Wallonia, excellence in hydrogen technology

@ Hydrogen + Fuel Cells EUROPE

Hall 13, stand B56

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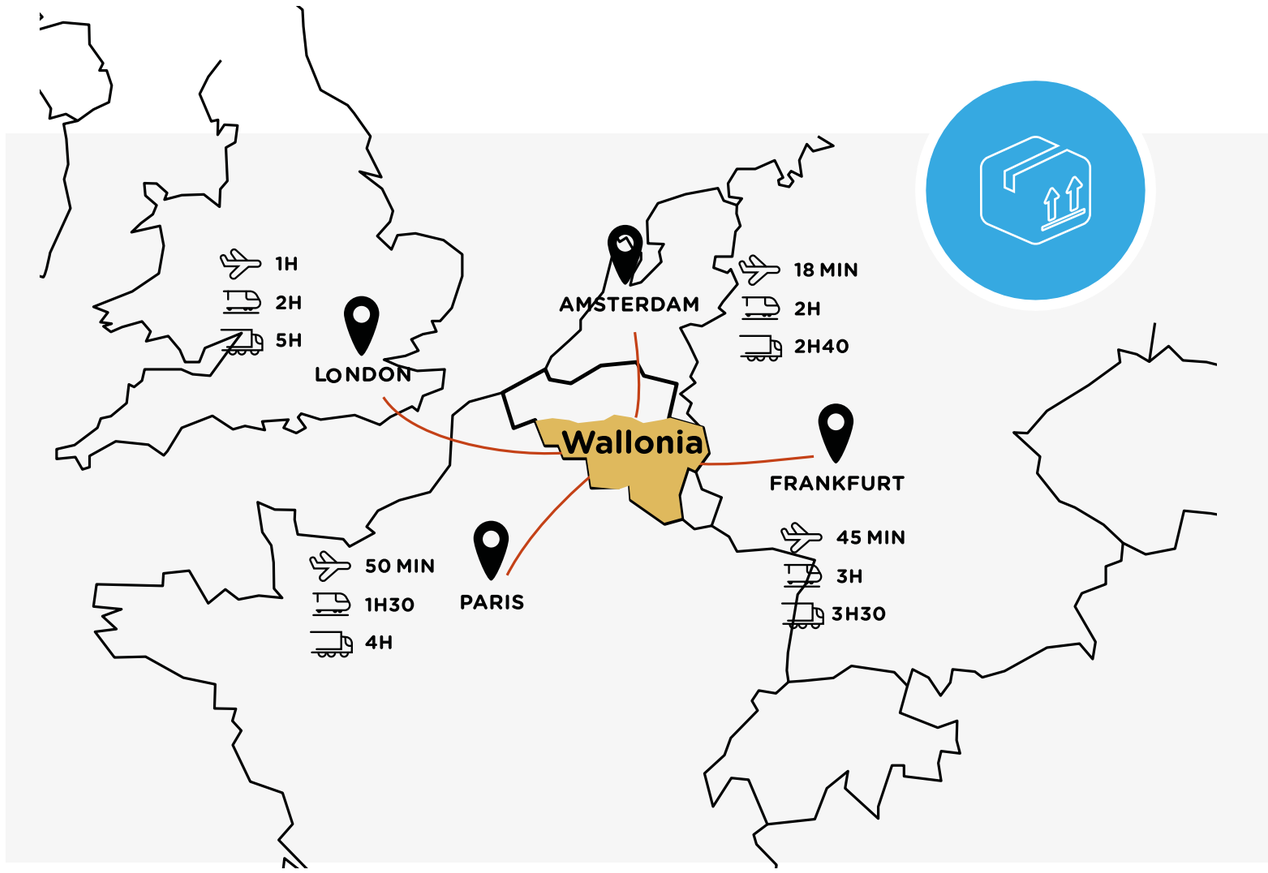

Wallonia has an excellent logistics infrastructure and «multimodality» is the keyword. **Liege Airport** was awarded the title of **best cargo airport in the world** for the year 2020. You will also find yourself well supported : the actors of the sector are gathered in the «Logistics in Wallonia» cluster.

