STARTING SOON…
Horizon Europe- Clean Hydrogen Community Building and Brokerage Event
1st February 2024

Opportunities in Horizon Europe: The Energy Series
#EnergyHorizon

Host: Conall McGinley
National Contact Point for Horizon Europe (Energy) for the UK
Introduction

1 Why are we here?

• What is Horizon Europe?
• What is the Clean Hydrogen Partnership and the ‘Call Topics’?
• Who (UK and international) is interested in collaborating?
• What support is there to help me start building a Horizon Europe project consortium?
Introduction

2 Agenda

09:30 – Welcome & Aims of the Day
09:40 – Introduction & Call Topic Overview – Nikos Lymeropoulos, Project Officer at Clean Hydrogen Partnership
10:00 – Hydrogen R&D Landscapes in the UK, and focus countries (5 mins each) & Panel Discussion
   Netherlands – Achim Eberspacher, Energy NCP
   Germany – Nathan Antonels, Scientist in Funding Administration at Forschungszentrum Jülich GmbH,
   UK – Avi Kharel, Knowledge Transfer Manager – Hydrogen at Knowledge Transfer Network
   Czech Republic – Daniel Minarik, Chairman of the Board at Moravian-Silesian Hydrogen Cluster
10:30 (5 min) – Break.
10:35– How to get ready for Horizon Europe and find the right partners?
   National Contact Point to cover where applicants can find help and support within their respective country
10:50 – Case Study – Dennis Hayter - Vice President, Business Development at Intelligent Energy Ltd
11:00 - Q&A
11:10– Pitching Session – Andrew Stewart at KTN to facilitate
11.45 (5 min) – Closing Remarks
### Introduction

#### 3 House Keeping

- **Microphone off** unless speaking please.
- Please post Q using the **Q&A FUNCTION**.
- **Save the zoom chat** – we will not be sharing this.
- Please message **Michael Foster** in the Zoom chat if you are having technical issues.
- **The webinar is being recorded** and will be shared with the slides afterwards.
Introduction

4 Upcoming Opportunities

OPEN - £700 European Travel Awards
Introduction

5 Enjoy!
Nikolaos Lymperopoulos, Project Officer at the Clean Hydrogen Partnership.
Overview of Clean Hydrogen Partnership 2024 call topics

N. Lymperopoulos
Project Officer

1st February 2024
Clean Hydrogen Joint Undertaking

EU Institutional Public-Private Partnership (IPPP) 2021-2027

Industry
More than 400 members

Research community
over 130 members

1 billion EURO from Horizon Europe* to implement R&I activities and facilitate the transition to a greener EU society through the development of hydrogen technologies

* additional 200 million EURO for Hydrogen valleys (under RePowerEU)
Clean Hydrogen JU Programme (incl FCH JU legacy)

367 projects supported for €1.57 bn

**H₂ Valleys**
- 14 Projects
- €169 mill

**H₂ Production**
- 78 Projects
- €280.3 mill

**H₂ Storage & Distribution**
- 37 Projects
- €124.4 mill

**Cross-cutting**
- 54 Projects
- €80.1 mill

**Supply Chain**
- 18 Projects
- €58 mill

**Strategic Research Challenge**
- 3 Projects
- €29.6 mill

**H₂ End Use: Clean Heat and Power**
- 85 Projects
- €293.6 mill

**H₂ End Use: Transport**
- 78 Projects
- €540.5 mill

*It excludes some call 2023 grants – still under preparation*
Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027

**Production**
- Electrolysis
- Other Routes

**Distribution and Storage**
- Large Scale Storage
- Liquid Hydrogen Carriers
- Hydrogen Transport
- Compression, Purification, Metering
- Hydrogen Refuelling Stations

**Transport Applications**
- Rail
- Waterborne
- Aeronautic

**End-use**
- Building Blocks
- Stationary Applications
- Strategic Research challenges
- Turbines, Boilers, Burners
- Hydrogen Transport
- Stationary Fuel Cells
- Industry

**Horizontal Activities**
- Cross-cutting
- Supply Chain
- Hydrogen Valleys

**Building Blocks**

**Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027**
Call for proposals 2024

Total budget: 113.5 M€
Publication date: 17 January 2024
Deadline: 17 April 2024
Info Day Presentations: [here](#)

- **Hydrogen for Transport** (4 topics)
- **Hydrogen Storage and Distribution** (5 topics)
- **Renewable Hydrogen Production** (5 topics)
- **Hydrogen for Heat & Power** (2 topics)
- **Hydrogen Valleys** (2 topics)
- **Cross-cutting issues** (2 topics)

Total budget: 113.5 M€
Publication date: 17 January 2024
Deadline: 17 April 2024
Info Day Presentations: [here](#)
8 months for time to grant, from call deadline to signature of the grant agreement

Admissibility Check
Eligibility Check
Evaluation of Proposals
Grant Preparation
Grant Signature

Quality of the proposal is key!
- The experts evaluate each proposal as submitted
- The experts do not recommend substantial modifications
- If the experts identify significant shortcomings, they must reflect those in a lower score for the relevant criterion

Call deadline ➔ Signature of Grant Agreement
17 April 2024 ➔ 17 December 2024
Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027

Production

Electrolysis

Other Routes

Distribution and Storage

Large Scale Storage

Liquid Hydrogen Carriers

Hydrogen Transport

Compression, Purification, Metering

Hydrogen Refuelling Stations

End-use

Transport Applications

Building Blocks

Heavy Duty

Waterborne

Rail

Aeronautic

Stationary Applications

Stationary Fuel Cells

Industry

Turbines, Boilers, Burners

Cross-cutting

Hydrogen Valleys

Supply Chain

Strategic Research challenges
Main Focus

- Electrolysers:
  - Improving PCCEL and AEMEL
  - Revisiting monitoring & diagnostic tools for electrolysers
- Circular Hydrogen production
  - Optimal integration of hydrogen production in industry

What is new

- Direct sea water electrolysis
# Renewable Hydrogen Overview

<table>
<thead>
<tr>
<th>Topic</th>
<th>Type of Action</th>
<th>Ind. Budg (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-01-01: Innovative proton conducting ceramic</td>
<td>RIA</td>
<td>3</td>
</tr>
<tr>
<td>electrolysis cells and stacks for intermediate temperature hydrogen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-01-02: Advanced anion exchange membrane</td>
<td>RIA</td>
<td>4</td>
</tr>
<tr>
<td>electrolyser for low-cost hydrogen production for high power range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-01-03: Development of innovative technologies</td>
<td>RIA</td>
<td>4</td>
</tr>
<tr>
<td>for direct seawater electrolysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-01-04: Development and implementation of</td>
<td>RIA</td>
<td>4</td>
</tr>
<tr>
<td>online monitoring and diagnostic tools for electrolyser</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-01-05: Hydrogen production and integration</td>
<td>IA</td>
<td>10</td>
</tr>
<tr>
<td>in energy-intensive or specialty chemical industries in a circular</td>
<td></td>
<td></td>
</tr>
<tr>
<td>approach to maximise total process efficiency and substance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>utilisation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027

