What is distecH$_2$?

DisTecH$_2$ is an innovative and ambitious project seeking to revolutionise green hydrogen production by developing **artificial photosynthesis technology**. DisTecH2 doesn't just improve upon conventional electrolysis; rather, it proposes a disruptive approach: a modular photoelectrolyser that directly uses sunlight to generate **green hydrogen without the need for external electricity.**

Did you know...

Green hydrogen is crucial for energy and decarbonisation independence, but its current production via electrolysis requires electricity, making the process expensive. DisTecH2 proposes using a modular **photoelectrolyser** that uses direct sunlight to **produce hydrogen more efficiently and sustainably.**

OBJECTIVES

INNOVATION

DEVELOP AND OPTIMISE new photoelectrocatalytic materials to improve efficiency and reduce costs.

PRODUCTION

BUILD A QUASI-SOLID-STATE MODULAR PHOTOELECTROLYSER, operating in continuous flow with direct solar capture.

ELECTRICITY PRODUCTION

Implement a system that combines a **PHOTOELECTROLYTIC CELL (PEC) + SOLID OXIDE FUEL CELL (SOFC),** using the generated hydrogen to produce electricity efficiently.

METHODOLOGY & ACTIVITIES

The **DisTecH$_2$** project is grounded in an innovative and multidisciplinary methodology, designed to overcome the current challenges in green hydrogen production. DisTecH$_2$ proposes the development of a cutting-edge **modular photoelectrolyser**, capable of generating **green hydrogen without electrical consumption.**

DEVELOPMENT OF ADVANCED MATERIALS

Optimisation of photoelectrocatalysts based on Earth-abundant elements.

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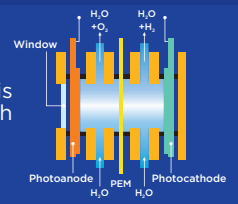
DESIGN OF THE MODULAR PHOTOELECTROLYSER

Implementation of a solar photoelectrolysis system operating in continuous flow with ion-exchange membranes.



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CONSTRUCTION AND VALIDATION OF A PEC PANEL PROTOTYPE

Assembly of unit cells into a solar hydrogen production prototype.

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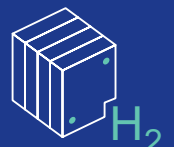
INTEGRATION WITH A SOLID OXIDE FUEL CELL (SOFC)

Evaluation of a hybrid system to convert green hydrogen into clean and continuous electricity.



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IMPACT AND ECONOMIC FEASIBILITY ASSESSMENT

Cost, efficiency, and carbon footprint analysis of the developed system.

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IMPACT & BENEFITS

ENVIRONMENTAL

- Reduction of **CO_2** emissions
- Use of **sustainable materials**
- **Optimisation of water consumption** in hydrogen production

ECONOMIC

- **Lowering the cost of green hydrogen** (<2 euros/kg)
- Reducing energy dependence, promoting **decentralised self-generation**
- Potential for **industrialisation and commercialisation**

SOCIAL

- **Job creation** in key sectors such as **energy, engineering, and R&D**
- **Training and capacity-building** in hydrogen technologies
- **Contribution to a just energy transition** within the EU.