Horizont Európa
Tiszta Hidrogén Partnerség
információs rendezvény

Nemzeti Kutatási, Fejlesztési és Innovációs Hivatal

Budapest, 2022. március 29.

Clean Hydrogen Partnership

Technikai tudnivalók

1. Tájékoztatjuk Önöket, hogy a webinárium rögzítésre kerül.
2. Lehetőség szerint tüntessék fel nevükben az intézményt, amit képviselnek. Pl. Küttel Orsolya, NKFIH
3. Kérdéseiket várjuk a chat ablakban, illetve a Q&A szekcióban szóban, kézfeltétel opcióval előre jelezve.
4. Az idő hiányában meg nem válaszolt kérdésekre az előadást követően írásban válaszolunk.
5. Az előadások diái elérhetőek lesznek az NKFIH honlapján, és az előadások is visszanézhetők lesznek.
6. A rendezvényt követően egyéni konzultációs lehetőséget biztosítunk az érdeklődőknek.

Webinárium programja

10:00 – 10:10 Bevezető gondolatok,

Csuzdi Szonja, főosztályvezető, Nemzetközi Főosztály, NKFI Hivatal

10:10 – 10:30 Introduction of Clean Hydrogen Partnership,

Dionisis Tsimis, Project Officer, Clean Hydrogen Partnership

10:30 – 10:50 Introduction of Hydrogen Europe,

Michael Diderich, Innovation Director, Hydrogen Europe

10:50 – 11:10 European Green Hydrogen Accelerator, Business Investment Platform.

Dervalics Ákos country manager, EIT InnoEnergy

11:10 – 11:30 Az EU-s szakpolitikai háttér bemutatása,

Boldizsár Dóra, Express Innovation Agency

11:30 – 11:50 A hazai szakpolitikai háttér bemutatása, Horváth Viktor, főosztályvezető, Stratégiai Tervezési és Programozási Főosztály, Innovációs és Technológiai Minisztérium

11:50 – 12:30 Tiszta Hidrogén Partnerség – pályázati felhívások bemutatása,

Palotai Zoltán, Express Innovation Agency

12:30 – 12:50 Jó gyakorlat bemutatása,

Tompos András, elnök, Magyar Hidrogén és Tüzelőanyag-cella Egyesület

12:50 – 13:00 Q&A

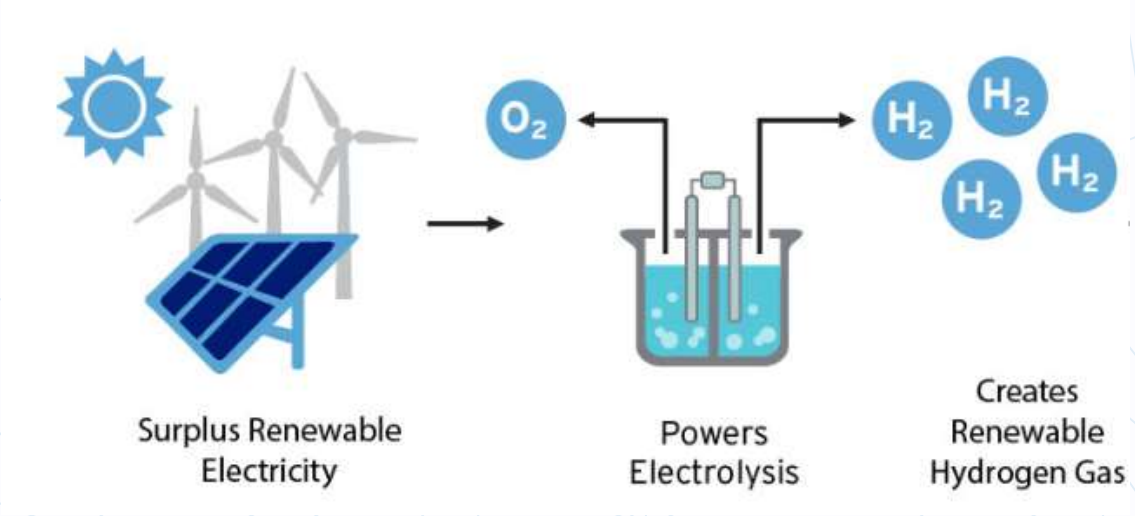
Tiszta Hidrogén Partnerség
- pályázati felhívások 2022 -

Tématerületek

41 topics

- Renewable Hydrogen Production - 10 topics
- Hydrogen Storage and Distribution - 11 topics
- H2 for Transport - 8 topics
- H2 for Heat and Power - 4 topics
- Cross-cutting issues - 5 topics
- Hydrogen Valleys - 2 topics
- Strategic Research Challenge - 1 topic

Renewable Hydrogen Production



Renewable Hydrogen Production

TOPIC	TOPIC TITLE	TYPE OF ACTION	BUDGET (EUR)	PROJECTS FUNDED	TRL	DEADLINE
HORIZON-JTI-CLEANH2-2022-01-01	Development and validation of pressurised high temperature steam electrolysis stacks (Solid Oxide Electrolysis)	RIA	2.5 million	1	TRL4	31 May 2022
HORIZON-JTI-CLEANH2-2022-01-02	Development and validation of pressurised high temperature steam electrolysis stacks (Proton Conducting Ceramic Electrolysis)	RIA	2.5 million	1	TRL4	31 May 2022
HORIZON-JTI-CLEANH2-2022-01-03	Development of low temperature water electrolysers for highly pressurised hydrogen production	RIA	5 million	2	TRL6	31 May 2022
HORIZON-JTI-CLEANH2-2022-01-04	Design for advanced and scalable manufacturing of electrolysers	RIA	4 million	2	MRL5	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-01-05	Scaling up of cells and stacks for large electrolysers	RIA	6 million	1	TRL5	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-01-06	Efficiency boost of solar thermochemical water splitting	RIA	4 million	1	TRL6	31 May 2022
HORIZON-JTI-CLEANH2-2022-01-07	Bringing renewable hydrogen MW scale off grid installations closer to technical and financial maturity	IA	9 million	1	TRL7	31 May 2022
HORIZON-JTI-CLEANH2-2022-01-08	Integration of multi-MW electrolysers in industrial applications	IA	18 million	1	TRL8	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-01-09	Scaling-up technologies for SOEL	RIA	6 million	2	TRL6	31 May 2022
HORIZON-JTI-CLEANH2-2022-01-10	Demonstrating offshore production of renewable hydrogen	IA	20 million	1	TRL7	20 Sept. 2022