Production

Electrolysis

Other Routes

Distribution and Storage

Large Scale Storage

Liquid Hydrogen Carriers

Hydrogen Transport

Compression, Purification, Metering

Hydrogen Refuelling Stations

End-use

Transport Applications

Building Blocks

Heavy Duty

Waterborne

Rail

Aeronautic

Stationary Applications

Stationary Fuel Cells

Industry

Turbines, Boilers, Burners

Cross-cutting

Hydrogen Valleys

Supply Chain

Strategic Research challenges

Horizontal Activities
Hydrogen Storage and Distribution Overview

Main Focus

Hydrogen Storage
- Microbiological interactions in H₂ underground storage in porous media
- Next generation aboveground storage solutions

Hydrogen Distribution
- Scaling up and demonstrating purification prototypes
- Flexible compressor coupled to RES

What is new
- Multi-purpose HRS up to 3,000kgH₂/day
## Hydrogen Storage and Distribution Overview

<table>
<thead>
<tr>
<th>Topic</th>
<th>Type of Action</th>
<th>Budget (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-02-01: Investigation of microbial interaction for underground hydrogen porous media storage</td>
<td>RIA</td>
<td>3</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-02-02: Novel large-scale aboveground storage solutions for demand-optimised supply of hydrogen</td>
<td>RIA</td>
<td>4</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-02-03: Demonstration of hydrogen purification and separation systems for renewable hydrogen-containing streams in industrial applications</td>
<td>IA</td>
<td>6</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-02-04: Demonstration of innovative solutions for high-capacity, reliable, flexible, and sustainable hydrogen compression technologies in commercial applications</td>
<td>IA</td>
<td>6</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-02-05: Demonstration and deployment of multi-purpose Hydrogen Refuelling Stations combining road and airport, railway, and/or harbour applications</td>
<td>IA</td>
<td>8</td>
</tr>
</tbody>
</table>
Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027

Production

Distribution and Storage

End-use

Horizontal Activities

Electrolysis
Other Routes

Large Scale Storage

Liquid Hydrogen Carriers

Hydrogen Transport

Compression, Purification, Metering

Hydrogen Refuelling Stations

Building Blocks

Transport Applications

Aeronautic

Heavy Duty

Waterborne

Rail

Stationary Applications

Stationary Fuel Cells

Industry

Turbines, Boilers, Burners

Cross-cutting

Hydrogen Valleys

Supply Chain

Strategic Research challenges

Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027

Industry
Hydrogen End Uses: Transport Applications Overview

Main Focus
- Maritime and Heavy-Duty (with spill over to other applications);
- Balance of Plant (BoP design, architectures and operational strategies);
- Integration and demonstration for maritime application;

What is new
- Scale up of BoP components
- New storage solutions for maritime applications;
- Synergy between topics of the same call and existing projects (StaSHH)
## Transport Applications Overview

<table>
<thead>
<tr>
<th>Topic</th>
<th>Type of Action</th>
<th>Ind. Budget (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-03-01: Balance of plant components, architectures and operation strategies for improved PEMFC system efficiency and lifetime</td>
<td>RIA</td>
<td>4</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-03-02: Scaling-up Balance of Plant components for efficient high-power heavy-duty applications</td>
<td>RIA</td>
<td>4</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-03-03: Next generation on-board storage solutions for hydrogen-powered maritime applications</td>
<td>RIA</td>
<td>5</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-03-04: Demonstration of hydrogen fuel cell-powered inland or short sea shipping</td>
<td>IA</td>
<td>6</td>
</tr>
</tbody>
</table>
Main Focus

- Next generation fuel cell: Portable robust and long-term autonomous FC systems for quick integration into the power system of a critical user, providing backup power in an uninterruptible manner
- Hydrogen-fired Gas Turbines

What is new

- Portable FC to power critical infrastructures under demanding operational conditions
- Covering knowledge gaps on premixed hydrogen combustion at high pressure
<table>
<thead>
<tr>
<th>Topic</th>
<th>Type of Action</th>
<th>Ind. Budget (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-04-01: Portable fuel cells for backup power during natural disasters to power critical infrastructures</td>
<td>IA</td>
<td>5</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-04-02: Improved characterisation, prediction and optimisation of flame stabilisation in high-pressure premixed hydrogen combustion at gas-turbine conditions</td>
<td>RIA</td>
<td>4</td>
</tr>
</tbody>
</table>
Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027

Production

Distribution and Storage

End-use

Horizontal Activities

Electrolysis

Other Routes

Large Scale Storage

Liquid Hydrogen Carriers

Hydrogen Transport

Compression, Purification, Metering

Hydrogen Refuelling Stations

Transport Applications

Building Blocks

Heavy Duty

Waterborne

Rail

Aeronautic

Stationary Applications

Stationary Fuel Cells

Industry

Turbines, Boilers, Burners

Hydrogen Valleys

Supply Chain

Strategic Research challenges

Cross-cutting

Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027

production

distribution and storage

end-use

horizontal activities

electrolysis

other routes

large scale storage

liquid hydrogen carriers

hydrogen transport

compression, purification, metering

hydrogen refuelling stations

transport applications

building blocks

heavy duty

waterborne

rail

aeronautic

stationary applications

stationary fuel cells

industry

turbines, boilers, burners

hydrogen valleys

supply chain

strategic research challenges

cross-cutting
Cross-cutting Issues Overview

Main Focus

- Continue raising the environmental sustainability of fuel cell and hydrogen (FCH) systems by developing bespoke guidelines
- To research novel materials environmentally friendly for PEM-based hydrogen technologies

What is new

- Development of ‘safe and sustainable-by-design’ (SSbD) guidelines for systems across the hydrogen value chain
- Development of non-fluorinated components
## Cross-cutting Issues Overview

<table>
<thead>
<tr>
<th>Topic</th>
<th>Type of Action</th>
<th>Ind. Budget (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORIZON-JTI-CLEANH2-2024-05-01: Guidelines for sustainable-by-design systems across the hydrogen value chain</td>
<td>CSA</td>
<td>1.5</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2023-05-02: Development of non-fluorinated components for fuel cells and electrolysers</td>
<td>RIA</td>
<td>3</td>
</tr>
</tbody>
</table>
Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027

