Hydrogen in Transport

Germany 2025

Global Business Innovation Programme

Innovate UK


H2

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Innovate UK

Innovate UK, part of UK Research and Innovation, is the UK's innovation agency. It works to create a better future by inspiring, involving and investing in businesses developing life-changing innovations. Its mission is to help companies to grow through their development and commercialisation of new products, processes and services, supported by an outstanding innovation ecosystem that is agile, inclusive and easy to navigate.

www.ukri.org/councils/innovate-uk

Innovate UK Business Growth

Innovate UK Business Growth is Innovate UK's national business growth and scaling service. It is an integral part of the innovation agency's products and services portfolio.

The service is available to all established small to medium sized innovation-focused growth companies, including Innovate UK grant winners.

Innovate UK Business Growth accelerates its ambitious clients on their growth journeys with one-to-one support from over 400 innovation and growth specialists and scaleup directors embedded in every UK region and nation. Their tailored, expert advice helps thousands of businesses sharpen their commercial strategies, realise the maximum value from their IP, raise game changing investment and take their businesses onto the global stage every year.

www.iukbg.ukri.org

Global Business Innovation Programme

Delivered by Innovate UK, the Global Business Innovation Programme is aimed at UK companies, helping them to establish international innovation collaborations and to overcome barriers to entering global markets.

This engaging programme consists of a get ready preparation phase, 5-day innovation visit to Germany, an exploit the opportunity workshop, and support from an Innovate UK innovation and growth specialist - helping the business to identify growth opportunities and develop innovation led collaborations with partners in the country.

Hydrogen in Transport

The UK is advancing hydrogen as a zero-emission transport fuel, targeting hard-to-abate transport segments where batteries and bio-fuels have limitations. The UK aims to scale up low-carbon hydrogen production to 10 GW by 2030, of which at least half should be green hydrogen (1). Transport-sector demand for hydrogen is projected to increase: usage is modelled to grow from 1–4 TWh in 2030 to 75–165 TWh by 2050 (2). This demand covers likely applications in heavy goods vehicles (HGVs), buses/coaches, domestic and international aviation, and shipping.

The UK has strong research capabilities and a well-developed innovation ecosystem, supported by public funding bodies like UKRI and initiatives like the Innovate UK-funded Catapult Network's Hydrogen Innovation Initiative, which drives the commercialisation of new products and services. The UK is also home to world-leading companies such as ITM Power, Johnson Matthey, Ceres Power, and Wrightbus, which are at the forefront of developing and manufacturing key hydrogen technologies.

The UK government has been supportive of the green hydrogen transition through funding like the Hydrogen Allocation Rounds (HARs) subsidising green hydrogen production in the UK and demonstration programmes, e.g. the Tees Valley Hydrogen Transport Hub, with a goal to see green hydrogen in use across various transport modes by 2030. The UK government has positioned hydrogen as a key component of transport decarbonisation by 2050, especially in sectors where batteries are less viable.

(1) UK hydrogen strategy - GOV.UK
(2) Decarbonising transport: is hydrogen the answer?

Germany and UK Cooperation

Germany and the UK share a clear ambition to decarbonise transport and establish themselves as leaders in Europe's emerging hydrogen economy. Their strategic innovation partnership is underpinned by deep scientific collaboration and a joint commitment to address global challenges.

The cooperation is reinforced through the bilateral framework signed in July 2025, which drives joint R&D in industrial innovation and clean technologies. By leveraging aligned interests and complementary strengths – such as Germany's engineering excellence and the UK deep-tech innovation ecosystem – both countries are well-placed to accelerate science-driven economic growth and advance sustainable technology development.


H2

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Profile

Carnot is reducing the cost & emissions for heavy-duty transportation with the world's most efficient engines.

We achieve ground-breaking efficiency by using materials that can operate at combustion temperatures reducing the need for active cooling and hence eliminating the third of energy wasted in current engine designs. Whereas a typical diesel engine can achieve only 20-45% efficiency, a Carnot Engine can operate at 65-70% efficiency.

By doubling efficiency, fuel consumption is halved – delivering enormous OPEX savings. In addition, the Carnot Engine is designed to be fuel agnostic, able to operate on hydrogen, ammonia, biofuels and e-Fuels. This transitional approach enables use of available fuels in the short-term whilst being ready for future fuels as they become available at scale and appropriate cost; de-risking decarbonisation strategies.

Objectives

As we move forward to address key sustainability/decarbonisation targets in the marine, heavy duty automotive (primarily off-highway) and grid edge power generation markets, we are looking to connect with organisations positioned to support us with three key areas of our business:

- Core technology innovation; universities and organisations with expertise or products in materials (high temperature structural materials, lubricants and low-friction or hard-wearing materials), combustion engine components (injectors and wider fuel system components, turbochargers/e-turbos, exhausts and aftertreatment etc…) and synergistic powertrain/power systems technologies (drivelines, hybridisation, automation/control)
- Broader project collaboration/partnership/supply-chain; as we look toward future European (Horizon) funding opportunities
- Potential commercial opportunities (potential partners for joint funded development).

CARNOT

CARNOT

The world's most efficient, fuel agnostic, internal combustion engine.

70% Brake Thermal Efficiency	35% lower total cost of ownership >50% more range than comparable ICE
Net Zero, Hydrogen, e-Fuel, Ammonia & Biofuel Ready	Making Net Zero affordable today Avoid environmental regulatory financial penalties & taxes
Fuel Agnostic Technology	Uses existing infrastructure, fuel supply and manufacturing capacity to scale Potential to accelerate transition to net-zero by 7.5 years and save 33 $GtCO_2e$ Creating demand for carbon neutral fuel and hydrogen supply & infrastructure

70%
Brake Thermal Efficiency

35%
Lower TCO Than Modern Engines

50%
Reduced Weight and Greater Range

www.carnotengines.com

Circular Refining

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Profile

We are driving the UK's net-zero transition by developing and deploying integrated solutions across the hydrogen value chain.