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Wallonia: excellence in hydrogen technology

Companies, research centers and universities in Wallonia have a long history of research in the field of hydrogen technology. This commitment to the use of hydrogen was strongly facilitated by the Government of Wallonia that identified hydrogen as an innovation area of strategic interest. As a result, the e-WallonHy green hydrogen strategy was initiated by the cluster TWEED, the UCLouvain and the CRM research group, who regularly consult the different actors that are active in the sector.

The ambition of the e-WallonHy program is to develop an economy based on green hydrogen in Wallonia that comprises the different elements of the value chain, from production to storage and transport and finally utilization for mobility, heating of buildings and industrial processes.

The cluster TWEED has created a club within the Cluster dedicated to hydrogen, the H2Hub Wallonia group. In addition, several projects, such as the HECO2 project group, were launched through the sustained efforts of the various clusters (cluster TWEED, Greenwin, Pôle Mecatech, Skywin) and the Walloon authorities. Moreover, participation in international projects within the framework of the European Union's IPCEI Hydrogen program is encouraged. The IPCEI Hydrogen program was launched in 2020 to promote the market ramp-up of green hydrogen. IPCEI stands for Important Project of Common European Interest and was signed by 23 EU Member States and Norway in order to interlink European hydrogen projects and to benefit from spill-over effects at a European level. Walloon participants in IPCEI projects include Carmeuse, John Cockerill and Breuer.

As a consequence of these concerted efforts, large industrial players in the metal, glass and lime industry are now investing in the use of hydrogen for the reduction of their emissions. Examples to be cited include Arcelor Mittal (steel production), AGC glass (glass production) and Carmeuse (lime production). Furthermore, numerous companies and research institutes are now able to propose novel technologies and to be reliable partners with strong competences. Either as a promising new area of activity, or as their core business, they are now involved in every step of the hydrogen value chain.

With John Cockerill, the region is home to a leading electrolyzer manufacturer that forms the pinnacle of a whole value chain of companies and research facilities. They endeavor to enhance electrolyzer performance, study alternative production methods such as plasmalysis, or are involved in the design and production of electrolyzer components such as membranes, porous transport layers, catalysts and electrodes. A number of companies design and/or produce elements or control systems for hydrogen transport and storage, whereas others offer system integration solutions and process engineering services to end users in sector such as transport, heating or heavy industry.

In view of the challenges brought about by the ambitious climate targets and of the growing role of green energy, it is necessary to pool and exchange available knowledge and technological innovations in this quickly expanding hydrogen industry. The following pages of this brochure contain more information on the hydrogen community in Wallonia. Let's get in touch !

GREEN WIN FROM INNOVATION TO BUSINESS · PÔLE MECATECH LE PÔLE DE COMPÉTITIVITÉ WALLON EN GÉNIE MÉCANIQUE · Skywin Aerospace cluster of Wallonia · Cluster TWEED

Wallonia.be EXPORT INVESTMENT · Wallonie recherche SPW · Wallonie - Bruxelles International.be

Hydrogen for carbon capture

COLUMBUS

CO2 source: Lime production
Carbon capture & methanation technologies

HECO2

Hydrogen
Electrification
Carbon capture utilisation and storage

Production of electrolysers

JOHN COCKERILL

Gigafactory (electrolyser production capacity 1GW)
H2 technology value chain development in EU

Hydrogen powering transport

ZELLIE

Hydrogen production 5MW water electrolysis
1H2 barge + 1 fuel cell barge

H2C-MOUSCRON

Hydrogen production water elecxtrolysis
Biomethane production from potato waste
4 dual fuel trucks + 4 fuel cell trucks + 3

HAYRPORT

H2 production 1,5MW water electrolysis
60% windpower 30% photovoltaic power & 10% grid
10 fuel cell trucks

WALHYCO

H2 production 5MW water electrolysis
Windpower & photovoltaic
Refueling station for 22 trucks

WALLONIA EXPORT & INVESTMENT AGENCY

The Wallonia Export & Investment Agency (AWEX) is the institution in charge of the development and management of Wallonia's domestic and international economic relations.

Through a personalized, innovative, and sustainable approach, AWEX supports Walloon companies - regardless of their size, sector, or target market - in every step of their international endeavors. This includes exports, technological partnerships, and development abroad.

The agency's vast network of connections ensures the best advisors are always by your side. Our local anchors and agents abroad are capable of providing unparalleled insight to take your company to the next level. In addition, our connections will help establish your business in the global marketplace and promote it throughout the world. Training, incentives, and international financing are also available.