Production

Electrolysis

Other Routes

Distribution and Storage

Large Scale Storage

Liquid Hydrogen Carriers

Hydrogen Transport

Compression, Purification, Metering

Hydrogen Refuelling Stations

End-use

Building Blocks

Transport Applications

Rail

Aeronautic

Waterborne

Stationary Applications

Stationary Fuel Cells

Turbines, Boilers, Burners

Industry

Strategic Research challenges

Supply Chain

Cross-cutting

Hydrogen Valleys

Cross-cutting Strategic Research challenges

Clean Hydrogen JU Strategic Research and Innovation Agenda 2021 – 2027
Main Focus

▪ Demonstrate an ecosystem built on the complete value chain of hydrogen;

▪ Large and small-scale hydrogen valleys acting as testbeds to showcase first regional "hydrogen economies";

▪ Topic open to foster the emergence of the widest possible array of valleys configurations;

▪ Innovation in Hydrogen Valleys is not about the technology development of an application, but on system integration of hydrogen production, its distribution and storage, and its subsequent use (TRL >=6-8)

What is new

▪ FAQs on Hydrogen Valleys available
## Hydrogen Valleys - Overview

<table>
<thead>
<tr>
<th>Topic</th>
<th>Type of Action</th>
<th>Ind. Budget (M€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORIZON-JTI-CLEANH2-2023-06-01: Hydrogen Valleys (large-scale)</td>
<td>IA</td>
<td>20*</td>
</tr>
<tr>
<td>HORIZON-JTI-CLEANH2-2023-06-02: Hydrogen Valleys (small-scale)</td>
<td>IA</td>
<td>9*</td>
</tr>
</tbody>
</table>

*For the Call for Proposals 2024, up to 60 MEUR additional budget is available to top-up the allocated budget for hydrogen valleys under the Call for Proposals 2024. More than one (Hydrogen Valley) project per topic will be funded, according to the final ranking at the end of the evaluation process.

The maximum JU contribution that can be requested is an eligibility criteria!!
Participation of UK organisations

- As of 1st January 2024 the UK is associated to Horizon Europe
- The entities established in the UK can participate under equivalent conditions as those applicable to entities established in the Union in all calls or contests implementing the programme’s budget of 2024 and onwards
- As beneficiaries, they are able to lead project consortia if so decided by the consortium. They also count towards the minimum number of countries requirement in calls for transnational projects
- FAQ on UK participation
JU Governance - Stakeholders Group

New Call for Expression of Interest OPEN
UK participation welcome*

The Stakeholders Group is an official advisory body, part of the governance structure, to be consulted on various horizontal issues or specific questions in areas relevant to the work of the Clean Hydrogen JU.

**ELEGIBILITY CRITERIA**

- Being a registered organisation in one of the sectors of the hydrogen value chain
- Being a representative organisation of the scientific community
- Being an organisation representing another relevant European partnership

**DEADLINE EXTENDED** 15 February 2024


* UK participation cannot bring a decision-making vote on matters agreed prior to the accession in HE (01.01.2024)
Get support - 1

Please read carefully all provisions below before the preparation of your application

Lump Sums Guidance
- Guidance: "Lump sums - what do I need to know?"
- Comprehensive information on lump sum funding in Horizon Europe

FAQ
- Mailbox for submitting questions: PROJECTS@clean-hydrogen.europa.eu
- Specific FAQ for call HORIZON-JTI-CLEANH2-2024
Get support - 2

**Funding and Tenders Opportunities Portal**

**Get Support**

- [Online Manual](#) is your guide on the procedures from proposal submission to managing your grant

- [IT How To wiki](#) (guide for IT processes)

- [Funding & Tender Portal FAQ](#) find the answers to most frequently asked questions on submission of proposals, evaluation and grant management

- [Research Enquiry Service](#) enquires about the validation process of the legal entities
Please address your questions to:

PROJECTS@clean-hydrogen.europa.eu

For further information

https://www.clean-hydrogen.europa.eu/
Clean Hydrogen Landscapes

Netherlands – Achim Eberspächer, Horizon Europe NCP for the Netherlands (Energy)

Germany – Nathan Antonels, Scientist in Funding Administration at Forschungszentrum Jülich GmbH

UK – Avi Kharel, Knowledge Transfer Manager for Hydrogen at Knowledge Transfer Network
Hydrogen R&D in the Netherlands

Achim Eberspächer

National Contact Point Horizon Europe for Energy in the Netherlands

1st of February 2024
Dutch strengths

Being an import hub for (continental) Europe

Dealing with the North Sea

Winning, processing and circulating natural gas
IPCEI hydrogen: 4 waves with a budget of 1.6 billion euros altogether

National Growth Fund Groenvermogen with a budget of 338 million euros

Altogether public funds of more than 10 billion euros in mostly technology neutral schemes
The Dutch hydrogen landscape

- LOHC: Puffin
- Offshore Electrolysis: PosHydon
- Underground storage: HyStoreReact
- Hydrogen Valley: HEAVENN
Finding R&D partners on H$_2$ in the Netherlands

› Use the Dutch Hydrogen Guide with 155 profiles of organisations from the Netherlands active in H$_2$

› Contact the National Contact Points for the FCHJU in the Netherlands

Achim Eberspächer
achim.eberspaecher@rvo.nl

Pieter Houttuin
pieter.houttuin@rvo.nl
GERMAN HYDROGEN R&D ACTIVITIES

Dr. Nathan Antonels, Project Management Jülich, Germany
EXPENDITURE AND H₂ RESEARCH THEMES

R&D expenditure
2019: 110 bn € / 3.2% GDP
2025: 3.5% GDP (goal)

Higher education
Government & non-profit
Business enterprises

Green electricity production
• Wind
• Solar

H₂ production
• Alkali Electrolysis
• PEM Electrolysis
• Solid Oxide Electrolysis Cell

H₂ distribution and storage
• Caverns
• Storage vessels
• Pipelines

Hydrogen applications
• Mobility
• Decarbonisation
• Chemicals
• Electricity generation
• Heat generation

Source(s):
https://wasserstoffwirtschaft.sh/de/h2-im-gesamtsystem
GREEN ELECTRICITY PRODUCTION

› Establishment of renewable energy generation long-term focus
› Ensure supply into grid for various applications
› Various companies RWE, BayWa, Altus (Karlsruhe) etc.
› Projects and programs: H₂Mare, AquaVentus etc.