Our core work encompasses rapid prototyping in advanced manufacturing and facility design for innovative hardware like the HyMax composite transport containers and HyLo modular storage solutions. Simultaneously, we are leading digital innovation by launching Hydrogen IQ, an AI-powered procurement platform.

Our strategy is underpinned by strategic collaboration with institutions such as the University of Manchester and the University of Salford NERIC to bridge technology gaps and establish world-first ISO standards for composite gas storage, ensuring our innovations are both scalable and commercially viable.

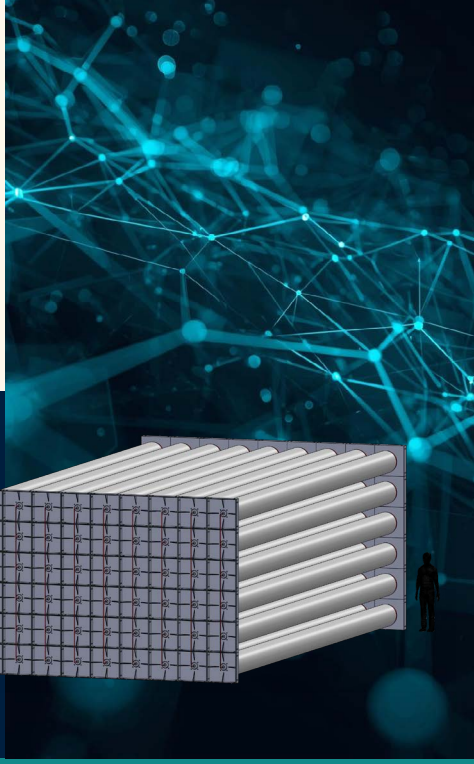
Objectives

We are actively looking for three core types of cooperation to accelerate our projects. Firstly, we seek Industrial Demonstrator Partners—specifically German industrial users or logistics hubs—to co-fund and host a First-of-a-Kind demonstrator of our modular HyLo hydrogen storage facility, validating its deployment.

Secondly, we aim to establish a reliable supply chain by searching for Advanced Manufacturing Suppliers in Germany to procure specialist equipment for the automated production line of our HyMax Type 5 composite cylinders.

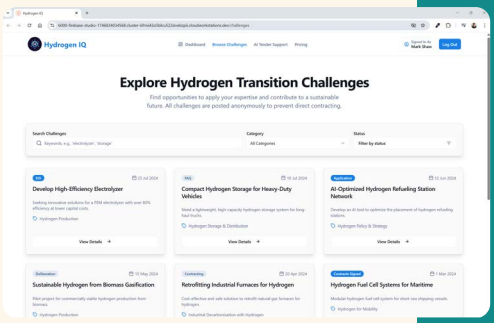
Finally, we require Platform Users—hydrogen producers and large off-takers—to become early adopters and pilot testers of our Hydrogen IQ procurement platform, providing essential data for its commercial launch and market scalability.

Circular Refining: Driving the Future of Hydrogen



HyLo
Industrial Hydrogen & Nitrogen Supply

HyLo provides the essential infrastructure for Ammonia-to-Hydrogen (ATH) conversion. We manage the import logistics of liquid ammonia (NH3) and integrate seamlessly with the cracking unit. This robust system handles the distribution and off-take of the resulting high-purity hydrogen (H2) and nitrogen (N2) for industry, leveraging our reliable 350-bar storage and expert system design to ensure continuous, on-demand industrial gas supply.



Hydrogen IQ
The AI Procurement Marketplace

Hydrogen IQ is our AI-powered marketplace designed to revolutionize hydrogen solution procurement. The platform utilizes advanced generative and agentic AI to instantly dissolve market complexity, matching your specific project needs with validated suppliers and technologies. This transforms a fragmented, slow process into a liquid, transparent market. The result is accelerated project deployment, optimized sourcing, and the confidence that you've secured the most efficient hydrogen solution available.

Contact us today to explore our hydrogen energy import solutions!
Call us at 0161 667 3352

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DRIFT

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Profile

DRIFT Energy provides a new, planet-scale class of renewable energy. Over 80% of the world's wind energy is trapped where traditional renewables cannot access it - the deep ocean.

DRIFT is developing the first ever form of transport that makes more energy than it uses - energy harvesting ships capable of capturing wind energy in the deep ocean. Using state-of-the-art sailing technology, these vessels harness the wind and drag a turbine through the water as they move to generate electricity.

This electricity is used to purify sea water and convert it to hydrogen through electrolysis. The hydrogen is compressed and stored onboard, ready to be transported to customers around the world. DRIFT ships represent a new class of renewable energy for today, that is decentralised, rapidly deployable, independent of any grid and planet scale.

DRIFT
Oceans of Energy

Objectives

DRIFT Energy is developing designs for a full-scale demonstrator vessel, with a target construction date of Q4 2027.

DRIFT is seeking to expand its base of hydrogen industry connections and collaborators for the project, and would also like to meet and forge links with potential end users or distributors of hydrogen.

DRIFT is particularly interested in partners for the following components of the hydrogen ecosystem for both the demonstrator and future vessels:

- Storage technologies, including technologies to increase gravimetric and volumetric efficiency of storage
- Filling of storage, including compression technology
- Valves
- Safety equipment
- Marinised engines or fuel cells using hydrogen as a fuel

DRIFT is also interested to hear from companies that are looking to collaborate on demonstration or R&D opportunities.