AWEX is also committed to strengthening Wallonia's position as the premier gateway for international investors seeking success in the heart of Europe. We work closely with them to inform, convince, and advise in every stage of their development.

Feel free to get in touch with one of our local or international agents via our websites listed above.

In our network of more than 400 employees in nearly 100 countries around the world, there is always someone ready and willing to support you in your approach.

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Websites : www.awex-export.be
www.investinwallonia.be
www.wallonia.be

Facebook : Wallonia Export | Facebook
LinkedIn: https://www.linkedin.com/company/wallonia-export-investment-agency/

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EXPORT
INVESTMENT

ECONOMIC AND COMMERCIAL REPRESENTATIONS OF THE WALLOON REGION IN GERMANY

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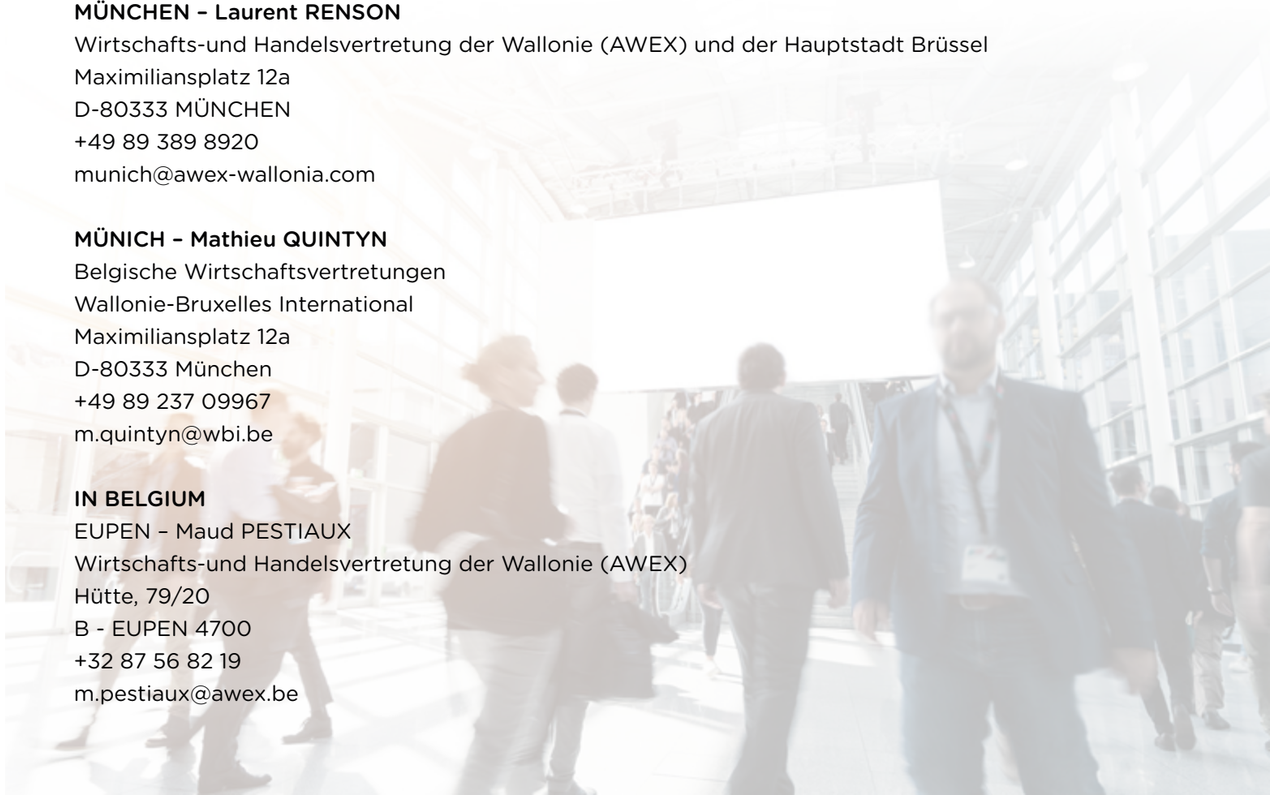