BDEW; ZSW; AGEB; BMWK; Statistik der Kohlenwirtschaft; Statistisches Bundesamt; ID 583195
ELECTROLYSER - H₂ PRODUCTION

- Currently: ~173.4 MW electrolysis capacity.
- Goal: 10 GW electrolysis capacity by 2030.
- Some programs in Germany:

**H₂Mare**
Discovers offshore generation of green hydrogen and other P2X products

**H₂Giga**
Supports series production of electrolyzer

---

Sources:
https://www.wasserstoff-kompass.de/en/elektrolyse-monitor
https://www.wasserstoff-kompass.de/
H₂ DISTRIBUTION AND STORAGE

› Storage below, in caverns, and conventionally above terrain.
› Already, ~420 km H₂ pipelines Germany distributed in Ruhr, Central German chemical triangle, Schleswig-Holstein
› Recently: Ministry announced ~9700 km H₂ network costing 19.8 billion euros by 2032

Energiepark Bad Lauchstädt
Intergrated project including H₂ production, cavern storage and transport via repurposed pipeline

TransHyDE
Develops technologies for hydrogen transport infrastructure

Length: 9,721 km
Existing natural gas pipelines for conversion: 5,630 km
New pipelines: 4,091 km

Sources:
https://energiepark-bad-lauchstaedt.de/
https://www.bev-mrd.de/de/unternehmen/energie/wasserstoff/wasserstoff-pipelines-netze/
https://www.wasserstoff-leitprojekte.de/projects/transhyde
https://www.mrd.de/nachrichten/deutschland/wirtschaft/wasserstoff-kernnetz-kleiner-habeck-industrie-100.html

06.02.2024
HYDROGEN APPLICATIONS

Hydrogen can be utilised via solutions in 4 main areas: mobility, industry, heat/electricity generation and base chemistry.

- **Decarbonisation** of hard-to-abate industry
- **H2Stahl**: Hydrogen injection at 10,000 m³ per hour into blast furnace and 6.5 km hydrogen pipeline

**KOPERNIKUS PROJEKTE**
The Future of Our Energy

Store renewable energy in physical substances
**Sunfire**: Synthesis gas from water and CO₂ via co-electrolysis. Production of various hydrocarbons in downstream processes.

**Industrial scale fuel-cell production**
**H2GO**: 80 Mio. € for R&D for fuel cell production, heavy duty traffic, 19 Fraunhofer Institutes involved.

Sources:
- [https://www.energiesystem-forschung.de/forschen/projekte/reallabor-der-energiewende-h2-stahl](https://www.energiesystem-forschung.de/forschen/projekte/reallabor-der-energiewende-h2-stahl)
INTERNATIONAL POSSIBILITIES

Förderrichtlinie für internationale Wasserstoffprojekte
Durch BMWK geförderte Projekte

- **WATERSyngas**
  - Shahr, Tunesien
  - Biogaserzeugung und Synthesegaszurückgewinnung (H₂, CO₂)

- **WATERFuel**
  - Shahr, Tunesien
  - 1.6 MW PV, 12 kW H₂ Elektrolyseur, MethanolProduktion

- **Power-to-MEDME**
  - Amplego, Chile
  - 12 MW H₂ Elektrolysierer, CO₂ Capture, PL
  - Herstellung von H₂, Methanol und DME

- **H₂Verde**
  - Bobia, Chile
  - 17 MW H₂ Elektrolysierer
  - Dekarbonisierung von Dickinson

- **Haru Oni**
  - Punta Arenas, Chile
  - Windkraft, Elektrolysierer, DAC, Pt
  - Grün Methanol-Fertigung

- **Oshivela**
  - Androos, Namibia
  - 20 MW PV, 12 MW H₂ Elektrolysierer
  - Direkt reduziertes Eisenerzeugung

- **H₂U**
  - Rio Negro, Uruguay
  - zwei 2 MW Elektrolysierer und zwei H₂ Tankstellen
  - Wasserstoffproduktion

- **HyDSerbia**
  - Nohče Pančevo, Serbien
  - 3 MW PV, 3 MW H₂ Elektrolysierer
  - Aufbau Wasserstoffinfrastruktur

- **AmmoniaStorage**
  - NEOM, Saudi Arabien
  - Entwicklung: 70% MT Ammoniakbank

- **HyShiFT**
  - Sexplain, S'Ecolleca
  - 40 MW H₂ Elektrolysierer
  - Dekarbonisierung PT-Anlage

Die Projekte werden durch das BMWK gefördert.
COLLABORATION

- Germany is active in several international hydrogen related platforms:
  - IEA, 21 TCPs, Hydrogen TCP, AdvancedFuelCells TCP
  - Mission Innovation
  - Hydrogen Energy Ministerial, CEM
  - IPHE
  - Clean Hydrogen Partnership (EU)
  - RD20 Conference in Japan: R&D G20 countries for clean energy technologies"
Contact: eu-energie@fz-juelich.de
About 36 million tons of CO2 is emitted each year by the Industrial clusters.
Power/Energy Storage

Government’s 10 GW electrolyser-based hydrogen capacity target by 2030
Hydrogen Transport

- Automotive Transformation Fund
- Advanced Propulsion Centre
- Zero Emission Vessels and Infrastructure Competition
- The Sustainable Innovation Fund: SBRI
- Zero emission heavy goods vehicles and infrastructure competition
- Unlocking the hydrogen energy market
- Zero Emission Road Freight Demonstration
Hydrogen Aviation and Maritime

- Teesside International Airport Hydrogen Refuelling Hub
- Zero Emission Hydrogen Demonstration in Airport Applications
- Transitioning towards Zero Emission Vehicles (TZEV) and Niche Vehicle Network (NVN) programmes – various collaborations
- Zero Emission Flight Infrastructure (ZEFI) programme – 12 projects
- Clean Maritime Demonstration Competition (CMDC)
- Aerospace Technology Institute - 10 projects with multiple collaborators have received funding to carry out Hydrogen R&D projects
Funding- Net Zero Innovation Portfolio

- IETF (Industrial Energy Transformation Fund),
- Low Carbon Hydrogen Supply Fund,
- Industrial Energy Efficiency Accelerator,
- Industrial Fuel Switching,
- Green Distilleries Competition,
- Red Diesel Replacement Competition
- Industrial Hydrogen Accelerator Program
- Energy Entrepreneurs Fund
- Hydrogen BECCS Innovation Programme
Hydrogen Innovation Network
Activities and Support
Innovate UK KTN Hydrogen supply chain directory

Hydrogen Supply Chain Directory

The Supply Chain Directory shares details of end users who are either currently using hydrogen or are proactively planning to. It also aims to showcase solutions providers in this space who may be able to help these end users move closer to their hydrogen goals.

Supply Chain View - Click to on a section of the supply chain to filter the dashboard. Hover over the chart for more information.

UK View - Based on postcodes provided by respondents. Hover over the map for more information about each organisation.

Org View - Click on the chart to filter on a certain region and/or organisation type.

- Hydrogen Supply Chain Directory to discover the 320+ organisations across the UK in Hydrogen supply chain.
Hydrogen Supply Chain Directory to discover the 320+ organisations across the UK in Hydrogen supply chain.

Hydrogen Directory Introduction Request

Please sign up below to request an introduction to another user/organisation in the directory.