DRIFT

Oceans of Energy

THE EARTHSHOT PRIZE
NOMINEE 2025

A new, planet scale class of mobile renewable energy

Generation

High-performance sailing ships harvest deep ocean wind energy using underwater turbines.

Storage

An on-board electrolyser produces green hydrogen which is compressed and stored onboard.

Distribution

AI-enabled routing algorithms keep the ships in optimum weather ready to deliver to port.

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Electric Aviation Group

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Profile

Electric Aviation Group (EAG) is a UK-based technology company developing zero-emission propulsion and energy systems for the aerospace, automotive, defence, and marine sectors.

Our focus is on hydrogen-electric powertrains, including high-power-density electric motors, magnet-free EESMs, advanced fuel cell systems, lightweight composite hydrogen storage, and high-efficiency power electronics.

We design integrated, certifiable, and scalable solutions that minimise weight, maximise efficiency, and improve overall system performance.

By combining expertise in aerospace engineering, electrification, and hydrogen technologies, EAG is creating next-generation propulsion architectures to decarbonise aviation and transport, delivering sustainable, high-performance solutions for future mobility.

Objectives

EAG is seeking strategic partnerships with German OEMs, Tier-1 suppliers, research institutes, and hydrogen infrastructure organisations to accelerate the development and commercialisation of hydrogen-electric propulsion technologies.

We aim to co-develop and validate key subsystems — including electric motors, magnet-free EESMs, power electronics, fuel cells, and cryogenic hydrogen storage.

Collaboration opportunities include joint R&D, digital-twin and AI-driven design, materials optimisation, and system integration for aerospace, automotive and heavy-mobility applications.

EAG also seeks to build bilateral supply-chain and demonstration partnerships under Horizon Europe, Clean Aviation, and HyLand/NOW GmbH programmes to scale sustainable propulsion technologies across UK-Germany markets.

EAG
ELECTRIC AVIATION GROUP

EAG

ELECTRIC AVIATION GROUP

Pioneering Hydrogen-Electric Propulsion for Zero-Emission Transport

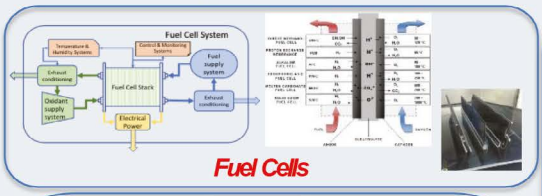
Integrated, certifiable, and scalable hydrogen-electric systems for aviation and mobility

Electric Aviation Group (EAG) is a UK-based technology company developing zero-emission propulsion and energy systems for the aerospace, automotive, defence, and marine sectors.

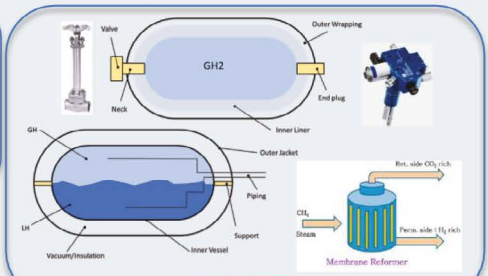
Our integrated hydrogen-electric powertrain solutions combine:

- Ultra-lightweight electric motors and power electronics
- Advanced fuel cell and battery systems
- Hydrogen storage and distribution Systems

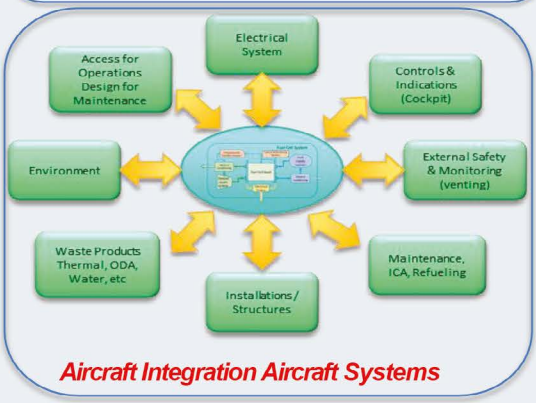
Together, these deliver unmatched power-to-weight ratio, efficiency, and sustainability while remaining fully certifiable and scalable for future mobility.



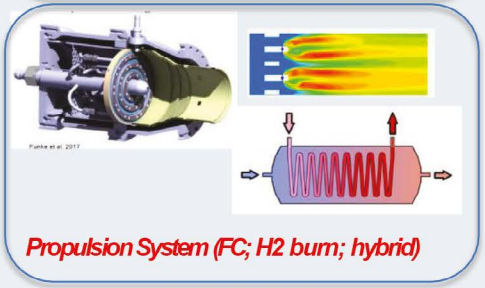
Fuel Cells



Storage & Distribution



Aircraft Integration Aircraft Systems



Propulsion System (FC; H2 burn; hybrid)

Partner with us to co-develop, test, and scale hydrogen-electric propulsion technologies across UK-Germany transport ecosystems.

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Engas Global

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Profile

Engas Global is offering patented electrolysers and hydrogen compressors at up to 90% lower cost than conventional technologies to make hydrogen viable even at farm scale to displace fossil fuels. Creating localised H2 production and refuelling infrastructure. We build, own and operate our plants to sell hydrogen.