COMPANIES

COMPANIES BY SECTOR

H2 PRODUCTION

ALKALINE ELECTROLYZERS

ANY SHAPE - PRODUCTION OF COMPLEX ELECTRODES BY DESIGN TOPOLOGY OPTIMIZATION

CENAERO - PRODUCTION PROCESS OPTIMIZATION THROUGH MULTI-PHYSICS VIRTUAL PROTOTYPES

CENTEXBEL - DESIGN OF ELECTROLYZER MEMBRANES THAT OPTIMIZES RECYCLING

CILYX - DEVELOPMENT OF TEST BENCHES - DATA ACQUISITION AND CONTROL SYSTEMS

CRM - IMPROVING H2 PRODUCTION BY ELECTROLYSIS

ICS - COATING SOLUTIONS FOR ELECTROLYZER ELECTRODES

GDTECH - ELECTROLYSIS MODELING

JEMA - DEDICATED POWER SUPPLIES FOR PROTOTYPE OF ELECTROLYZERS

JOHN COCKERILL - PRODUCTION OF HIGH-CAPACITY ALKALINE ELECTROLYZERS

PEPPS ENGINEERING - MONITORING AND PREDICTION OF PARAMETERS OF ELECTROLYZERS

UMONS - TRMO LAB - 3D MODELLING OF ALKALINE ELECTROLYZERS

UNAMUR - LARN LAB - COATINGS FOR PEMFC AND PEM ELECTROLYZERS

H2WIN - ENZYMATIC CATALYSTS FOR PEM ELECTROLYSIS OF WATER WITH ENZYMES

PLASMALYSIS

AGC PLASMA TECHNOLOGY SOLUTIONS - PLASMALYSIS OF METHANE INTO H2 AND CARBON

ULB - NEW H2 WATER ELECTROCATALYST, ATMOSPHERIC AND ELECTROLYSIS PLASMA

H2 PRODUCTION SITES

CENAERO - DESIGN & LIFETIME OF CRITICAL COMPONENTS (COATINGS, VALVES) - COMPOSITE TANK OPTIMIZATION

CBV - FANS FOR H2 PRODUCTION PLANTS

CILYX - DEVELOPMENT OF TEST BENCHES - DATA ACQUISITION AND CONTROL SYSTEMS

DARDENNE - MACHINING OF PARTS USED IN CRYOGENIC CONDITION

JEMA - DEDICATED POWER SUPPLIES FOR ELECTROLYZERS

SICHEM COATINGS - INNOVATIVE WATER-BASED COATING SOLUTIONS TO PREVENT HYDROGEN DIFFUSION

TECHNOCHIM - PREVENTIVE AND CURATIVE EQUIPMENT AND INFRASTRUCTURE CORROSION PROTECTION

TECHNORD - AUTOMATION AND SCADA FOR COMMAND AND CONTROL OF H2 PRODUCTION SITES

NOVANDI - DEVELOPMENT OF H2 PRODUCTION SITE (TERMINAL IN LIÈGE) FOR TRANSPORT PURPOSES

VIRYA - DEVELOPMENT, CONSTRUCTION AND OPERATION OF RENEWABLE H2 PRODUCTION SITES

VERDON - DESIGN AND CONSTRUCTION OF SKIDS FOR H2 (BLENDING AND TUBES) - PIPING INSTALLATIONS

PARTICIPANTS

H2 TRANSPORTATION

BEBLUE - CRYOGENIC TESTING OF COMPONENTS

B-SENS - LEAKAGE DETECTION USING OPTICAL FIBERS

CENAERO - COMPOSITE TANK OPTIMIZATION - DESIGN & LIFETIME OF CRITICAL COMPONENTS (COATINGS, VALVES)