First name*  
Last name*  
Email address*

Organisation Name*  
Job Title*  

Organisation of interest you would like to be connected with*  
Please select

Reason for introduction*

Your consent

Please tick to confirm Innovate UK KTN have your permission to process your data. You can view Innovate UK KTN’s Privacy Policy here.*

Submit
Innovate UK KTN Hydrogen Innovation Network 2023

Hydrogen Innovation Network helps solve Hydrogen based challenges through the iX (Innovation Exchange) program.

Innovate UK KTN’s Innovation Exchange programme connects companies with specific challenges to innovators who are already working on the solutions. Our unique cross-sector approach connects businesses with opportunities beyond their existing thinking.
Contact:

Hydrogen Innovation Network: Avijita Kharel (Avi)
avijita.kharel@iuk.ktn-uk.org
How to get ready for Horizon Europe and find the right partners?

Conall McGinley
UK National Contact Point for Energy
Horizon Europe Funding & Support
Hydrogen R&D in the UK
What is Horizon Europe?

Pillar 1: EXCELLENT SCIENCE
- European Research Council
- Marie Skłodowska-Curie Actions
- Research Infrastructures

Pillar 2: GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS
- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Pillar 3: INNOVATIVE EUROPE
- European Innovation Council

WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA
- Widening participation and spreading excellence
- Reforming and Enhancing the European R&I system

Clean Hydrogen Partnership separate

Total Funding:
- €53.8bn
- €24.9bn
- €13.4bn
The fundamentals of Horizon Europe

- Must apply as part of a consortium representing at least three member states/associate countries
- Proposal preparation can take 6 months or longer
- Projects generally last 2-5 years
- Projects must advance cutting-edge innovation at a European level
- Projects must benefit all Europeans
- “Top Down” approach
Benefits of Horizon Europe to your organisation

• Solve global grand challenges through collaborative R&I
• Collaborate with world leading organisations to learn from the best
• Access cutting edge technologies, infrastructure, talent & markets
• Contribute to the dialogue on standards, regulations and research policies
• Ensure that UK technology development aligns with global market place
• Collaborative partners frequently become buyers
• Creating UK jobs, growth and stronger supply chains
What does a National Contact Point do?

Team of sector specific advisors to support UK entities to successfully participate in EU “Framework Programmes” and to shape the direction of EU research agenda.

**Assisting, advising and training** – to improve the quality of Horizon Europe proposals with UK content to increase success rate

**Informing, awareness raising** – on all aspects of Horizon Europe rules, processes and participation

**Thought Leadership** – working with UK Government, sector stakeholders and Commission to shape future direction of R&I

**Signposting and cooperation** – direct to relevant support and work with each other to support consortium development

[Image of NCP roles and stakeholders]

- **NCP**
- **Global Research & Innovation network**
- **EU Commission**
- **UK Gov’t**
- **Research organisations**
- **Academia**
- **Businesses**
What does a National Contact Point do?

Discussion of needs → Signposting → Finding a topic → Building a network and finding partners → Proposal Development → Long-term strategic approach
Energy Innovation Funding Landscape

Global Business Innovation Programme

- Innovate UK Smart Grant
- Targeted Innovate UK/BEIS Calls
- Energy Catalyst Challenge Calls
- Knowledge Transfer Partnership funding
- EIC Accelerator

- Targeted Innovate UK/BEIS Calls
  - Horizon Europe
- Eureka Eurostars
- OFGEM Strategic Innovation Fund
- Innovate UK Smart Grant

Funding Landscape

Grants (Solo applicant)
- Grants (Collaborative)

Support for market development

Country/Region specific funding

Energy Industry Challenges

Loans

Innovate UK Innovation Loans

- Scottish Enterprise SMART Grant
- Scottish Enterprise CETP Grant
- Enterprise NI Grants
- Wales SMART Partnerships funding

- Energy Innovation Council Challenges
- Innovate UK Innovation Exchange
Case Study - HySeas III

£9.2m project focused on developing the world’s first sea-going, hydrogen fuelled, vehicle and passenger ferry using hydrogen produced from local renewable energy sources around the Scottish Isles.

Coordinated by the University of St Andrews, the team includes:

- Vessel design and development: Caledonian Maritime Assets Limited (UK)
- Fuel cell power systems: Ballard Power Systems Europe A/S (Denmark)
- Vessel Systems Integrator: Kongsberg Maritime AS (Norway)
- Fuelling Infrastructure: McPhy Energy SA (France)
- Vessel and ports owner/operator: Orkney Island Council (UK)
- Lifecycle and socio-economic analysis: DLR (Germany)
Clean Hydrogen Partnership

• Public-private partnership supporting research and innovation activities in hydrogen technologies in Europe.
• EU will provide €1 billion euro for the period 2021-2027, complemented by at least an equivalent amount of private investment, raising the total budget to above €2 billion
• 20 live calls
Engaging with Europe

- Clean Hydrogen Partnership
- EU Hydrogen Week
- NCP Network
- Key conferences and events
Pitches

Open the Floor
Raise your hand
Invited to the floor, unmute yourself

Pitches 2 mins
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aragon Hydrogen Foundation</td>
<td>Catherine McHale</td>
</tr>
<tr>
<td>Coolkeeragh Green Energy Cluster</td>
<td>Oliver Curnick / John Graves</td>
</tr>
<tr>
<td>Coventry University</td>
<td>Oliver Curnick</td>
</tr>
<tr>
<td>Coventry University</td>
<td></td>
</tr>
<tr>
<td>Cranfield University</td>
<td>Mostafa Ranjbar</td>
</tr>
<tr>
<td>ena Development Consultants</td>
<td>Manolis Tsantakis</td>
</tr>
<tr>
<td>ERM</td>
<td>Andrew Flagg</td>
</tr>
<tr>
<td>Gerad</td>
<td>Rooholah Rad</td>
</tr>
<tr>
<td>Hive Composites</td>
<td>Peter Hansen</td>
</tr>
<tr>
<td>Hixal</td>
<td>Ian Perry-Jones</td>
</tr>
<tr>
<td>Hydrogen Ireland</td>
<td>Paul McCormack</td>
</tr>
<tr>
<td>MCG</td>
<td>Clinton Liu</td>
</tr>
<tr>
<td>Microgen Renewables</td>
<td>Martyn Cowsill</td>
</tr>
<tr>
<td>mtc</td>
<td>Huw Sullivan</td>
</tr>
<tr>
<td>Steamology</td>
<td>Matt Candy</td>
</tr>
</tbody>
</table>
Aragon Hydrogen Foundation

PRIVATE, NON-PROFIT RESEARCH CENTER, CREATED IN 2003 TO PROMOTE THE USE OF HYDROGEN AND FUEL CELL TECHNOLOGIES AS A GREEN ENERGY VECTOR

MOST SUCCESSFUL SPANISH ENTITY IN THE CLEAN HYDROGEN JU WITH 33 PROJECTS - 11 AS COORDINATOR

1,200 m² building with offices, laboratories and a unique workshop prepared to work with large H₂ equipment.