Engas Global Ltd offers:

- Modular, containerised electrolyser for hydrogen production
- 350bar hydrogen compressor, refueller and hydrogen storage/bunkering system.
- Biogas-scrubber to make pure biomethane and 250bar bio-CNG refueller.
- All our equipment and plants are regulatory compliant.
- Engas Global offer services on designing the optimal size of electrolysers, compressors etc. and dealing with complex trade-off between the electrical infrastructure, surplus-electricity, cost of hydrogen storage and the cost of transportation of hydrogen.

Objectives

We are looking to build local partnerships in Germany for project development under a joint venture agreement to produce hydrogen at farms and at ports to use it locally in transport sectors.

This will also include localised manufacturing and assembly of electrodes, PLC controllers and assembly of containerised hydrogen systems in Germany.

We are also looking to collaborate with SMEs, universities, ports, dairy farms, anaerobic digestion companies, construction companies, fleet operators, system integrators and project developers and exploring the possibilities of registering a company in Germany.

Engas Global
an electrolyser and H_2 compressor company

Engas Global

an electrolyser and H_2 compressor company

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www.en-gas.com

Engas Global is offering patented, 50-250kW scale electrolysers and hydrogen compressors at up to 90% lower cost to create localised H_2 production, bunkering and 350bar refuelling infrastructure. We build, own and operate our plants to sell hydrogen. All our plants are regulatory compliant.

"It can be cheaper to run hydrogen cars on €/km basis than driving petrol/diesel-cars to travel the same distance and extremely satisfying."

-Dr Amit Roy,
CEO, Engas Global

Biogas upgrading to Bio-CNG & 250bar refueller, Andover, UK.

We also manufacture our CO_2 capturing plants to purify raw biogas to produce 250bar biomethane for vehicles and offgrid EV charging.

Green efuels

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Profile

Our solution turns green electrons into global molecules. We bind renewable hydrogen into a liquid organic carrier that ships and stores like today's fuels—no cryogenics, no high-pressure tanks, just safe, stable liquids handled at ambient conditions. Compared with liquefied hydrogen, LOHCs unlock simpler logistics and leverage existing liquid-fuel infrastructure; several analyses now point to LOHCs emerging as a cost-advantaged option for long-distance shipping this decade.

The result is an energy-dense, infrastructure-friendly pathway from sunny or windy regions to hard-to-abate users—power, refining, mobility, steel—without rewiring global trade. That's the quiet revolution: hydrogen that moves like oil but decarbonises like sunlight.

Under the hood, the chemistry is elegantly simple. Hydrogenation saturates an unsaturated liquid at the production site; dehydrogenation later liberates clean H_2 for use while regenerating the carrier.

Objectives

We build on the state-of-the-art, so your project launches future-proof.

What does deployment look like with Green E-Fuels? We design modular, skid-mounted hydrogenation units co-located with electrolysers, then move carrier by road, rail, or ship to compact dehydrogenation hubs sited near industrial demand—refineries, chemical parks, power peakers, or port bunkering. This approach dovetails with today's permitting and leverages existing terminals, cutting time-to-market. Crucially, LOHC is already out of the lab: full supply-chain demonstrations have delivered marine cargoes and fuelled turbines in Japan, and multiple EU and Middle-East projects are now progressing from FEED to FID. Independent analyses from agencies and journals increasingly position LOHCs alongside ammonia as front-runners for intercontinental hydrogen trade, with compelling economics where pipelines aren't feasible. Partnering with Sinclair means bankable technology, global logistics know-how, and an execution team that makes hydrogen behave like a drop-in commodity—so decarbonisation arrives not as disruption, but as an upgrade.

Green e-Fuels Ltd
Drop-in Replacement Green Fuels

Green e-Fuels Ltd

Drop-in Replacement Green Fuels

ABOUT US!

Green e-Fuels Ltd specialises in small-footprint (including mobile low-loader) systems enable near-site production powered by on-site solar or wind, reducing supply-chain risk while fitting today's fuel infrastructure.

DROP-IN LIQUID HYDROGEN LOGISTICS

STORE AS A LIQUID. SHIP LIKE FUEL. DELIVER AS HYDROGEN.

Our platform binds green hydrogen into a safe, non-flammable liquid that stores and ships at ambient temperature and pressure—no cryogenics, no 700-bar cylinders. At origin, we hydrogenate the carrier; at destination, we release ultra-pure H_2 on demand and recycle the liquid—closing a clean, circular loop. This leverages today's fuel infrastructure to move hydrogen from windy and sunny regions to hard-to-abate users with minimal disruption.

Intermittent Renewable Energy

Green hydrogen production

- BESS (Battery storage – short duration)
- Supercapacitors (power stabilization)
- Green hydrogen derivative (long duration)
- Smart power management system & control

Hydrogen derivative (stored at STP)

OUR SERVICES

H2 stored in liquid form	**Hydrogen Stored at ambient P&T**
100% Green Energy	**Modular, Scalable Capacity**
Proven at Global Scale	**State-of-the-Art Performance**

Green E-fuels Ltd utilizes hydrogen propulsion, modular construction, and optimized storage to maximize efficiency.

- End-to-End Zero Emissions Energy Systems
- Modular Design for Versatility
- Advanced Hydrogen Storage Solutions
- Smart Energy Management Systems
- Future-Ready Technology

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Profile

At Hydrixon Tech, we are developing advanced solutions for safe, high-density hydrogen storage and transportation. Using metal hydride technology combined with our innovative thermal management system, we overcome the traditional limitations of slow absorption and desorption rates. This enables efficient hydrogen loading and release, ensuring reliability for mobile and stationary applications.

Our approach delivers secure, compact storage for hydrogen-powered vehicles and scalable systems for renewable energy integration and fuel cell applications.

By making hydrogen storage safer and more practical, we aim to accelerate the transition to clean transportation and sustainable energy infrastructure worldwide.