Renewable Hydrogen Production

HORIZON-JTI-CLEANH2-2022-01-01: Development and validation of pressurised high temperature steam electrolysis stacks (Solid Oxide Electrolysis)

- Type of Action: RIA
- Overall budget: 2.5 million
- Projects to be funded: 1 project
- TRL to be achieved TRL: TRL4
- Deadline: 31 May 2022

Game changer SOELs

Proposals for this topic should set out a credible pathway to contribute to the development and validation of pressurised SOEL with technological breakthroughs aiming at designing and operating a stack at an optimal pressure with eventual assistance of a downstream compression process to reach higher delivery pressure.

HORIZON-JTI-CLEANH2-2022-01-02: Development and validation of pressurised high temperature steam electrolysis stacks (Proton Conducting Ceramic Electrolysis)

- Type of Action: RIA
- Overall budget: 2.5 million
- Projects to be funded: 1 project
- TRL to be achieved TRL: TRL4
- Deadline: 31 May 2022

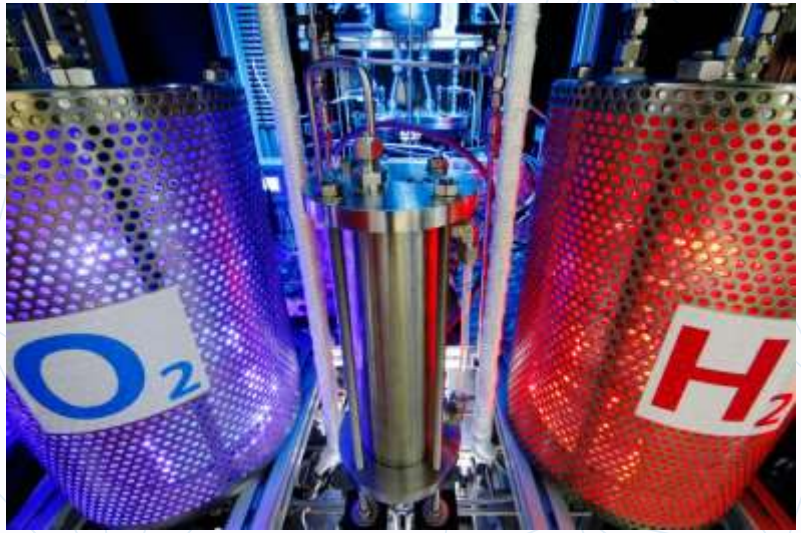
Game changer PCCELs

The project outcomes will pave the way for the deployment of pressurised hydrogen production units based on proton conducting electrolyte to accelerate uptake in one or more applications (for example: injection into the gas grid, onsite production at HRS, feedstock for industry, such as steel plants, refineries, chemical plants).

Renewable Hydrogen Production

HORIZON-JTI-CLEANH2-2022-01-03: Development of low temperature water electrolysers for highly pressurised hydrogen production

- Type of Action: RIA
- Overall budget: 5 million
- Projects to be funded: 2 projects
- TRL to be achieved : TRL6
- Deadline: 31 May 2022



LTELs for gas grid injection and avoidance of mechanical compressors

The scope of this project is to develop the next generation of water electrolysers (PEMEL or AEMEL) operating below 150 ºC for pressurised hydrogen production at the pressure of minimum 50 bar for AEL and AEMEL and 80 bar for PEMEL further advancing innovations developed in projects59 like NEPTUNE and PRETZEL

Renewable Hydrogen Production

HORIZON-JTI-CLEANH2-2022-01-04: Design for advanced and scalable manufacturing of electrolysers

- Type of Action: RIA
- Overall budget: 4 million
- Projects to be funded: 2 projects
- TRL to be achieved: MRL5
- Deadline: 20 Sept. 2022

Targets:

- Novel component(s) or manufacturing process(es) integrated in a demonstrator stack.
- New surface coating technologies and advanced manufacturing processes (e.g., 3D printing).
- Improvement of manufacturing throughput and level of automation to produce a stack, reduced manufacturing times and costs.

HORIZON-JTI-CLEANH2-2022-01-05: Scaling up of cells and stacks for large electrolysers

- Type of Action: RIA
- Overall budget: 6 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 20 Sept. 2022

Targets:

- Design & construct cells to test the viability of building a single 10MW stack.
- Appropriately scale-up BoP, ensure compact design, minimise weight and footprint.
- Build and test several short stacks, identifying optimal sizes for larger cells and stacks from scientific, engineering, logistics and economic perspectives.

Renewable Hydrogen Production

HORIZON-JTI-CLEANH2-2022-01-06: Efficiency boost of solar thermochemical water splitting

- Type of Action: RIA
- Overall budget: 4 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL6
- Deadline: 31 May 2022

Solar thermochemical cycles as a viable and competitive hydrogen production technology

Proposals should demonstrate on-sun operation of a prototype plant system in a relevant environment (typically between 50 and 300 kW) for at least 6 months operation time reaching average hydrogen production rates higher than 0.75 kg/year per m2 land area used.

