



Green Hydrogen from Sunshine

Hydrogen **PRO**duction by **ME**ans of solar heat and power in high **TE**perature Solid **O**xide Electrolysers



Consortium

The project PROMETEO is the result of the cooperation among a number of international partners operating in the hydrogen sector. The Consortium pools a set of complementary knowledge and expertise along the hydrogen value chain, including R&D, technological innovation and industry know-how.

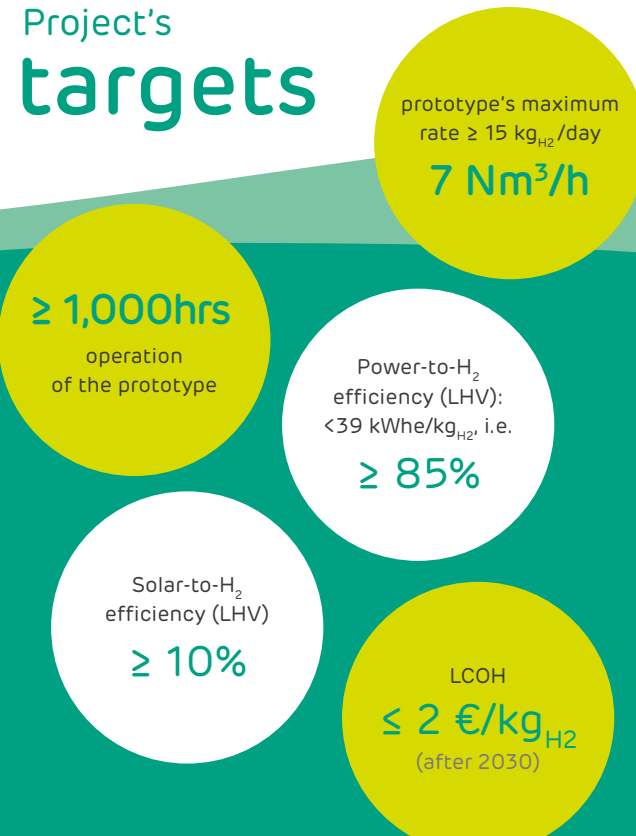


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PROMETEO is a European Horizon 2020 project that aims to design, construct and test an **innovative prototype** to produce renewable hydrogen from **solar power**.

PROMETEO's prototype is based on high-temperature solid oxide electrolysis (SOE) coupled with an innovative solar heat storage system. The storage system will optimize the use of intermittent solar heat in hydrogen production.

Project's targets



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PROMETEO project's timeline



1 Solid Oxide Electrolyser stack

Starting point: Solid Oxide Electrolyser (SOE), i.e. an advanced electrolysis system with high efficiency, fed with steam and operating at high temperatures (>750°C). The SOE was supplied by the partner SolydEra SA and is the basic component of the prototype.

2 Analysis of end-users' cases

Potential end-users of PROMETEO's technology steer the R&D activities to find appropriate and effective solutions to end-users' applications:

- chemical storage of renewable electricity by Capital Energy,
- green hydrogen in chemical industries, such as ammonia and fertilisers production, by Stamicarbon,
- injection of green hydrogen into the gas grid, by Snam.

3 Flow-sheeting & modelling

PROMETEO analyses the most appropriate manner to integrate the SOE stack with the Balance of Plant (BoP) and Renewable Heat & Power Supply Systems to meet end-users' needs.

4 Lab validation of components

The key components of the prototype are

- the SOE stack,
- the heat storage system (TES) with the steam generator,
- and the BoP units.

Components are individually tested and validated in the laboratories before their integration in the prototype.

5 Design

A fully-integrated pilot unit is designed. This system will include a 25 kW SOE and will produce 15 kg/day of hydrogen.

6 Construction

The pilot unit is assembled, delivered to demo site in Spain and connected with renewable heat & power sources.

7 PROMETEO Concept

The pilot unit is tested for at least 1,000 hours to validate its performances under representative conditions.

8 Assessment

The final configuration of the system and test results are used to assess effective achievement of end-users' needs of modular scale-up systems for commercial exploitation.

Discover the prototype:
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