CILYX - DEVELOPMENT OF TEST BENCHES - DATA ACQUISITION AND CONTROL SYSTEMS

DARDENNE - MACHINING OF PARTS USED IN CRYOGENIC CONDITION

MATERIA NOVA - INNOVATIVE COATINGS AND NANOCOMPOSITE POLYMERS

SICHEM COATINGS - NEW WATER-BASED COATING SOLUTIONS TO PREVENT HYDROGEN DIFFUSION

TECHNOCHIM - PREVENTIVE AND CURATIVE EQUIPMENT/INFRASTRUCTURE CORROSION PROTECTION

VERDON - DESIGN AND CONSTRUCTION OF SKIDS FOR H2 (BLENDING AND TUBES) - PIPING INSTALLATIONS

ULIEGE - FEASIBILITY STUDY OF A GLOBAL-GRID, IP THROUGH THE USE OF HYDROGEN

X-RIS - NDT USING DIGITAL RADIOGRAPHY

H2 STORAGE

B-SENS - LEAKAGE DETECTION USING OPTICAL FIBERS

BEBLUE - CRYOGENIC TESTING OF COMPONENTS

CENAERO - COMPOSITE TANK OPTIMIZATION

CERTECH - DEVELOPMENT OF POROUS MATERIALS FOR H2 STORAGE

CILYX - DEVELOPMENT OF TEST BENCHES - DATA ACQUISITION AND CONTROL SYSTEMS

CRM - DEVELOPMENT OF METAL PROTECTION BARRIER SOLUTIONS

EMPHASE - LEAK DETECTION USING FIBER OPTIC SENSING

GDTECH - MODELING (DIGITAL TWINS) AND SIMULATION OF STORAGE TANKS

SICHEM COATINGS - WATER-BASED COATING SOLUTIONS TO PREVENT HYDROGEN DIFFUSION

MATERIA NOVA - INNOVATIVE COATINGS AND NANOCOMPOSITE POLYMERS

TECHNOCHIM - PREVENTIVE AND CURATIVE EQUIPMENT AND INFRASTRUCTURE CORROSION PROTECTION

TECHNORD - AUTOMATION AND SCADA FOR COMMAND AND CONTROL OF H2 STORAGE SITES

ULB - PRODUCTION OF THIN LAYERS FOR THE STORAGE AND TRANSPORT OF AMMONIA

ULIEGE - NUMERICAL SIMULATION OF FLUID-STRUCTURE INTERACTIONS IN CRYOGENIC VALVES AND TANKS

UNAMUR - LARN LAB - COATINGS FOR HYDROGEN BARRIERS

V2I - NDT OF HIGH-PRESSURE COMPOSITE H2 TANKS

X-RIS - NDT USING DIGITAL RADIOGRAPHY

COMPANIES BY SECTOR

FUEL CELLS

AGC PLASMA TECHNOLOGY SOLUTIONS - CARBON COATING OF BIPOLAR PLATES BY PVD TECHNOLOGY

ANY SHAPE - PRODUCTION OF COMPLEX ELECTRODES BY DESIGN TOPOLOGY OPTIMIZATION

BTD (BREUR TECHNICAL DEVEL.)- PROTOTYPE AND COMPONENT TESTING OF FUEL CELLS

CALYOS - PASSIVE COOLING OF FUEL CELLS - E-MOBILITY APPLICATIONS

CILYX - DEVELOPMENT OF TEST BENCHES - DATA ACQUISITION AND CONTROL SYSTEMS

CRM - DEVELOPMENT OF FUEL CELLS

H2WIN -ENZYMATIC CATALYSTS FOR HYDROGEN TO PRODUCE ELECTRICITY THROUGH A BIO FUEL CELL

ICS - COATING SOLUTIONS FOR FUEL CELLS ELECTRODES

ULB - PRODUCTION AND CHARACTERIZATION OF THIN LAYERS FOR FUEL CELLS

ULIEGE - DEVELOPMENT OF LOW TEMPERATURE FUEL CELL CATALYSTS

V2I - QUALITY CONTROL OF FLOW CHANNEL PATTERNS ON PLATES (FUEL CELL STACK)

H2 COMBUSTION ENGINES

BTD (BREUR TECHNICAL DEVEL.) - PROTOTYPE AND COMPONENT TESTING OF E-FUEL MOTORS

CILYX - DEVELOPMENT OF TEST BENCHES - DATA ACQUISITION AND CONTROL SYSTEMS

GDTECH- H2 COMBUSTION SIMULATION

MITIS - DEVELOPMENT OF A FUEL CELL STATIONARY POWER GENERATION SYSTEM

UMONS -TRMI LAB - NUMERICAL AND EXPERIMENTAL KNOW-HOW FOR HYDROGEN COMBUSTION

PARTICIPANTS

OTHER APPLICATIONS (PETRO-INDUSTRY, METALLURGY, HEATING, FERTILIZER PRODUCTION, MOBILITY...)