Renewable Hydrogen Production

HORIZON-JTI-CLEANH2-2022-01-07: Bringing renewable hydrogen MW scale off grid installations closer to technical and financial maturity

- Type of Action: IA
- Overall budget: 9 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL7
- Deadline: 31 May 2022

Main objective:

To demonstrate complete value chain of off-grid hydrogen production, storage and end-use installations at MW scale

HORIZON-JTI-CLEANH2-2022-01-08: Integration of multi-MW electrolysers in industrial applications

- Type of Action: IA
- Overall budget: 18 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL8
- Deadline: 20 Sept. 2022

FLAGSHIP PROJECT

The scope of the project is to demonstrate the integration of a large-scale electrolyser of minimum 25 MW. Technical requirements in terms of purity and pressure shall be designed to fulfil the industrial requirements. At least 2 years of operation are expected. Hydrogen production should be >1,500 tonne/yr and the facility should be working more than 3,200 equivalent hours/yr at full load

Renewable Hydrogen Production

HORIZON-JTI-CLEANH2-2022-01-09: Scaling-up technologies for SOEL

- Type of Action: RIA
- Overall budget: 6 million
- Projects to be funded: 2 projects
- TRL to be achieved: TRL6
- Deadline: 31 May 2022

The proposal should focus on the scalability of cells, stacks and modules, namely in terms of design, cells and stack manufacture and their assembly into modules.

HORIZON-JTI-CLEANH2-2022-01-10: Demonstrating offshore production of renewable hydrogen

- Type of Action: IA
- Overall budget: 20 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL7
- Deadline: 20 Sept. 2022

FLAGSHIP PROJECT

Design, construct and integrate a > 5MW electrolyser in an offshore infrastructure

Re-use existing offshore electricity/oil/gas infrastructure or develop new – export wind energy as H2

Hydrogen Storage and Distribution

Hydrogen Storage and Distribution

TOPIC	TOPIC TITLE	TYPE OF ACTION	BUDGET (EUR)	PROJECTS FUNDED	TRL	DEADLINE
HORIZON-JTI-CLEANH2-2022-02-01	Compatibility of Distribution non-steel metallic gas grid materials with hydrogen	RIA	2.5 million	1	TRL5	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-02-02	Hydrogen and Hydrogen/Natural gas mixture leak detection system for continuous monitoring and safe operation of HRS and future Hydrogen/Natural gas mixture networks	RIA	2.5 million	1	TRL5	31 May 2022
HORIZON-JTI-CLEANH2-2022-02-03	Validation of a high-performance hydrogen liquefier prototype	RIA	5 million	1	TRL5	31 May 2022
HORIZON-JTI-CLEANH2-2022-02-04	Ammonia to Renewable Hydrogen: efficient system for ammonia cracking	RIA	3 million	1	TRL5	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-02-05	Efficient system for dehydrogenation of liquid organic hydrogen carriers	RIA	3 million	1	TRL5	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-02-06	Development of large scale LH2 containment for shipping	RIA	6.5 million	1	TRL5	20 Sept. 2022

Hydrogen Storage and Distribution

TOPIC	TOPIC TITLE	TYPE OF ACTION	BUDGET (EUR)	PROJECTS FUNDED	TRL	DEADLINE
HORIZON-JTI-CLEANH2-2022-02-07	Increased hydrogen capacity of GH 2 road trailers	RIA	2.5 million	1	TRL5	31 May 2022
HORIZON-JTI-CLEANH2-2022-02-08	Development of novel or hybrid concepts for reliable, high capacity and energy-efficient H2 compression systems at real-world scale	IA	5 million	1	TRL7	31 May 2022
HORIZON-JTI-CLEANH2-2022-02-09	Sampling methodology and quality assessment of HRS	RIA	4 million	1	TRL5	31 May 2022
HORIZON-JTI-CLEANH2-2022-02-10	Implementing new/optimised refuelling protocols and components for high flow HRS	RIA	8 million	2	TRL6	31 May 2022
HORIZON-JTI-CLEANH2-2022-02-11	Development and demonstration of mobile and stationary compressed hydrogen refuelling solutions for application in inland shipping and short-distance maritime operations	IA	7 million	1	TRL6	20 Sept. 2022

Hydrogen Storage and Distribution

HORIZON-JTI-CLEANH2-2022-02-01: Compatibility of Distribution non-steel metallic gas grid materials with hydrogen

- Type of Action: RIA
- Overall budget: 2.5 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 20 Sept. 2022

Targets:

- Deliver a preliminary inventory of non-steel metallic materials in the distribution grid.
- Test the effect of hydrogen and natural gas mixtures up to 20% as well as with 100% hydrogen.
- Create a database of results of gas grid metallic materials' behaviour in the presence of hydrogen.

HORIZON-JTI-CLEANH2-2022-02-02: Hydrogen and Hydrogen/Natural gas mixture leak detection system for continuous monitoring and safe operation of HRS and future Hydrogen/Natural gas mixture networks

- Type of Action: RIA
- Overall budget: 2.5 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 31 May 2022

Targets:

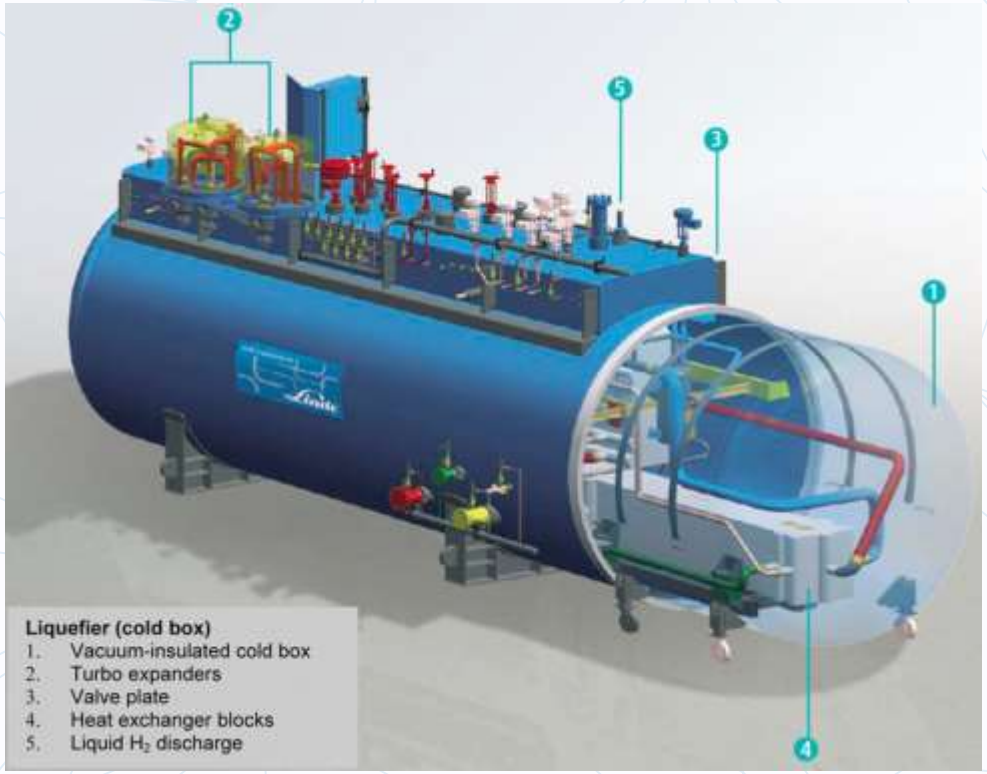
- New and optimised leak detection sensors and tools should be developed in order to enable safer storage, transport and distribution of hydrogen.
- The proposed technology should be suitable for continuous leak detection monitoring or/and periodic maintenance.
- The scope of the topic is open to any kind of sensing technology.

