

I progetti a partecipazione ENEA finanziati dalla UE

PROMETEO

Hydrogen PROduction by MEans of solar heat and power in high TEmperature Solid Oxide Electrolysers

Dati progetto

Coordinatore:

ENEA - Italia

Responsabile ENEA:

GIACONIA ALBERTO TERIN-STSN

Sito WEB:

<https://prometeo-project.eu/>

Descrizione:

PROMETEO aims at producing green hydrogen from renewable heat & power sources by high temperature electrolysis in areas of low electricity prices associated to photovoltaic or wind.

Solid Oxide Electrolysis (SOE) is a highly efficient technology to convert heat & power into hydrogen from water usually validated in steady-state operation. However, the heat for the steam generation may not be available for the operation of the SOE when inexpensive power is offered (e.g. off-grid peak, photovoltaics or wind). Thus, the challenge is to optimize the coupling of the SOE with two intermittent sources: non-programmable renewable electricity and high-temperature solar heat from Concentrating Solar (CS) systems with Thermal Energy Storage (TES) to supply solar heat when power is made available.

In PROMETEO a fully integrated optimized system will be developed, where the SOE combined with the TES and ancillary components will efficiently convert intermittent heat & power sources to hydrogen. The design will satisfy different criteria: end-users' needs, sustainability aspects, regulatory & safety concerns, scale-up and engineering issues.

The players of the value-chain will play key roles in the partnership created around the project: from developers and research organizations, to the electrolyzer supplier, system integrator/engineering and end-users.

A fully-equipped modular prototype with at least 25 kWe SOE (about 15 kg/day hydrogen production) and TES (for 24 hours operation) will be designed, built, connected to representative external power/heat sources and validated in real context (TRL 5). Particular attention will be given to partial load operation, transients and hot stand-by periods.

Industrial end-users will lead to techno-economic & sustainability studies to apply the technology upscaled (up to 100 MW) in on-grid & off-grid scenarios for different end-uses: utility for grid balancing, power-to-gas, and hydrogen as feedstock for the fertilizer & chemical industry.

Attività svolta da ENEA:

L'ENEA assume il triplice ruolo di coordinatore del progetto/consorzio, coordinatore tecnico di un Work Package e di sviluppatore de

Programma Quadro:

HORIZON 2020

Programma UE:

JTI - Hydrogen

Tipo di progetto:

Partner del progetto

	Ruolo	Tipologia	Nome	Nazione
1	---	IND	SOLIDPOWER SPA	Italia
2	---	IND	SNAM	Italia
3	---	IND	NEXTCHEM SRL	Italia
4	---	RIC	FONDAZIONE BRUNO KESSLER	Italia
5	COORD	RIC	ENEA	Italia
6	---	SOC. CONSUL.	STAMICARBON B.V.	Paesi Bassi
7	---	IND	CAPITAL ENERGY S.L.	Spagna
8	---	RIC	FUNDACION IMDEA ALIMENTACION	Spagna
9	---	EDU	ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE	Svizzera

Keyword

Keyword associate al progetto dal database di CORDIS

HYDROGEN AND FUEL CELLS

RENEWABLE SOURCES OF ENERGY

Altre Keyword non presenti nel database di CORDIS

Altri indici non disponibili