CBV - FANS FOR H2 PRODUCTION PLANTS

CENAERO - H2 USE IN BUILDINGS WITH ENERGY MANAGEMENT SYSTEMS & BEST ENERGY MIX

CILYX - DEVELOPMENT OF TEST BENCHES - DATA ACQUISITION AND CONTROL SYSTEMS

GDTECH - DESIGN AND PROTOTYPING OF HYDRAULIC VALVES

JEMA - DEDICATED POWER SUPPLIES

MATERIA NOVA - INNOVATIVE COATINGS AND NANOCOMPOSITE POLYMERS

NOVANDI - DEVELOPMENT OF H2 PRODUCTION SITE (TERMINAL IN LIÈGE) FOR TRANSPORT PURPOSES

PEPPS ENGINEERING - MONITORING AND PREDICTION OF PARAMETERS

SICHEM COATINGS - WATER-BASED COATING SOLUTIONS TO PREVENT HYDROGEN DIFFUSION

TECHNIFUTUR - VOCATIONAL TRAINING FOR H2 APPLICATIONS IN THE INDUSTRIAL SECTOR

TECHNOCHIM - PREVENTIVE AND CURATIVE EQUIPMENT/INFRASTRUCTURE CORROSION PROTECTION

ULIEGE - PROCESS MODELING OF FUEL SWITCHING TO HYDROGEN

UMONS - TRMO LAB - MODELLING OF CONVERSION OF H2 TO METHANOL AND TO METHANE

VERDON - DESIGN AND CONSTRUCTION OF PIPING INSTALLATIONS

X-RIS - NDT USING DIGITAL RADIOGRAPHY

RECYCLING (END-OF-LIFE)

CENTEXBEL- DESIGN OF ELECTROLYZER MEMBRANES THAT OPTIMIZES RECYCLING

SICHEM COATINGS - WATER-BASED COATING SOLUTIONS TO PREVENT HYDROGEN DIFFUSION

ASSOCIATIONS

CLUSTER TWEED

GREENWIN

ANY SHAPE

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Activities:
AnyShape is a company dedicated to Additive Manufacturing Technologies for Industry with state-of-the-art equipment to produce metal, plastic, and composites industrial parts. AnyShape helps companies in Europe and beyond by providing them with the whole value chain in additive manufacturing.
AnyShape is today manufacturing qualified “Flight Hardware” for several aerospace OEMs. The know-how developed last 10 years is now transferred in other markets, including the energy and hydrogen markets.

Interest in hydrogen/fuel cells :
AnyShape is already partnering with main actors in the hydrogen business like Carmeuse or John Cockerill Energy. Our main market is the design and production of complex electrodes by using design topology optimization including innovative lattice structures and materials leading to a strong improvement of electrodes efficiency and lifetime.

Potential for collaboration:
Ready to talk about new projects where Additive Manufacturing could bring a real added-value to your final product.

AGC GLASS PLASMA TECHNOLOGY SOLUTIONS

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Activities:
AGC Plasma Technology Solutions is a world-class provider of low-pressure plasma coating technology and equipment. We are a team of plasma coating experts specialized in innovative PVD and PECVD applications from R&D and new product development all the way through to equipment manufacturing and operational management of mass production coating plants.

Interest in hydrogen/fuel cells :
H2 interest : with 40 years of experience in the field of plasma and plasma sources but also our capacity in scaling up technologies to bring them to mass production, AGC through the HECO2 project has the objective to produce H2 using plasma technology. The principle studied is to transform the methane into H2 and solid Carbon. The main advantages of this solution are first that the electrical consumption per kg of H2 is 8 time lower than electrolysis and second that no CO2 is produced. The goal is to decide the construction of a H2 production plant of 1000 Ton H2/Year for 2026.
Fuel cell : the carbon coating of bipolar plates used in the fuel cells to protect them from corrosion used the same PVD technology that is used by AGC in the glass business. AGC Plasma is able to build high throughput coating lines for this application.

Potential for collaboration:
AGC Plasma Technology Solutions supports inventors at universities, research institutes, and small businesses to scale up and industrialize their innovative plasma technology. By working together and leveraging our engineering expertise in industrial installations and operational excellence, we can bring your concept to industrial scale. We advise you in the design and optimization of the right equipment with the right specifications at the right cost to allow a reliable, cost-efficient and high-quality mass production.