Hydrogen Storage and Distribution

HORIZON-JTI-CLEANH2-2022-02-03: Validation of a high-performance hydrogen liquefier prototype

- Type of Action: RIA
- Overall budget: 5 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 31 May 2022

Construction of an industrial prototype at limited scale ⟷ Evaluate the performance, durability and efficiency of the prototype



Hydrogen Storage and Distribution

HORIZON-JTI-CLEANH2-2022-02-04: Ammonia to Renewable Hydrogen: efficient system for ammonia cracking

- Type of Action: RIA
- Overall budget: 3 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 20 Sept. 2022

Develop and test an improved ammonia dehydrogenation system

Work should focus around the catalyst and reactor of the dehydrogenation unit.

HORIZON-JTI-CLEANH2-2022-02-05: Efficient system for dehydrogenation of liquid organic hydrogen carriers

- Type of Action: RIA
- Overall budget: 3 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 20 Sept. 2022

Develop and test an improved LOHC dehydro-genation system

Hydrogen Storage and Distribution

HORIZON-JTI-CLEANH2-2022-02-06: Development of large scale LH2 containment for shipping

- Type of Action: RIA
- Overall budget: 6.5 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 20 Sept. 2022

Main objective:

To develop and validate containment concepts intended for the bulk shipping of liquid hydrogen.

HORIZON-JTI-CLEANH2-2022-02-07: Increased hydrogen capacity of GH2 road trailers

- Type of Action: RIA
- Overall budget: 2.5 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 31 May 2022

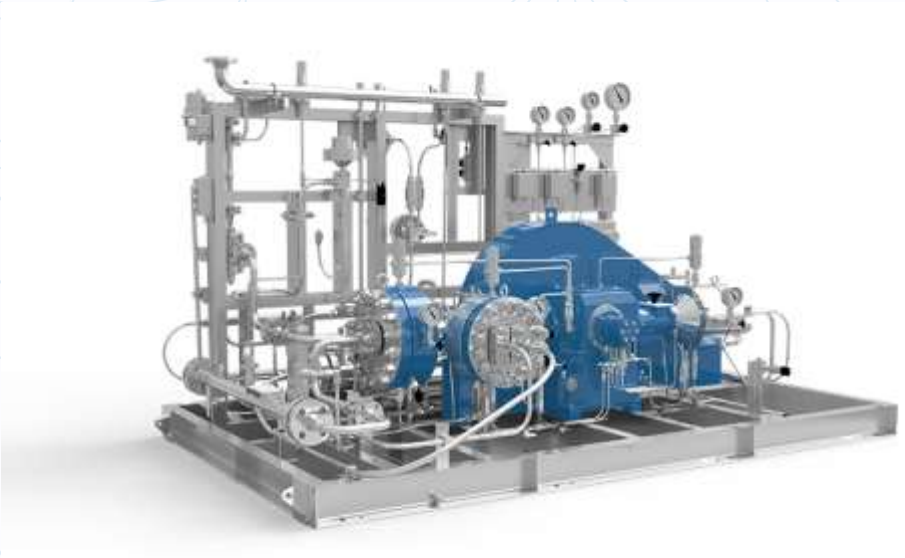
To develop and validate a solution with a minimum payload of 1.2 tonne of compressed hydrogen above 500 bar by end of the project.

Hydrogen Storage and Distribution

HORIZON-JTI-CLEANH2-2022-02-08: Development of novel or hybrid concepts for reliable, high capacity and energy-efficient H2 compression systems at real-world scale

- Type of Action: IA
- Overall budget: 5 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL7
- Deadline: 31 May 2022

To develop and validate a solution with a minimum payload of 1.2 tonne of compressed hydrogen above 500 bar by end of the project.



HORIZON-JTI-CLEANH2-2022-02-09: Sampling methodology and quality assessment of HRS

- Type of Action: RIA
- Overall budget: 4 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 31 May 2022

- Ensure that the hydrogen quality can be accurately measured according to the standards.
- Validate the capability of at least 5 EU based hydrogen purity laboratories, for both sampling as well as analysing hydrogen according to the applicable standards
- A publicly accessible hydrogen quality database representing the hydrogen quality supplied in the EU should be established.

Hydrogen Storage and Distribution

HORIZON-JTI-CLEANH2-2022-02-10: Implementing new/optimised refueling protocols and components for high flow HRS

- Type of Action: RIA
- Overall budget: 8 million
- Projects to be funded: 2 projects
- TRL to be achieved: TRL6
- Deadline: 31 May 2022

To validate new fueling protocols for heavy duty applications as well as the necessary components that will allow high capacity refueling.