- 635 kW wind
- 100 kW PV
- 62 kW PV (self-consumption)
- AEL 250 kW, industrial scale
- AEL 20 kW, test bench
- AEL 48 kW, 8 Nm³/h @8 bar
- PEMEL 5 kW, 1 Nm³/h @6 bar
- AEMEL 15 kW, 2 Nm³/h @35 bar
- 7 kg (4000 L) @35 bar
- 23 kg (900 L) @350 bar
- HIGGS - R&D Blending H₂/GN
- Hyundai Nexo & Kangoo ZE
Coolkeeragh Green Energy Cluster

Proposed Approach & Experience
ESB are proposing the development of a Green energy cluster in the north west of NI centred around Coolkeeragh power station and surrounding Maydown Industrial Estate. The site is predisposed for such an ambitious project:
- The area has one of the largest concentrations of industry in NI.
- The surrounding seabed’s have the potential for large volumes of offshore wind. For which this project could provide a valid route to market.

The Cluster would not only be enabling the electricity system in NI become Net Zero but the green fuels created from renewable electricity would lead to the decarbonisation of the wider industrial area and provide energy storage.

Organisational Capabilities
What skills, capabilities, facilities does your organisation have that will be vital for this project?
ESB, with its extensive experience and expertise in energy management and infrastructure development, emerges as an ideal partner for establishing a green energy cluster. Its proven track record in renewable energy projects, coupled with its commitment to sustainability, ensures the successful implementation of green initiatives. ESB’s innovative solutions, technological prowess, and collaborative approach make it well-equipped to navigate the complexities of creating and managing a green energy cluster, driving forward the transition towards a more sustainable future with efficiency and efficacy.

Partners
If you are looking for partners, what type of partners are you looking for?
ESB has a track record of delivering projects through many different mechanisms with different structures and types of partners. For any energy cluster to be a success multiple parties need to be involved. Some key partners are:
- Renewable energy developers
- Industrial Off takers in NI
- Hydrogen/Efuel technology providers

Administrative Information
ESB has been Ireland’s foremost energy company since it was established in 1927, driven by an unwavering commitment to power society forward and deliver a net-zero future for our customers and the communities we serve. ESB is also NI’s largest inward investor. ESB would be a lead partner in this initiative.

Contact Details:
Catherine McHale
catherine.mchale@esb.ie
+3538608480966
Ireland
Advanced AEM electrolysers for low-cost hydrogen production for high power range applications (HORIZON-JTI-CLEANH2-2024-01-02)

<table>
<thead>
<tr>
<th>Proposed Approach &amp; Experience</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of novel, non-PGM, nanostructured anode electrocatalysts for oxygen evolution, based on metal organic frameworks (MOFs).</td>
<td>AEM electrolysis OEMs, stack/system developers</td>
</tr>
<tr>
<td>Long-term (3000 hr) stability/durability testing at single cell (5-100 cm²) scale, according to EU harmonised test protocols</td>
<td>Suppliers of porous transport layer (PTL) and bipolar plate materials/components.</td>
</tr>
<tr>
<td>Stack testing at 50 kW scale</td>
<td>AEM membrane &amp; CCM suppliers/developers</td>
</tr>
<tr>
<td></td>
<td>Partners for post-mortem analysis of aged components</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organisational Capabilities</th>
<th>Administrative Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU’s Hydrogen Energy Applications Laboratory hosts</td>
<td>Coventry University (academic institution), UK</td>
</tr>
<tr>
<td>Bespoke, fully-automated AEM cell test stands (x6)</td>
<td>Seeking role as a partner, but can contribute to bid writing</td>
</tr>
<tr>
<td>Off-gas analysis (GC-TCD)</td>
<td>Contact;</td>
</tr>
<tr>
<td>Hydrothermal synthesis</td>
<td>Oliver Curnick, <a href="mailto:oliver.curnick@coventry.ac.uk">oliver.curnick@coventry.ac.uk</a></td>
</tr>
<tr>
<td>Electrolyser stack test capability up to 70kW</td>
<td>John Graves, <a href="mailto:j.graves@coventry.ac.uk">j.graves@coventry.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td>PIC: 999612161</td>
</tr>
</tbody>
</table>
# Proposed Approach & Experience

The group at CU has experience in the application of advanced diagnostic techniques to fuel cells & electrolysers.

We propose:
- Spatially-resolved impedance spectroscopy (SR-EIS) for PEM/AEM/AEL electrolyzers
- Electrochemical Harmonic Analysis (EHA) for online fault detection
- AI-based fault detection and control e.g. diagnosis of membrane failure/crossover

# Organisational Capabilities

CU’s Hydrogen Energy Applications Laboratory hosts:
- Bespoke, fully-automated LT electrolyser cell test stands (x6)
- Off-gas analysis (GC-TCD)
- Electrolyser stack test capability up to 70kW

# Partners

PEM/AEM/AEL electrolyser OEMs
Data logging & management
Electrolyser modelling & digital twin,

# Administrative Information

Coventry University (academic institution), UK
Seeking role as a partner, but can contribute to bid writing

Contact:
Oliver Curnick, oliver.curnick@coventry.ac.uk

PIC: 999612161
Bioinspired Structures for Noise and Vibration Control in Sustainable Energy Applications

Partners

We are looking for any industrial partner in hydrogen storage tank manufacturing area, however any academic and research collaboration is welcomed.

Organisational Capabilities

- More than a decade of experience in design and development of the metamaterials
- Metamaterials with increased shear stiffness
- Metamaterials with increased resistance to indentation (toughness)
- Durability at dynamic loadings and fatigue
- Increased resistance to fracture and damage
- Different deformation pattern, tendency to form double curved dome
- High energy absorption capabilities
- Better thermal management – low temperature storage
- Low density
- Adjustable mechanical properties
- Cellular and random geometry for hydrogen storage

Administrative Information

Cranfield University is a public institution based in Cranfield, UK.

We are planning on being either the Coordinator or a Partner.