BEBLUE

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Activities :
Beblue proposes testing capabilities with cryogenic fluids, such as liquid or gaseous hydrogen, oxygen and nitrogen. It is one of the 4 strategic ESA test centers with more than 3 decades expertise in cryo testing.
Beblue offers material characterization, components & systems testing in real environments, and engineering expertise.
Material characterization includes Pin On Disk / Impact/Auto-Ignition/ Adiabatic compression/ traction & endurance cycling (@20K) Complex components testing of E-Pump, valves , bearing, dynamic seal, composite tank, fuel cells is performed in real conditions.
Beblue is specialist in cryo-tribology, test rig design, test rig integration, and test management.

Interest in hydrogen/fuel cells :
Development of new materials
Fuel cell testing in real environment up to 250KVA
Hydrogen systems like composite tanks, valves, lines, seals, heat exchanger

Potential for collaboration:
Be part of a German project, or offer our services to any partner or customer which require great expertise in testing capabilities

BELGIUM - WALLONIA@ H2 FC

BREUER TECHNICAL DEVEL.

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Activities:
BTD is an Iso-certified service provider in the field of engine development that develops efficient solutions for well-known companies in the transport sector:

Initial design development (PTC7.0)
Mechanical construction of prototype engines and subsystems
Testing & measurements of the prototypes, also gas-fired engines, and E-Fuels.

Its test center is equipped with dynamic test benches, a cold chamber up to -28°C, a 1-cylinder test bench, components test benches as state of art facility for balancing turbochargers.

Fuel cell testing capacities are in process.

Interest in hydrogen/fuel cells:
BTD is an associated partner in the European project IPCEI HYDROGEN project in the mobility wave and will build a new test center for H2, E-Fuel and fuel cell testing.

Potential for collaboration:
Find contacts and partners in the fields of H2, E-Fuel and fuel cells

B-SENS

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Activities:
Since its creation in 2016, B-SENS has been designing and developing multipoint temperature, strain and gas sensors using telecommunication fiber optics. These sensors, based on Bragg grating technology, meet the requirements of the industrial world, enabling reliable real-time monitoring of industrial assets, minimizing downtime and unforeseen problems.

Moreover, B-SENS has developed a unique hydrogen detection system based on optical fibers useful for the monitoring of pipelines or large storage units.

Interest in hydrogen/fuel cells:
Leakage detection

Potential for collaboration:
Find a partner for the commercialization of our hydrogen sensors

CALYOS

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Activities:
Calyos is one of the world's leading experts in two-phase (liquid to vapour) heat transfer technologies. Our mission is to solve the greatest thermal challenges by enabling the adoption of the best, passive two-phase cooling solutions.

Calyos has developed several loop heat pipe and heat pipe solutions for specific cooling applications: power electronics, processors, batteries and fuel cells. Calyos primarily targets the E-Mobility and Computing markets, where electrification and data processing are creating ever-rising demand for new, disruptive thermal solutions.

Interest in hydrogen/fuel cells:
Development of passive cooling solution for fuel cells and e-mobility applications.

Potential for collaboration:
Offer engineering services to integrate Calyos diphasic technology in fuel cells and e-mobility applications

CENAERO

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Activities:
Cenaero is a private non-profit applied research center & provides to companies involved in a technology innovation process numerical simulation methods and tools to invent and design more competitive products. Cenaero provides expertise and engineering services for high performance composites, thermo-fluid processes and systems modeling, optimization and uncertainty quantification, multidisciplinary topology optimization, metallic manufacturing processes modeling, high resolution computational fluid dynamics, hypersonic flows and ablative materials, turbomachinery design, and high performance computing.

Interest in hydrogen/fuel cells:
Examples of value brought by Cenaero for H2 include:
• Production process optimization (reforming, electrolysis, etc) through multi-physics virtual prototypes
• Storage & transport technologies including composite tank optimization and thermal management and design & lifetime of critical components (coatings, valves)
• Conversion– Engine & fuel cell design
• Thermal management (2-phase flow technologies) • Applications in H2-to-building with energy management systems & best energy mix Cenaero operates a highperformance computing infrastructure for fundamental, applied and industrial research

Potential for collaboration:
Numerical simulation and artificial intelligence for production, transportation & storage of Hydrogen from different sources and in it’s different forms

CENTEXBEL

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Activities:
Centexbel is the Belgian competence center for textiles and plastics. Its expertise covers a wide range of areas including textile materials, production processes, reinforcing textiles, surface treatment techniques, and characterization methods. The existing knowledge in textiles and polymer materials enables a holistic approach to developing new structured textile and composite materials. Circular material development is a key focus area within our R&D strategy to support innovation in our societies. Centexbel is actively involved in numerous EU and regional projects as a partner and often as a coordinator, always trying to innovate and support the manufacturing industry.