HORIZON-JTI-CLEANH2-2022-02-11: Development and demonstration of mobile and stationary compressed hydrogen refuelling solutions for application in inland shipping and short-distance maritime operations

- Type of Action: IA
- Overall budget: 7 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL6
- Deadline: 20 Sept. 2022

To focus on either a stationary (pipe-to-ship) or on a floating (ship-to-ship or platform-to-ship) solution.

Pályázati felhívások 2022

H2 for Transport

H2 for Transport

TOPIC	TOPIC TITLE	TYPE OF ACTION	BUDGET (EUR)	PROJECTS FUNDED	TRL	DEADLINE
HORIZON-JTI-CLEANH2-2022-03-01	Development and optimisation of reliable and versatile PEMFC stacks for high power range applications	RIA	7 million	2	TRL5	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-03-02	Innovative and optimised MEA components towards next generation of improved PEMFC stacks for heavy-duty vehicles	RIA	6 million	2	TRL4	31 May 2022
HORIZON-JTI-CLEANH2-2022-03-03	Large scale demonstration of European H2 Heavy-Duty Vehicle along the TEN-T corridors	IA	30 million	1	TRL8	31 May 2022
HORIZON-JTI-CLEANH2-2022-03-04	Liquid hydrogen tanks for heavy-duty vehicles	RIA	5 million	2	TRL6	31 May 2022
HORIZON-JTI-CLEANH2-2022-03-05	Large scale demonstration of hydrogen fuel cell propelled inland waterway vessels	IA	15 million	1	TRL8	31 May 2022
HORIZON-JTI-CLEANH2-2022-03-06	Development and optimisation of a dedicated Fuel Cells for Aviation: Development of dedicated stack (100s kW) with the objective of MWs full system	RIA	20 million	1	TRL5-6	31 May 2022
HORIZON-JTI-CLEANH2-2022-03-07	Development of specific aviation cryogenic storage system with a gauging, fuel metering, heat management and monitoring system	RIA	10 million	1	TRL3-4	31 May 2022
HORIZON-JTI-CLEANH2-2022-03-08	Development and optimisation of a dedicated Fuel Cells for Aviation: disruptive next-gen high temperature Fuel Cells technology for future aviation	RIA	5 million	1	TRL4	31 May 2022

H2 for Transport

HORIZON-JTI-CLEANH2-2022-03-01: Development and optimisation of reliable and versatile PEMFC stacks for high power range applications

- Type of Action: RIA
- Overall budget: 7 million
- Projects to be funded: 2 projects
- TRL to be achieved: TRL5
- Deadline: 20 Sept. 2022

Development of stacks suitable for sustained operation at high stack-power.

→ Primary focus heavy duty road applications

HORIZON-JTI-CLEANH2-2022-03-02: Innovative and optimised MEA components towards next generation of improved PEMFC stacks for heavy duty vehicles

- Type of Action: RIA
- Overall budget: 6 million
- Projects to be funded: 2 projects
- TRL to be achieved: TRL4
- Deadline: 31 May 2022

Development of MEA toward HDV applications.

H2 for Transport

HORIZON-JTI-CLEANH2-2022-03-03: Large scale demonstration of European H2 Heavy Duty Vehicle along the TEN-T corridors

- Type of Action: IA
- Overall budget: 30 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL8
- Deadline: 31 May 2022

Deployment and operation in real-life conditions of 150 FCH trucks.

Trucks rigid or tractors

FLAGSHIP PROJECT

HORIZON-JTI-CLEANH2-2022-03-04: Liquid hydrogen tanks for heavy-duty vehicles

- Type of Action: RIA
- Overall budget: 5 million
- Projects to be funded: 2 projects
- TRL to be achieved: TRL6
- Deadline: 31 May 2022

Analysis of Onboard LH2 tanks to evaluate the feasibility of the technology.

A full scale LH2 tank system for heavy duty road application will have to be tested (test bench).

H2 for Transport

HORIZON-JTI-CLEANH2-2022 -03-05: Large scale demonstration of hydrogen fuel cell propelled inland waterway vessels

- Type of Action: IA
- Overall budget: 15 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL8
- Deadline: 31 May 2022

FLAGSHIP PROJECT

Deployment of 5 inland waterway vessels with fuel cells and electric propulsion.

Retrofitting and/or new build with a focus on converting ship types with the highest impact on emissions.

H2 for Transport

HORIZON-JTI-CLEANH2-2022-03-06: Development and optimisation of a dedicated Fuel Cells for Aviation: from dedicated stack (100s kW) up to full system (MWs)

- Type of Action: RIA
- Overall budget: 20 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5-6
- Deadline: 31 May 2022

Development of an aviation-specific stack and FC system fit for aircraft integration.

HORIZON-JTI-CLEANH2-2022-03-07: Development of specific aviation cryogenic storage system with a gauging, fuel metering, heat management and monitoring system

- Type of Action: RIA
- Overall budget: 10 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL3-4
- Deadline: 31 May 2022

Advancements in LH2 aviation storage through 2 demonstrators:

- Demonstrator 1: focus on lightweight and materials selection for the LH2 tank.
- Demonstrator 2: design and integration of the storage solution including the development of BoP components.