Objectives

Hydrixon Tech is seeking partners in Germany to launch pilot programs and explore research collaborations in advanced hydrogen storage and transportation.

We aim to work with automotive manufacturers, energy providers, and infrastructure developers to validate our metal hydride technology in real-world conditions.

These partnerships will help demonstrate the safety, efficiency, and scalability of next-generation hydrogen storage solutions, accelerating clean mobility and renewable energy adoption.

HYDRIXON TECH
COMPANY

H2

HYDRIXON TECH
COMPANY

SAFE & EFFICIENT HYDROGEN STORAGE

Advanced Proprietary Technology

The Future of Clean Energy Storage

Advanced metal hydride storage system with proprietary thermal management technology.

Fast charging, maximum capacity, and unparalleled safety for industrial-scale hydrogen applications.

Maximum Safety

Solid-state storage eliminates high-pressure risks. Advanced thermal management prevents thermal runaway. Inherently safe design.

Rapid Charging

Industry-leading fast hydrogen loading. Proprietary distribution system ensures optimal performance and efficiency.

Smart Thermal Control

Integrated active cooling system maintains optimal temperature for maximum capacity. High efficiency thermal management.

Superior Performance

Breakthrough technology delivers faster charging and higher capacity than conventional systems. 1000+ cycle life.

PERFORMANCE SPECIFICATIONS

1.0 kg H_2 STORAGE CAPACITY	**35 bar** OPERATING PRESSURE	**<5 min** FUELING TIME
<5 min REFUELING TIME	**>95%** STORAGE EFFICIENCY	**1000+** CYCLE LIFE

POWERING TOMORROW, TODAY

Join the hydrogen revolution with HYDRIXON TECH's breakthrough storage technology

www.hydrixontech.com | info@hydrixontech.com

Hypermotive

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Profile

Hypermotive are expert integrators of hydrogen power system technologies. We have developed a range of productised technologies and associated services for end-use applications (mobility and power). These are also applicable to transport and storage of hydrogen, providing automated control and safety of gas storage.

We have delivered the hydrogen integration of the UK's first mainline certified hydrogen powered train (Porterbrook HydroFLEX), the UK's first twin fuel-cell truck demonstrator (HVS) and supported novel fuel cell technology developers, to create fuel cell systems and demonstrate in maritime applications.

We support integration and connectivity of hydrogen technologies right across the hydrogen value chain at all verticals.

We have manufacturing capability producing technologies for hydrogen systems integration, including communication wiring and high-power cables, power distribution systems, power conversion and electrical filtration.

Objectives

We design and manufacture electrification, battery and fuel cell system integration products. This includes fuel cell controllers, hydrogen tank controllers, power distribution (PDU) and power conversion. We are a Tier 1 supplier into mobility and power sectors including automotive & industrial vehicles, marine, off-highway, rail, aerospace, motorsport and mobile power.

We have developed a marine fuel cell power system in collaboration with Honda, the X-M1, and a MEGC automation system, M:STORE, using our Hypercore integration products and technologies.

We are looking for collaborative opportunities to deploy these new integration technologies (Hypercore), and our products that utilise these (X-M1, M:STORE) and deliver hydrogen integration programmes with industrial end-users, fleet owners and operators and the wider Germany supply chain. Private and public funded programmes are all considered.

HYPERMOTIVE

HYPERMOTIVE

Your Partner for Hydrogen System Integration

Get in touch to explore your hydrogen needs
enquiries@hyper-motive.com

Visit us
www.hyper-motive.com

Tailored hydrogen solutions
Working alongside you throughout the lifecycle of your zero-emissions vehicles, vessels and power systems.

Complete hydrogen integration services
An end-to-end service tailored to your needs, using our products and technologies coupled with engineering expertise and contract manufacturing.

Leaders in hydrogen integration
Delivering hydrogen fuel cell power across road, rail and marine since 2016. Whether embarking on the hydrogen journey or optimising your portfolio, talk to us and explore how we can help you lead the way.

IVEngineering

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Profile

IVe is driving the shift to zero-emission transport and clean energy with innovative hydrogen solutions.

We provide fuel cell powerpacks, vehicle repowering systems, and energy generation technologies tailored to customer needs. By delivering integrated, tested, and flexible systems, we make hydrogen adoption simpler and more cost-effective.

Working collaboratively from concept to deployment, we combine in-house engineering with trusted partners to ensure every solution is safe, scalable, and high-performance, helping organisations decarbonise efficiently and accelerate the adoption of hydrogen technologies.

Objectives

IVe seeks collaborators to accelerate hydrogen adoption in transport and energy sectors. We are interested in:

- Vehicle integrators for fuel cell and repowering projects
- Research institutions and innovation centres for joint R&D and testing
- Technology and supply chain partners to deliver integrated hydrogen solutions
- Funding and investment collaborators to support pilot projects and commercial deployment
- Opportunities to demonstrate, scale and deploy zero-emission hydrogen technologies in real-world applications across Europe

innervated
vehicle
engineering

innervated
vehicle
engineering

Driving Innovation Beyond Mobility

"At IVe, innovation drives everything we do.
Our team brings together years of expertise in hydrogen systems, vehicle integration and advanced controls, turning cutting-edge research into real-world clean technology.

We're not just building the future of mobility — we're powering it.

OUR TECHNOLOGIES

- Hydrogen Fuel Cell Powerpacks – clean, efficient, and scalable energy systems.
- Repowering Solutions – transforming existing fleets into zero-emission vehicles.
- Energy Generation Solutions – leveraging our tech beyond transport to create sustainable, distributed power.

