



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project EDEN

High energy density Mg-Based metal hydrides storage system

EDen aims at building a forefront scientific, technological and industrial expertise in energy storage and recovery system. In the past years hydrogen has been indicated as an advantageous energy carrier under many points of view, mainly environment preservation and high energy density. The necessity of hydrogen on specific mobile applications and energy backup system is promoted by the growing demand of sustainable solutions and the interface of discontinuous renewable energies. Hydrogen storage is well known to be the major bottleneck for the use of H<sub>2</sub> as energy carrier and despite the huge scientific and industrial effort [fig.1] in developing a novel practical solution for the hydrogen storage, actually there are few storage systems available for nice markets. The request for energy storage systems is growing as fast as the energy availability from renewable sources, consequently the market is demanding for more performing systems, safer and economic. It is emerged from the past EU projects (STORHY, NESSHY, COSY, NANOHY, FLYHY) that the hydrogen storage in solid state is the better solution to seek. Between the materials studied for solid state hydrogen storage, Magnesium based systems represent nowadays the major candidate able to meet the industrial storage targets: they have proper gravimetric and energetic density (typical >7 wt.%,  $\geq 100$  kg H<sub>2</sub>/m<sup>3</sup>) and suitable charging and discharging time and pressure. The main barrier to the wide use of the Magnesium based materials in hydrogen storage system is represented by two limitations: the working temperature of about 300°C and the high heat of reaction, around 10Wh/g. More specifically, EDen project aims to overtake these limitations by developing and realising an efficient hydrogen storage system that brings together available solutions from the market, the results of the EU projects on hydrogen storage and the development of novel solution for the storing material.

## Project Information

**Type of project :** Research

**Timing :** 01/10/2012 > 30/06/2016

**Project website:** <http://www.h2eden.eu/>

**Project Budget :** 2.653.574 €

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## Funding

European Union through FCH JU: Grant agreement 303472 - [CORDIS link](#)

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## Project partners

**Coordinator :**

**FBK - Fondazione Bruno Kessler**

MBN NANOMATERIALIA SPA

CIDETE INGENIEROS SL

MATRESSCRL

PANCO - PHYSIKALISCHE TECHNIK ANLAGENENTWICKLUNG & CONSULTING GMBH

UNIVERSIDAD DE LA LAGUNA

JRC - JOINT RESEARCH CENTRE - EUROPEAN COMMISSION

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**Sub project(s)**

**Sub project 1**

**Country:** Italy

**Address:**

VIA SANTA CROCE 77 38122 TRENTO

**Sub project categories**

Research

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Project Id: 953

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