H2 for Transport

HORIZON-JTI-CLEANH2-2022-03-08: Development and optimisation of a dedicated Fuel Cells for Aviation: disruptive next-gen high temperature Fuel Cells technology for future aviation

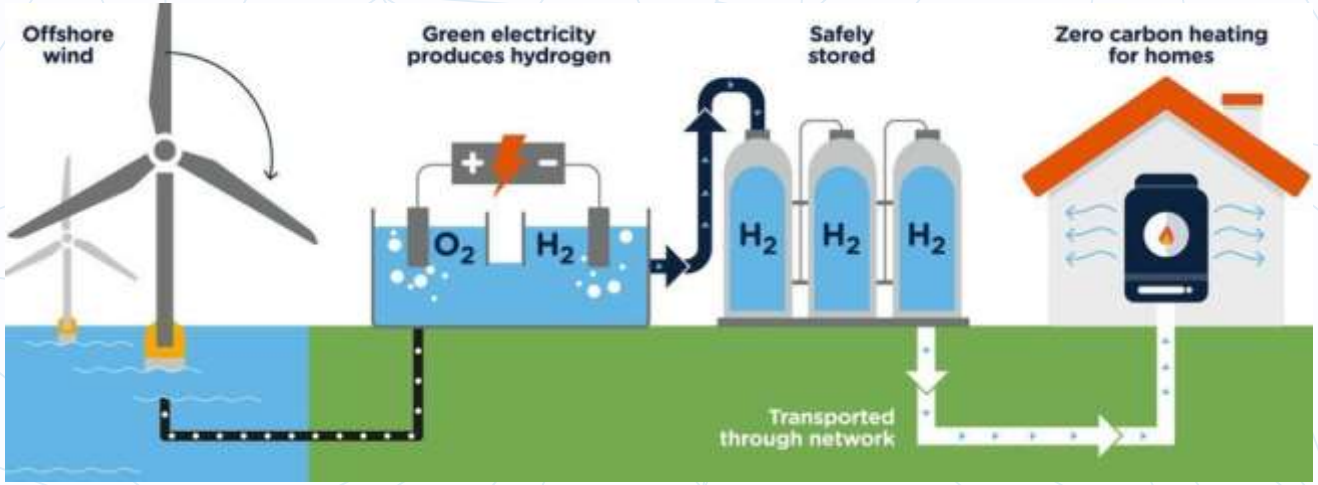
- Type of Action: RIA
- Overall budget: 5 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL4
- Deadline: 31 May 2022

Development of an aviation-specific disruptive fuel cell.

Design a fuel cell technology working at 120°C+ (constant operation)

Pályázati felhívások 2022

H2 for Heat and Power



H2 for Heat and Power

TOPIC	TOPIC TITLE	TYPE OF ACTION	BUDGET (EUR)	PROJECTS FUNDED	TRL	DEADLINE
HORIZON-JTI-CLEANH2-2022-04-01	Design and industrial deployment of innovative manufacturing processes for solid oxide fuel cells systems and fuel cell components	IA	7 million	1	MRL7	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-04-02	Ammonia powered fuel cell system focusing on superior efficiency, durable operation and design optimisation	RIA	4 million	1	TRL5	31 May 2022
HORIZON-JTI-CLEANH2-2022-04-03	Reversible SOC system development, operation and energy system (grid) integration	RIA	5.5 million	1	TRL5	31 May 2022
HORIZON-JTI-CLEANH2-2022-04-04	Dry Low NOx combustion of hydrogen-enriched fuels at high-pressure conditions for gas turbine applications	RIA	8 million	2	TRL6	31 May 2022

H2 for Heat and Power

HORIZON-JTI-CLEANH2-2022 -04-01: Design and industrial deployment of innovative manufacturing processes for solid oxide fuel cells systems and fuel cell components

- Type of Action: IA
- Overall budget: 7 million
- Projects to be funded: 1 project
- TRL to be achieved: MRL7
- Deadline: 20 Sept. 2022

Automation of time-consuming manufacturing steps and time/resource efficient quality control

- adaptation & development of manufacturing processes on prototype tool, progress measured by increase in MRL
- automation/equipment manufacturer/s at the core -> beneficial to all SOC manufacturers

HORIZON-JTI-CLEANH2-2022-04-02: Ammonia powered fuel cell system focusing on superior efficiency, durable operation and design optimisation

- Type of Action: RIA
- Overall budget: 4 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 31 May 2022

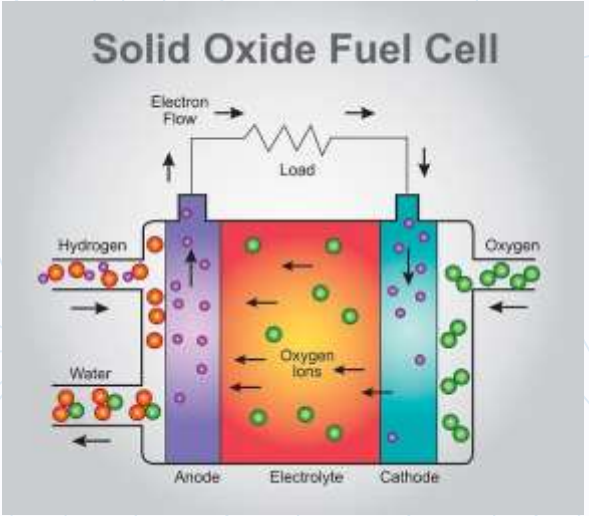
Design, manufacture and validation in relevant environmental of an ammonia driven fuel cell system

H2 for Heat and Power

HORIZON-JTI-CLEANH2-2022 -04-03: Reversible Solid Oxide Cell system development, operation and energy system (grid) integration

- Type of Action: RIA
- Overall budget: 5.5 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL5
- Deadline: 31 May 2022

Design, develop and validate a rSOC system (>5 kWe in fuel cell,>15 kWe in electrolysis) in relevant environment.



HORIZON-JTI-CLEANH2-2022-04-04: Dry Low NOx combustion of hydrogen-enriched fuels at high-pressure conditions for gas turbine applications

- Type of Action: RIA
- Overall budget: 8 million
- Projects to be funded: 2 projects
- TRL to be achieved: TRL6
- Deadline: 31 May 2022

Design and demonstrate a scaled and full-size combustion system in a relevant environment.