TARGET MARKETS

- Off-Highway Vehicles (3.5T–18T): Commercial vehicles, buses, logistics fleets.
- Stationary Power Generation: Data centers, construction sites, critical infrastructure, mobile backup power.

What we do

We help our customers decarbonise their operations by providing proven and flexible hydrogen power solutions. Our tailored systems are designed to meet each client's specific operational requirements and sustainability goals, supporting their transition to cleaner, more efficient energy.

Why us

We make hydrogen adoption simple, scalable, and cost-effective. By delivering integrated, market-ready systems through trusted hydrogen and refuelling partnerships, we remove complexity and accelerate deployment. Our collaborative, engineering-led approach combines in-house expertise with a strong supply chain to deliver safe, compliant, and ready-to-deploy hydrogen solutions.

" Turning Diesels into Hydrogen Vehicles "

MecharaTech

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Profile

Mechara Technologies is a UK systems-engineering SME developing digital model/shadow/twins that connect design, control, and supply for hydrogen fuel-cell transport.

Our models run across 250 + enterprise tools and are verified through data from 150 + suppliers worldwide. We combine physics-based and data-driven analytics to detect faults, reduce sensors, and optimise efficiency in hydrogen propulsion and balance-of-plant systems.

The team's experience spans kW- to MW-scale PEM fuel-cell programmes, including bus, marine, and stationary systems, giving us deep insight into real operating conditions. Every component we model is digitally traceable to requirements, total cost of ownership, and ROI, helping OEMs cut cost, time, and carbon in hydrogen mobility.

Objectives

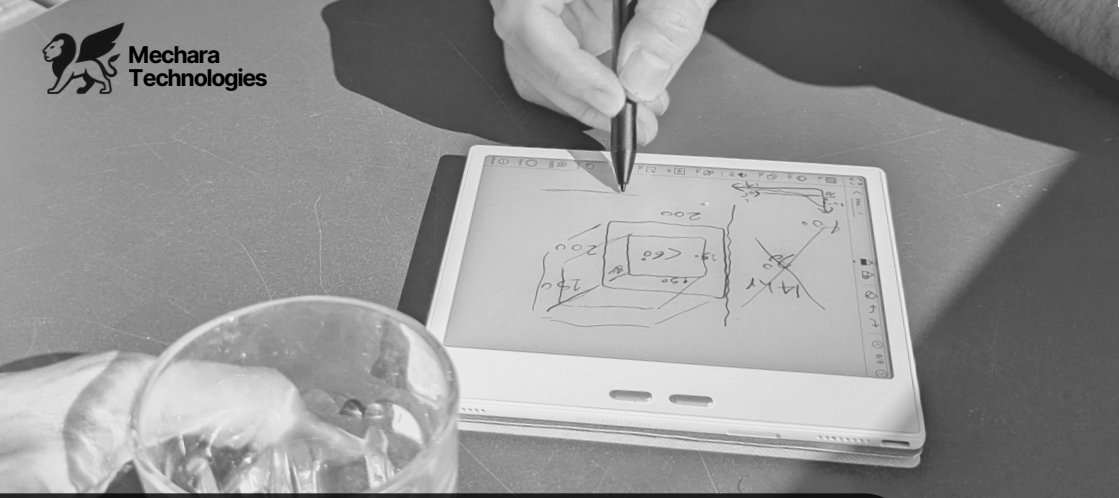
We are seeking OEMs, Tier-1s, and research partners in Germany to co-develop, validate, and embed our controller-in-the-loop digital-twin solutions for fuel cell systems.

Our aim is to integrate FMI-based models and virtual sensors into live testbeds, enabling faster calibration, fault detection, and reliability validation.

We also welcome partnerships with component manufacturers and test centres to expand our verified supplier network and strengthen our data-driven sourcing tools that link digital design directly to supply-chain traceability, cost optimisation, and sustainability.

Mechara Technologies

Mechara Technologies



Digital twins and model-based systems for hydrogen propulsion

Cutting cost, time, and carbon in development and O&M

From Simulation to System

Mechara is a UK systems-engineering company developing **digital twins** and **model-based design, control and optimisation tools** for the hydrogen transport sector.

We specialise in **fuel-cell propulsion**, **balance-of-plant (BoP) design**, and **thermal management**, supporting systems **from kilowatt to megawatt scale**.

Our Capabilities

Simulation libraries and digital twins
Interoperable models and virtual sensors for hydrogen systems, connecting simulation to real hardware for faster verification and validation.

Diagnostics and optimisation tools
Hybrid physics-data algorithms that detect faults, reduce sensors, and enables optimum control for higher efficiency and reliability.

Procurement and traceability tools
Integrated sourcing of anode, cathode, and thermal-loop components, digitally modelled within our design workflows, all traceable to requirements, TCO and ROI .

Scan to connect
Learn more about Mechara, explore our website, and get in touch with our team.

www.mecharatech.com
contact@mecharatech.com

SensiPhi

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Profile

We are pioneering the commercial application of High-Resolution Distributed Acoustic Sensing (HR-DAS) using our proprietary ULEB fibre core.

This technology transforms standard optical fibre into a continuous sensor network with over 10,000 nodes, delivering extreme nano-strain sensitivity and centimetre-scale resolution.

Our work focuses on providing crucial, high fidelity integrity data for high-value industrial assets—from composite structures in aerospace and wind turbines, to downhole well monitoring in Oil & Gas, and ensuring the safety and structural health of emerging hydrogen infrastructure where leak detection is paramount.

Objectives

We are actively seeking strategic industrial partnerships with organisations focused on advancing the safety and integrity of the hydrogen (H2) value chain.

