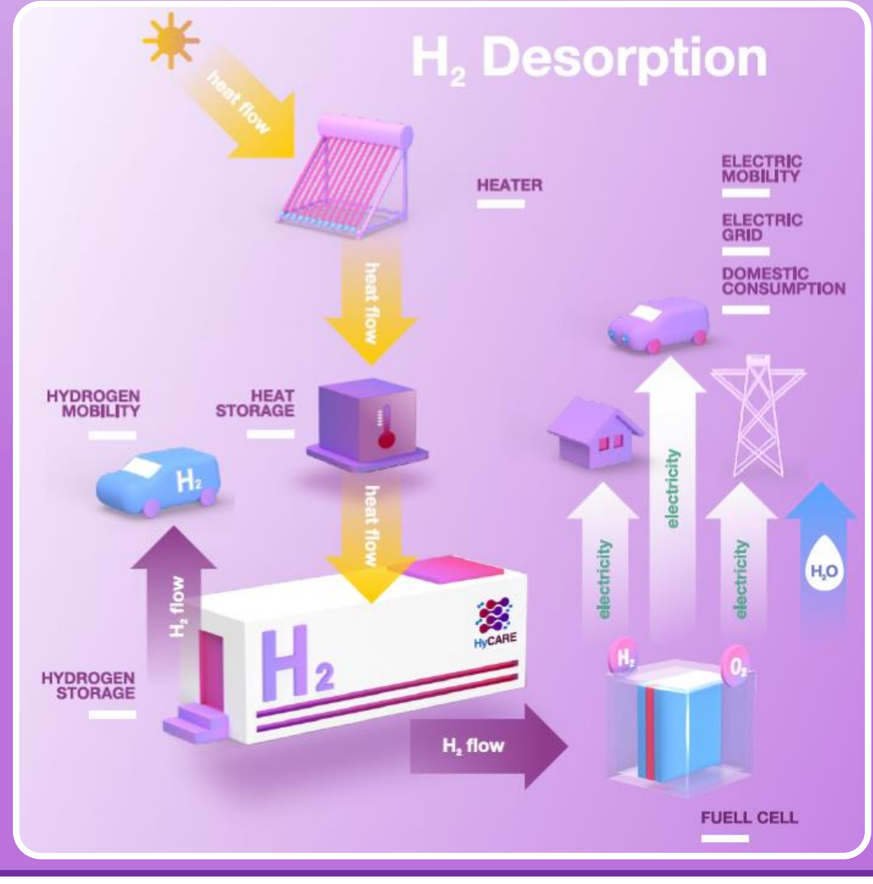
Follow Us!

The tank will be installed in the site of ENGIE Lab CRIGEN in 2021

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

Quantity	Safety		Efficiency	Environmental Impact	Cost
50 kg H_2	**<50** bar	**<100** °C	**70** %	**5.0** kWh/kg H_2	**Lower**
High quantity Of stored hydrogen	Low pressure storage	Low temperature storage	Total round trip energy efficiency	External energy source with innovative design for large scale storage, and use of non critical raw material	Activation time, material degradation, need of purification system

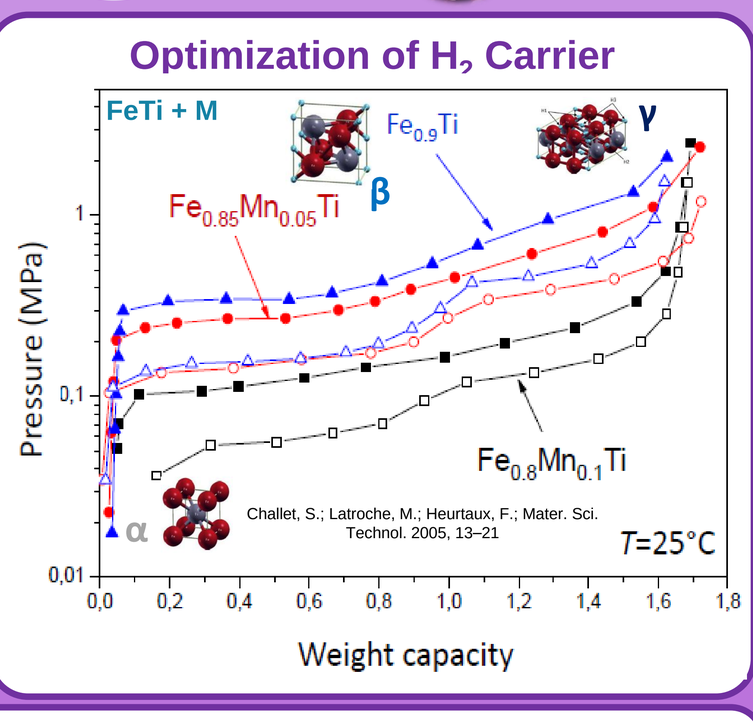




FeTi-type alloy

Organic PCM

Optimization of H_2 Carrier



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