Pályázati felhívások 2022

Cross-cutting issues

Cross-cutting issues

TOPIC	TOPIC TITLE	TYPE OF ACTION	BUDGET (EUR)	PROJECTS FUNDED	TRL	DEADLINE
HORIZON-JTI-CLEANH2-2022-05-01	Public understanding of hydrogen and fuel cell technologies	CSA	1 million	1	-	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-05-02	Safety of cryogenic hydrogen transfer technologies in public areas for mobile applications	RIA	2 million	1	-	31 May 2022
HORIZON-JTI-CLEANH2-2022-05-03	Safe hydrogen injection management at network-wide level: towards European gas sector transition	RIA	3 million	1	TRL6	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-05-04	Development of validated test methods and requirements for measuring devices intended for measuring NG/H2 mixtures	RIA	2 million	1	TRL4	31 May 2022
HORIZON-JTI-CLEANH2-2022-05-05	Research & Innovation co-operation with Africa on hydrogen	CSA	1 million	1	-	31 May 2022

Cross-cutting issues

HORIZON-JTI-CLEANH2-2022-05-01: Public understanding of hydrogen and fuel cell technologies

- Type of Action: CSA
- Overall budget: 1 million
- Projects to be funded: 1 project
- TRL to be achieved: -
- Deadline: 20 Sept. 2022

Raise public awareness and trust towards FCH technologies and their benefits.

Develop guidelines/ good practices (and materials) for raising awareness and trust, set up engagement activities.

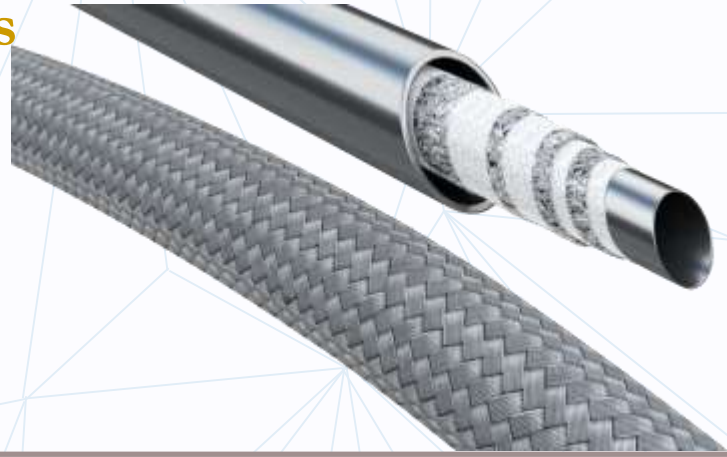
BUDAPEST HYDROGEN SUMMIT

Cross-cutting issues

HORIZON-JTI-CLEANH2-2022-05-02: Safety of cryogenic hydrogen transfer technologies in public areas for mobile applications

- Type of Action: RIA
- Overall budget: 2 million
- Projects to be funded: 1 project
- TRL to be achieved: -
- Deadline: 31 May 2022

Address safety-related aspects of LH2 / cryogenic transfers in new distribution applications.



Address ≥ 3 applications on hydrogen mobility (e.g., transferring operations for ships, trucks, stationary tanks fillings).

HORIZON-JTI-CLEANH2-2022-05-03: Safe hydrogen injection management at network-wide level: towards European gas sector transition

- Type of Action: RIA
- Overall budget: 3 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL6
- Deadline: 20 Sept. 2022

Development of technical documentation for a safe multi-gas network management.

Cross-cutting issues

HORIZON-JTI-CLEANH2-2022-05-04: Development of validated test methods and requirements for measuring devices intended for measuring NG/H2 mixtures

- Type of Action: RIA
- Overall budget: 2 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL4
- Deadline: 31 May 2022

Development and validation of test methods and requirements for measuring devices in the (T&D) gas network.

Develop and validate test methods, evaluate impacts on the devices, etc. & define limits and tolerances for currently used devices.

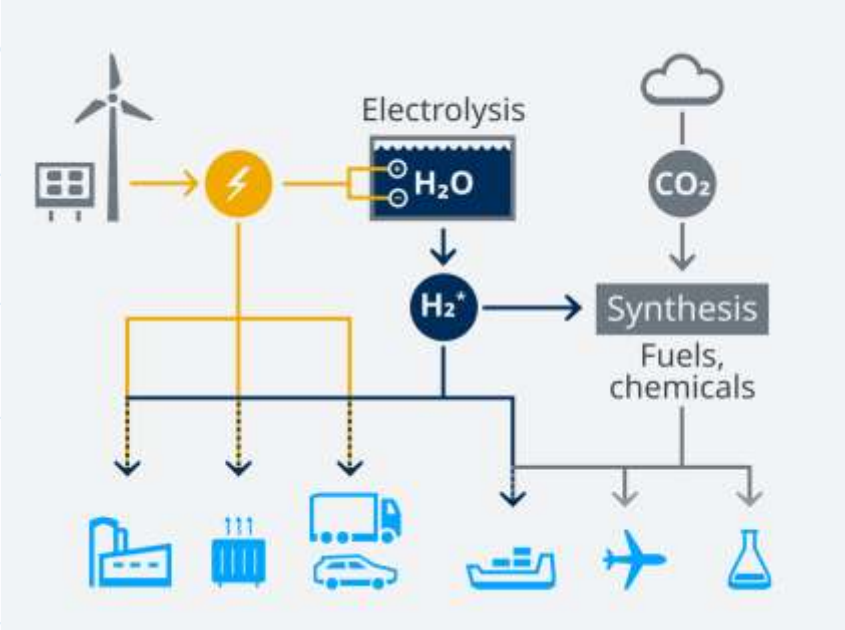
HORIZON-JTI-CLEANH2-2022-05-05: Research & Innovation co-operation with Africa on hydrogen

- Type of Action: CSA
- Overall budget: 1 million
- Projects to be funded: 1 project
- TRL to be achieved: -
- Deadline: 31 May 2022

Shape future cooperation with African partner countries on renewable hydrogen technologies.