Dr Mostafa Ranjbar, mostafa.ranjbar@cranfield.ac.uk, Tel. 00447951528282, United Kingdom, PIC 999440762
# Proposed Approach & Experience

## Proposal Writing Stage
*Project's pathways towards impact; Measures to maximize impact - Communication, Dissemination and Exploitation; IPRs management; Pathways to impact table: C & D & E measures; Target groups definition; Work package description; Critical risks for implementation; Business case or business plan.*

## Implementation Stage
*Communication & Dissemination Plan, Communication Pack Development, Day-to-day communication, Events organization, Use case monitoring, IPRs and Exploitation Strategy, Market Analysis, Business Plan, LCA, s-LCA, Social Acceptance Analysis, ESG reports, Field surveys, Replication of results.*

## Organisational Capabilities
*Pilots’ development and monitoring through Refineries, Energy cooperatives, Academic Labs, Regional and Local Authorities.*

*Social Sciences and Humanities expertise and experience.*

*Network of Interest development and engagement.*

<table>
<thead>
<tr>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seeking roll as a Partner for tasks:</td>
</tr>
<tr>
<td>- IPRs</td>
</tr>
<tr>
<td>- Commercial exploitation</td>
</tr>
<tr>
<td>- Dissemination</td>
</tr>
<tr>
<td>- LCA, s-LCA</td>
</tr>
<tr>
<td>- Social Sciences and Humanities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Administrative Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>SME</td>
</tr>
<tr>
<td>Seeking roll as a Partner</td>
</tr>
</tbody>
</table>

*Mr Manolis Tsantakis*

*manolis.tsantakis@enateam.gr*  
*+30 6944 83 51 51*  
*Greece*  
*PIC 916359292*
**Proposed Approach & Experience**

ERM's Sustainable Energy Solutions team (formed of acquisitions of Element Energy and E4Tech), provides **strategic consultancy** focused on the **low and zero carbon energy sector**, with 2 decades of **experience in the hydrogen sector**.

We provide support to consortia through key stages of **developing funding applications** as well as **Grant Agreement preparation**.

ERM has initiated most of the major Clean Hydrogen Partnership hydrogen transport projects in Europe. We also support project implementation through our role as **Coordinator**. We are involved in **27 projects through our UK entity** and **10 projects with our French entity** across FP7, H2020 and Horizon Europe. E.g:

<table>
<thead>
<tr>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERM can partner with existing consortia seeking Horizon Europe funding or projects already receiving funding.</td>
</tr>
</tbody>
</table>

| • H₂Accelerate Trucks (2022 call) |
| • ZEFER (2017 call) |
| • JIVE / JIVE 2 (2016 / 2017 call) |
| • ZEFER (2017 call) |
| • H₂Haul (2018 call) |
| • H₂ME / H₂ME 2 (2014 / 2015 call) |
| • Oyster (2020 call) |
| • HOPE (2022 call) |
| • PACE (2015 call) |
| • HYPSTER (2020 call) |

**Organisational Capabilities**

ERM can offer:

- **Extensive experience in Horizon Europe processes** in a dedicated team supporting funded project management (project delivery, consortium management, reporting, funding management and compliance).
- **Sustainable energy sector expertise** to support project delivery and effectively interface with beneficiaries, funding agency and external stakeholders.

<table>
<thead>
<tr>
<th>Administrative Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrew Flagg</td>
</tr>
<tr>
<td><a href="mailto:andrew.flagg@erm.com">andrew.flagg@erm.com</a></td>
</tr>
<tr>
<td>ERM UK – PIC: 950924854</td>
</tr>
<tr>
<td>ERM France – PIC: 886455647</td>
</tr>
</tbody>
</table>

Consultancy supporting funding applications, grant preparation and in role as Coordinator / technical support.
# Clean Hydrogen Production Via PC-H2SMR

## Proposed Approach & Experience
- Our project aims to revolutionise hydrogen production by addressing the environmental challenges associated with current methods, particularly focusing on the oil and gas industries. We specifically target the decarbonisation of fossil fuels and the production of hydrogen using a breakthrough technology called PC-H2SMR (*Plasma Catalytic Hydrogen Sulphide Methane Reformation*). This process avoids the use of water and minimises CO2 emissions. By utilising hydrocarbon-based sources like sour gas and biogas, we not only reduce methane emissions but also generate valuable by-products. Our approach is not only environmentally sustainable but also economically viable.

- Our team brings a wealth of expertise in catalysis, nanotechnology, and plasma technology. We have successfully developed a composite of highly stable nanocatalysts supported on mesoporous boron nitride, addressing the critical challenge of catalyst deactivation in H2SMR. This breakthrough enhances catalytic reactions and selectivity. Moreover, our integration of Non-Thermal Plasma (NTP) technology further demonstrates our commitment to pushing the boundaries of innovation. Our collective experience in these domains positions us as leaders in developing advanced solutions for sustainable clean hydrogen production.

## Business Model
In this programme, our business model centres around forming strategic partnerships with companies in the oil and gas sector. We aim to provide a sustainable and closed-loop solution for hydrogen production within the hydro-treating process. Our primary activities involve seamlessly integrating the PC-H2SMR process into existing hydro-treating facilities. We offer oil and gas refineries a clean, cost-effective, and environmentally friendly hydrogen source. Simultaneously, we use hydrogen sulphide produced during the hydro-treating process as feedstock for PC-H2SMR. Our target partners include major oil and gas companies, refineries, environmentally conscious organizations, technology integrators, sales and distribution partners, and research and development collaborators. Revenue sources encompass technology licensing and operating fees, along with consulting services for process optimization. Catalysts, hydrogen, and co-product sales also contribute to our income stream.

## Organisational Capabilities
GERAD Tech. boasts a multidisciplinary team with expertise spanning catalysis, nanotechnology, plasma technology, and petroleum engineering. Our skilled researchers have a proven track record in developing innovative solutions for sustainable energy. We possess state-of-the-art laboratory facilities equipped for advanced materials synthesis, catalyst testing, and NTP process optimization. Our in-house capabilities include a comprehensive understanding of plasma catalytic technology and its potential applications in H2SMR and hydrogen production.

## Administrative Information
GERAD Tech, a simplified joint-stock company in France.

Rooholah N. RAD, *r.rad@gerad.tech*, +330678536783
France

**Participant Identification Code (PIC):** 881674905
### Cluster 5: Climate, Energy and Mobility – any hydrogen calls

#### Proposed Approach & Experience

| • Technologies are urgently required that enable industry to switch from fossil fuels to hydrogen and deliver a decarbonised industrial and domestic sector. |
| • Pipelines will be the principal means of distributing hydrogen to industrial users in both the UK and international markets. However, hydrogen causes embrittlement in steel pipes, reducing the safety of new and existing assets. |
| • Steel pipes can be replaced by thermoplastic composite pipe for hydrogen applications. |
| • Thermoplastic composite pipes (TCP) can be manufactured in lengths exceeding 2km and can be spooled onto a drum, then unspooled for rapid installation. |
| • TCP are attractive due their ease of installation and lower embedded CO2. Thermoplastic materials are also recyclable at end of life. |
| • Hive has both H2 TCP IP/technology and testing capability for H2 products – an enabling technology for the deployment of hydrogen networks |