Our primary interest is collaborating with firms specialising in the manufacturing and operation of H2 transport assets (e.g., composite tanks for rail, shipping, trailers, and fuelling stations) and heavy industrial infrastructure.

We look to establish immediate qualification trials for our ULEB fibre and HR-DAS platform, specifically for real-time leak detection and structural monitoring in high-pressure, high stress and liquid H2 containment vessels. We aim to integrate our proprietary sensing technology into hydrogen applications, securing foundational partnerships that will accelerate the commercial deployment of HR-DAS as the safety standard across the emerging H2 economy.

Sensiφ®

10,000 SENSORS. ONE OPTICAL FIBRE.
DE-RISK H_2 INFRUSTRUCTURES.

The Breakthrough

We transform a single optical fibre into a structural **Nervous System** using proprietary **High-Resolution Distributed Acoustic Sensing (HR-DAS)**.

Why HR-DAS is Critical for Hydrogen Safety

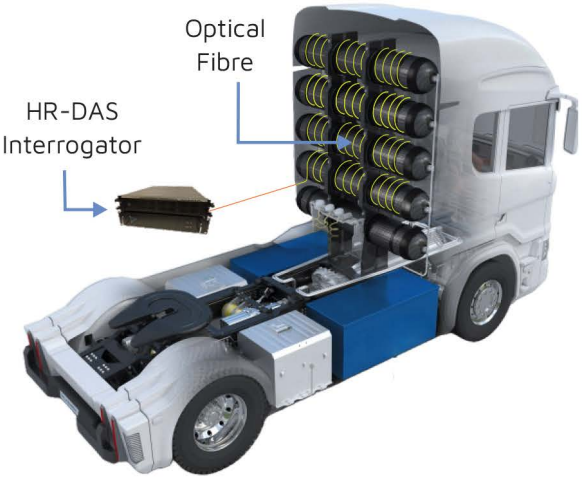
• **Complete Coverage**: Provides full-length, flexible monitoring of assets, eliminating the need for discrete sensors and **omitting all traditional blind spots**. Works independently of tank size, geometry, or material (composites/metal).

• **De-Risking H_2 Adoption**: Accelerates the safe development and deployment of hydrogen technology by providing verifiable, long-term integrity data.

• **Real-Time Failure Prevention**: Instantly detect and localise **micro-cracks, fatigue initiation, or stress points** before they escalate. Creates a comprehensive strain and acoustic map of H_2 tanks and pipelines within minutes.

• **Extreme Precision**: Measures variations at the **nano-strain level** with **centimetre-scale resolution** across the entire structure.

• **Predictive Maintenance**: Enables optimised inspection schedules based on real-time location and severity data, minimising costly downtime.



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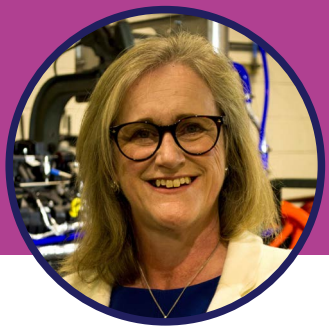
ULEMCo



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Profile

ULEMCo is focussed on delivering practical, cost-effective hydrogen transport solutions for heavy-duty equipment and specialist vehicles, based on our expertise and skills in system integration, hydrogen safety and novel approaches to both fuel cell and hydrogen combustion applications.

Spanning from H2ICED®, our hydrogen dual-fuel system for existing vehicles, to fully zero-emission technologies such as HyICE™, our hydrogen ICE series hybrid powertrain for repowering, and FCRx® our fuel-cell range-extension Plug&Play module for upgrading specialist electric trucks, we make it easy for customers to adopt hydrogen fuel in their operations, now.

HyTANKa® and Port-a-Bull™ our mobile refuelling solutions make hydrogen accessible even in the most challenging environments.

Combing proven engineering with our end-to-end approach, ULEMCo offers a scalable pathway to creating demand for hydrogen, tomorrow's fuel, today.

Objectives

We're looking for opportunities to collaborate with German partners to help them widen their offering in hydrogen solutions for their customers, particularly around upgrading and upcycling, in heavy duty applications including specialist road vehicles like those used in utilities and public services to emergency fire engines, ambulances, off-road and airport support equipment.

We're looking to share our real-world experience of deploying hundreds of hydrogen enabled vehicles with customers like Aberdeen City Council and civil engineering firms like BAM and Skanska in projects that have demonstrated that hydrogen will deliver the power and the operational flexibility they need, and to see how this might help stakeholders in the German Hydrogen economy accelerate demand and achieve FID for hydrogen supply projects.

ULEMCo
ULTRA LOW EMISSION

ULEMCo

ULTRA LOW EMISSION

ULEMCo delivers practical, cost-effective hydrogen transport solutions based on upcycling and repowering specialist HGV and off-road equipment.

Visit our website at **ulemco.com** to find out more!

Unitrove

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Profile

Unitrove is pioneering the development of the world's first Zero-Emission Multi-Fuel Station (ZEMFS): a 45-ft mobile unit delivering liquid hydrogen (LH_2), cryo-compressed hydrogen (CcH_2), compressed gaseous hydrogen (CGH_2), and electricity from a single transportable module.

The ZEMFS is a multi-modal solution, supporting road, rail, aviation, and maritime applications. Designed for rapid deployment and relocation, it provides heavy-duty transport and industrial operators with convenient, flexible, and cost-effective access to zero-carbon fuels.

Unitrove is also developing a liquid hydrogen power unit for electricity generation from LH_2, serving off-grid and industrial applications such as data centres, construction, filming, and events. A full-scale demonstration is planned for February 2026.