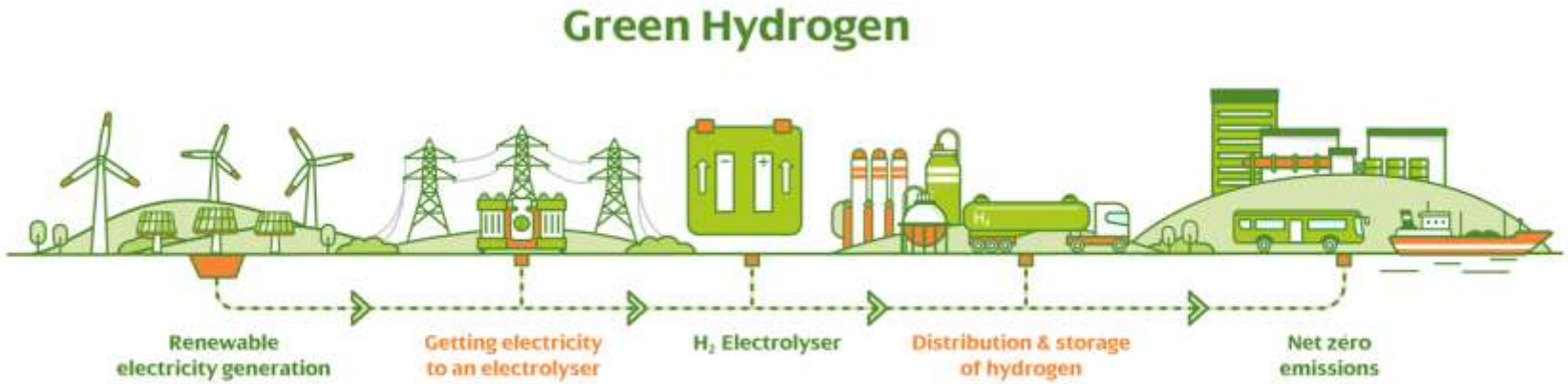
Pályázati felhívások 2022

Horizontal activities



Hydrogen Valleys

TOPIC	TOPIC TITLE	TYPE OF ACTION	BUDGET (EUR)	PROJECTS FUNDED	TRL	DEADLINE
HORIZON-JTI-CLEANH2-2022-06-01	Hydrogen Valleys (large-scale)	IA	25 million	1	TRL8	20 Sept. 2022
HORIZON-JTI-CLEANH2-2022-06-02	Hydrogen Valleys (small-scale)	IA	8 million	1	TRL8	20 Sept. 2022



Strategic Research Challenge

TOPIC	TOPIC TITLE	TYPE OF ACTION	BUDGET (EUR)	PROJECTS FUNDED	TRL	DEADLINE
HORIZON-JTI-CLEANH2-2022-07-01	Addressing the sustainability and criticality of electrolyser and fuel cell materials	RIA	10 million	1	TRL4	31 May 2022

Hydrogen Valleys

HORIZON-JTI-CLEANH2-2022-06-01: Hydrogen Valleys (large-scale)

- Type of Action: IA
- Overall budget: 25 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL8
- Deadline: 20 Sept. 2022

FLAGSHIP PROJECT

Develop, deploy and demonstrate a large-scale H2 valley with interlinkages outside its boundaries.

Production of ≥ 5,000 tonnes of renewable H2 per year using new hydrogen production capacity (GOs).

≥ 2 FCH applications from ≥ 2 sectors (energy, industry, transport)

HORIZON-JTI-CLEANH2-2022-06-02: Hydrogen Valleys (small-scale)

- Type of Action: IA
- Overall budget: 8 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL8
- Deadline: 20 Sept. 2022

FLAGSHIP PROJECT

Develop, deploy and demonstrate a H2 valley (particular attention to areas of Europe with no or limited presence of H2 Valleys).

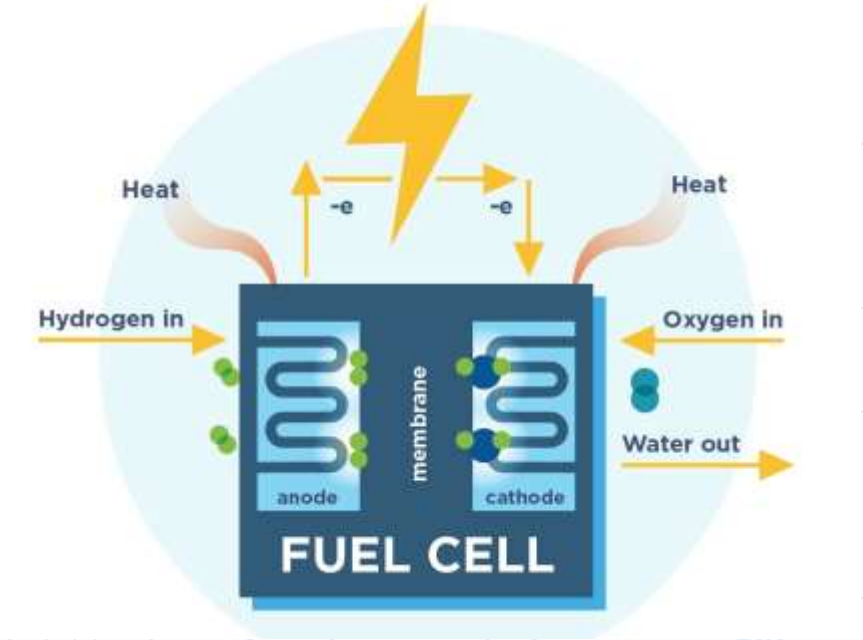
Production of ≥ 500 tonnes of renewable H2 per year (GOs)

Supply more than one end sector or application (mobility, industry energy) / >20% H2 produced for each of the 2 main applications.

Strategic Research Challenge

HORIZON-JTI-CLEANH2-2022-07-01: Addressing the sustainability and criticality of electrolyser and fuel cell materials

- Type of Action: RIA
- Overall budget: 10 million
- Projects to be funded: 1 project
- TRL to be achieved: TRL4
- Deadline: 31 May 2022



Removing the CRMs and materials of environmental concerns from electrolysers and fuel cells.

Development of low or free-CRM catalysts and poly/perfluoroalkyls-free ionomers according to SRIA's KPIs.

Improvement of CRM and ionomer recycling from scraps, wastes and end-of-life equipment.

Three innovative solutions for each PEM, AEM, AEL, PCC and SOC technologies.

Köszönöm a figyelmet!

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