#### Partners

**If you are looking for partners, what type of partners?**

**Looking for:**

- Projects looking to develop hydrogen distribution networks
- Industrial decarbonisation projects where we can demonstrate our TCP
- Projects where some further development and testing of our pipe solution can be performed – added innovation

#### Organisational Capabilities

**Thermoplastic composite pipe technology – spoolable, lightweight, recyclable**

| • We have designed, prototyped and are currently testing and qualifying our own TCP for hydrogen distribution with lower embedded energy than other products |
| • Diameters of 2” up to 8” spoolable – larger if non-spoolable |
| • Incorporates hydrogen permeation barrier – various technologies |
| • Prototyping capability for winding trial sections, tape coating line |

**Testing capability**

| • Hydrogen permeation, exposure and rapid gas decompression testing |
| • Pipe burst testing, cycling pressure, constant pressure, spooling trials |
| • Large scale universal test machine (up to 150kN) |
| • Bespoke structural test frames |
| • NDT inspection |
| • Fitting/joint designs |
| • Sensor technologies for condition monitoring and inspection |

#### Administrative Information

**Hive is a Director owned UK company**

- Interested in being a project partner in projects that require hydrogen distribution

**Contact details including:**

**Peter Hansen CEng MIMechE**

**Director**

Tel: +44(0)7941 818 320

p.hansen@hivecomposites.com

Your organisation’s Participant Identification Code (PIC) if your organisation has one
## Hydrogen Optimisation

1. **Optimising** hydrogen production, distribution, storage and transmission.
2. **Actualising** Green H2 to valorise and maximise the green energy outputs
3. **Evaluation** parameters of performance and benefits realisation
4. **Validating** P2X H2 technologies to be deployed in emerging scenarios
5. **Developing** long term strategies for the advancement in adoption of hydrogen technologies
6. **Mapping** Energy Navigation Routes for the transition of the EU energy system to the green destination

Hydrogen is the catalyst driving Europe’s energy transition. Optimising this journey through valorization of the hydrogen supply chain, production, distribution, storage and transmission is key to creating a successful hydrogen Europe.

<table>
<thead>
<tr>
<th>Extensive development and demonstration skills &amp; experience in innovation driven Hydrogenewables GenComm, GreenH2 and SMARTH2</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Hydrogen Ireland <a href="https://hydrogenireland.org/">https://hydrogenireland.org/</a></td>
</tr>
<tr>
<td>• GenComm Website <a href="nweurope.eu/gencomm">nweurope.eu/gencomm</a></td>
</tr>
<tr>
<td>• GenComm LinkedIn <a href="https://www.linkedin.com/company/gencomm/">GenComm</a></td>
</tr>
<tr>
<td>• GenComm twitter <a href="https://twitter.com/GenComm_CH2F">@GenComm_CH2F</a></td>
</tr>
<tr>
<td>• Community Hydrogen Forum <a href="www.communityh2.eu">www.communityh2.eu</a></td>
</tr>
<tr>
<td>GenComm Animation <a href="https://vimeo.com/829803672/3e5133a60a">https://vimeo.com/829803672/3e5133a60a</a></td>
</tr>
</tbody>
</table>
**Proposed Approach & Experience**

MCG UK will use the existing blockchain-enabled supply chain traceability platform VUILA to build digital material passport (DMP) by automatically calculating the hydrogen production cost and carbon intensity index throughout the hydrogen supply chain, thereby enhancing real-time visibility and control over real operations. DMP will provide digital records of hydrogen and incorporate digital carbon footprint monitoring, report and verification (MRV) system based on the energy web chain.

**Organisational Capabilities**

MCG have led Hy-PACT and leverage the existing blockchain-enabled supply chain traceability platform VUILA to build DMP (Digital Material Passport) by automatically calculating the hydrogen production cost and carbon intensity index throughout the hydrogen supply chain, thanks to the Innovate UK KTN project between MCG and Cranfield University: [https://www.cranfield.ac.uk/som/research-projects/iot-blockchain-integrated-platform-for-maritime-shipping-industry](https://www.cranfield.ac.uk/som/research-projects/iot-blockchain-integrated-platform-for-maritime-shipping-industry).

---

**Partners**

MCG are looking for industry partners in Europe and relevant academic expertise for the ongoing UK-Germany Collaborative R&D funding call and other emerging opportunities.

---

**Administrative Information**

MCG is a London-based SME Coordinator/Partner

Clinton Liu
cliu@vuila.uk
07586852406
[https://www.linkedin.com/in/clinton-liu-mcg-buildtolast/](https://www.linkedin.com/in/clinton-liu-mcg-buildtolast/)
## Proposed Approach & Experience - the problem/challenge you can solve?

Electrolysis for green hydrogen production needs zero-carbon, low-cost electricity. MicroGen can identify, from satellite, sites where new hydropower (the lowest-cost form of electricity generation) could be established, in accordance with multiple qualifications as ‘potential’ including minimal environmental impact.

## Previous, relevant, work or track record can you bring to the team?

MicroGen has developed “ISMO” satellite-based earth observation technology which is helping African governments to plan multiple hydropower installations for rural electrification.

## Organisational Capabilities

**Skills, capabilities, facilities does your organisation have that will be vital for this project?**

MicroGen provide:  
Bid/proposal writing  
Industry/Market Research  
Team/Partnership building  
Use of unique IP in satellite-based earth observation technology for the surveying of river valleys for sites suitable for hydropower development

## Partners

If you are looking for partners, what type of partners are you looking for?

- Hydrogen equipment manufacture/supply (electrolysers, compressors, fuel-cell, etc.)
- Government agencies focused on development of ‘green hydrogen’ production.

## Organisational Capabilities

**Skills, capabilities, facilities does your organisation have that will be vital for this project?**

MicroGen provide:  
Bid/proposal writing  
Industry/Market Research  
Team/Partnership building  
Use of unique IP in satellite-based earth observation technology for the surveying of river valleys for sites suitable for hydropower development

## Administrative Information

MicroGen is an SME. Willing to be either the Coordinator or a Partner

Your contact details including:  
Martyn Cowsill, martyn@microgenrenewables.com  +44 7827 017796  
From UK  
PIC : 962402476
Proposed Approach & Experience
Steamology delivers zero emission marine power to MW scale “Fit for 55”

Organisational Capabilities
Design, build, test and development of quiet, clean, efficient, energy dense, cost effective, long life marine power for retrofit or new build vessels

Partners
Naval Architects, Vessel Operators, Port H₂ Infrastructure

Administrative Information
Steamology zero emission power solutions
www.steamology.co.uk
SME Partner
Matt Candy CEO
matt.candy@steamology.co.uk
+44 (0) 77 88 92 00 15
UK