

EDEN

High Energy Density Mg-Based metal hydrides storage system

Duration:

From 01/10/2012 to 30/09/2015

Application Area:

Hydrogen Production, Distribution and Storage

Budget:

Total budget: 2.653.574,00 €

Requested EC Contribution: 1.524.900,00 €

Partnership / consortium list:

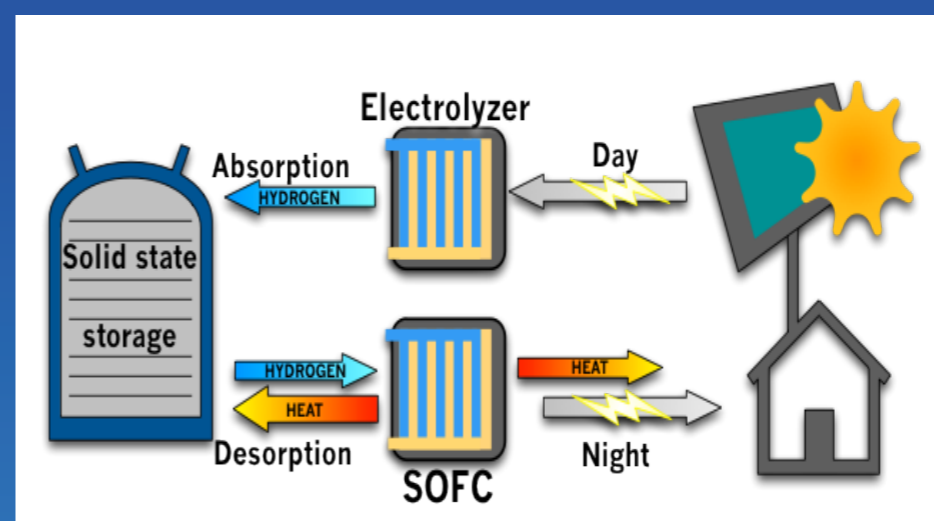
Fondazione Bruno Kessler, project coordinator (ITALY), MBN Nanomaterialia SpA (ITALY), Cidete Ingenieros SL (SPAIN), MATRES Scrl (ITALY), PANCO GmbH (GERMANY), Universidad de la Laguna (SPAIN), Joint Research Centre – Institute for Energy and Transport (NETHERLANDS)

Summary / main objectives of the project:

HyTransfer aims to develop and experimentally validate a practical approach for optimizing means of temperature control during fast transfers of compressed hydrogen to meet the specified temperature limit (gas or material) taking into account the container and system's thermal behaviour. This project aims to create conditions for an uptake of the approach by international standards, for wide-scale implementation into refuelling protocols.

Technical accomplishment / progress / result

- 1 – Development of simple thermodynamic model
- 2 – Experimental validation
- 3 – Techno-economic Analysis
- 4 – Recommendations for Regulations, Codes and Standards



Contribution to the Programme Objectives:

	OBJECTIVES OF THE CALL	OBJECTIVES OF THE PROJECT	CURRENT STATUS
Hydrogen storage capacity	>6% w	>6% w	6,8% w
System storage capacity	>4% w	4% w	N/A (test not finalized)
Compatibility with FC systems	Any FC	SOFC	confirmed
Long term run cost	<500€/kg	300€/kg	N/A (test not finalized)

Conclusions, major findings and perspectives:

The new approach to be developed within HyTransfer will allow a hydrogen station to directly and accurately calculate an end-of-fill temperature in a hydrogen tank and thereby maximize the fill quantity and minimize the refuelling time

Future Steps:

- 1 – Finalize the design and realization of the TANK
- 2 – Obtain catalyst addition on MgH₂ powders directly with PVD deposition technique to enhance reaction kinetics
- 3 – Design thermal and hydrogen management for TANK - SOFC coupling
- 4 – Realize the full system and run demonstration activities