



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project GrInHy2.0

Green Industrial Hydrogen via steam electrolysis

The European Commission and its roadmap for moving towards a competitive low-carbon economy in 2050 sets greenhouse gas emissions targets for different economic sectors. One of the main challenges of transforming Europe's economy will be the integration of highly volatile renewable energy sources (RES). Especially hydrogen produced from RES will have a major part in decarbonizing the industry, transport and energy sector – as feedstock, fuel and/or energy storage. However, access to renewable electricity will also be a limiting factor in the future and energy efficient technologies the key. Due to a significant energy input in form of steam preferably from industrial waste heat, Steam Electrolysis (StE) based on Solid Oxide Electrolysis Cells (SOEC) achieves outstanding electrical efficiencies of up to 84 %el,LHV. Thus, StE is a very promising technology to produce hydrogen most energy efficiently. GrInHy2.0 will demonstrate how steam electrolysis in an industrial relevant size can: • Be integrated into the industrial environment at an integrated iron-and-steel works with a StE unit of 720 kWAC and electrical efficiency of up to 84 %el, LHV • Operate at least 13,000 hours with a proved availability of >95 % • Provide a significant amount of hydrogen (18 kg/h) while meeting the high-quality standards for steel annealing processes • Produce at least 100 tons of green hydrogen at a targeted price of 7 €/kg to substitute hydrogen based on fossil fuels • Support the most promising Carbon Direct Avoidance (CDA) approach by substituting the reducing agent carbon by green hydrogen to reduce carbon dioxide emissions in the steel production In context with the production of green hydrogen from a steam electrolyser, the steel industry combines both hydrogen and oxygen demand – today and future – and the availability of cost-efficient waste heat from its high-temperature production processes.

## Project Information

**Type of project :** Demonstration

**Timing :** 01/01/2019 > 31/12/2022

**Project website:** <http://www.green-industrial-hydrogen.com/home/>

**Project Budget :** 5.882.492 €

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## Funding

European Union through FCH JU: Grant agreement 826350 - [CORDIS link](#)

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## Project partners

**Coordinator :**

[CEA - Commissariat à l'énergie atomique et aux énergies alternatives](#)

**Partners :**

[PAUL WURTH S.A.](#)

[Salzgitter Flachstahl GmbH](#)

[Sunfire](#)

[TENOVASPA](#)

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**Sub project(s)**

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