Finally, Unitrove seeks to deploy small-scale green hydrogen liquefaction plants to enable broader adoption of hydrogen and zero-carbon fuels.

Objectives

- To create and strengthen partnerships and collaborations for the production, storage, liquefaction, transportation, distribution, and use of green hydrogen, particularly within major German hydrogen hubs.
- To explore opportunities to raise venture capital from European investors to support global growth and expansion while fostering strong local collaborations.
- To exchange knowledge and technology with German industry partners to better understand market dynamics, align with local practices, and reduce the overall cost of green hydrogen.
- To contribute to the development of sustainable business models that accelerate hydrogen adoption and support the global transition to net-zero energy.

Zero-Emission Multi-Fuel Station (ZEMFS)

Delivering multiple fuels in a single 45-ft mobile unit

- Liquid hydrogen, LH_2
- Cryo-compressed hydrogen, CcH_2
- Compressed gaseous hydrogen, CGH_2
- Electricity

LH_2 Storage

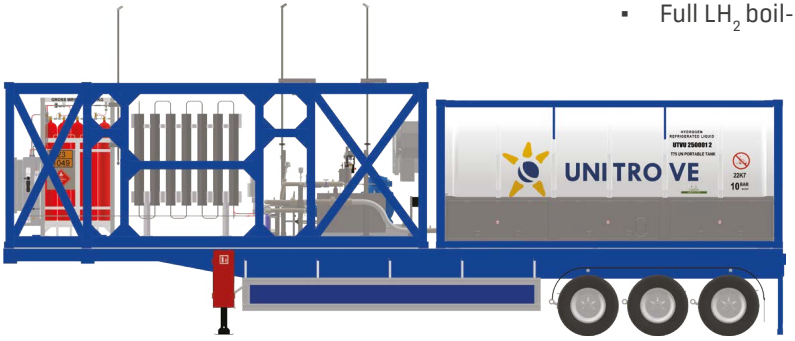
- 20-ft UN T75 container
- 20,000 litres, 10 bar relief
- 909 kg LH_2 (at 65% fill level)

CGH_2 Storage

- 2,000 water litres, 3 banks
- 63.4 kg CGH_2 (at 500 bar, 15 °C)

Features

- Safe, compact, versatile, modular
- Cost-saving logistics operation
- Full LH_2 boil-off recovery and use



Sectors

- Road
- Rail
- Maritime
- Aviation
- Industrial
- Construction
- Filming
- Events

Venuza

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Profile

We are developing remote hydrogen refuelling solutions tailored for heavy transport, including HGVs, buses, and remote emergency fleets.

Our system integrates renewable energy sources like solar and wind with grid supply to efficiently produce, store, and manage hydrogen using advanced AI-driven controls.

This modular and scalable technology reduces refuelling infrastructure costs and improves accessibility to clean hydrogen fuel, facilitating the transition to zero-emission transport. We partner with industry stakeholders to pilot and expand our refuelling hubs, contributing to lowering carbon emissions and supporting sustainable mobility initiatives across sectors.

Objectives

We seek potential collaborators, including technology partners, fleet operators, research institutions, and investors committed to accelerating hydrogen transport infrastructure adoption.

Through GBIP, we aim to pilot modular hydrogen hubs in Germany, share best practices, and secure strategic alliances that enhance clean energy innovation, market reach, and economic impact.

We welcome engagement from industry stakeholders interested in green transport solutions, AI-powered energy systems, and sustainable mobility development.

VENUZA
Get into ESG Future with Venuza!

Get Ready: A new era in energy is about to begin...

Exciting things are happening at Venuza Future Energy Ltd., We are currently focused on two groundbreaking projects designed to revolutionize the hydrogen energy landscape on Transport, Home and Industry Sector.

VENUZA

What We Offer:

State-of-the-art modular hydrogen refuelling hubs integrated with AI-driven energy management systems.

Our technology seamlessly combines renewable energy sources, grid power, and hydrogen storage into one intelligent ecosystem, enabling scalable, efficient, and accessible hydrogen refuelling infrastructure for heavy transport, public transit, and emergency fleets.

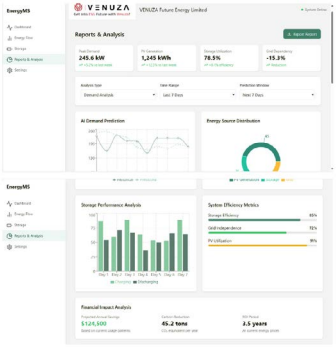
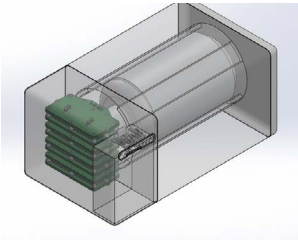


Figure 4.4:Reports & analysis page overview of the Venuza H2 EMS interface

Our Solutions Include:

- Venuza H2 Interface: A smart energy management to controls hydrogen production and storage using AI and IoT.



- Modular Hydrogen Hubs: Flexible, scalable infrastructure designed to reduce costs and improve accessibility for diverse sectors.
- Hydrogen Community Clusters: Decentralized energy networks that enable users to share hydrogen energy, optimizing local generation, storage, and cost savings.

Why Choose Us?

- AI-powered predictive analytics.
- Real-time energy flow control.
- Architecture developed with IoT infrastructure.
- Collaborative approach with hydrogen economy.

Join Us in Driving the Clean Energy Revolution

Partner with us to build a hydrogen-powered transport future that's smart, sustainable, and scalable.

VENUZA
Get into ESG Future with Venuza!
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https://www.venuza.uk/

Notes

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