Interest in hydrogen/fuel cells:
Centexbel contributes to the hydrogen ecosystem by developing sustainable membrane separators for electrolyzers. We select textile materials and weaving patterns for the membrane, and also formulate functional paste and select appropriate chemical components.

Potential for collaboration:
Private and public R&D project collaboration, customers in the fields of electrolyzers, textile separators

CERTECH

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Activities:
The R&D strategy of Certech is based on three major themes: environment, polymer materials technology, chemistry & industrial processes supported by an analytical & technological services platform. Certech uses environmentally friendly technologies for its R&D activities, thus supporting a sustainable economic development. These activities include the following topics:
Integration at a local level of mixed renewable electricity sourcing (for domestic and industrial use) through the production of hydrogen or via storage in batteries.
Development of hydrogen storage in solid porous materials, namely the Metal-Organic Frameworks (MOF). The porous solids are developed in specific reactors to increase their production while reducing cost and environmental impact.

Interest in hydrogen/fuel cells:
Certech guides the energy sector towards the use of eco-efficient products and is currently working on improving the storage of hydrogen.

Potential for collaboration:
Commercial and research partners in the abovementioned fields

CILYX

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Activities:
With cutting-edge expertise in electromechanics and Industry 4.0, CILYX specializes in the design, development, and integration of production equipment and special-purpose machines for various sectors of industry and life sciences. A team of 85 individuals, including around 65 specialized engineers and technicians, generates an annual turnover of over 12 million euros (2022).

Since its establishment in 2009, CILYX has cultivated advanced capabilities that it offers to major international industry players. It supports its clients throughout their industrial projects, from idea generation, concept validation, prototype development, and detailed studies to equipment industrialization studies.

CILYX is a partner and shareholder of the company BEBLUE CRYOTECH which is a European leader in cryogenic testing.

Interest in hydrogen/fuel cells :
Development of test benches. Data Acquisition and Control Systems.

Potential for collaboration:
Find contacts and partners in the industrial sector of H2. Be a supplier of testing equipment and test benches.

COMPAGNIE BELGE DE VENTILATEURS

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Activities:
CBV offers its customers a wide range of industrial fans and related services. Specialized in tailormade solutions, all engineering, design, manufacturing, consulting and service is based at one site (Tilff, Belgium) close to the border triangle Belgium-Germany-Netherlands. CBV works most of the time on projects in close collaboration with well-known OEMs.

Interest in hydrogen/fuel cells:
CBV designs and manufactures fans for hydrogen production plants

Potential for collaboration:
CBV looks for further partnerships to offer its fan design, manufacturing and maintenance skills to OEM's and End-Users in hydrogen production.

CRM

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Activities:
Innovation, Industrial solutions and a Vision for the future are the watchwords of the 265 employees of the Centre for Metallurgical Research spread over 11 sites. Since 1948, the CRM Group has been supporting its customers from the creation of ideas to the implementation of innovative solutions by responding to their industrial challenges, whether economic, societal or environmental.
In addition to its historical steel mission, CRM Group has added missions on current challenges, divided into 5 platforms: circular economy; energy transition; digitalization; advanced manufacturing; construction. These platforms are aimed at multi-sectoral applications such as defense, chemistry, aeronautics, energy and the environment.
With the collaboration of its members and partners – large companies and SMEs – the CRM Group is committed to contributing to a better future.

Interest in hydrogen/fuel cells:
CRM offers R&D and technology solutions in the field of electrolyzers, fuel cells and metal/H2 interactions.

Potential for collaboration:
Find customers and project partners in the fields of electrolyzers, fuel cells, and metal/H2 interactions.

DARDENNE

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Activities:
Established in 1978, Dardenne S.A. is experienced in built-to-print manufacturing of any high precision part or assembly for Aero, Space, Energy or Defense industry. Its organization and size deliver optimum Quality-to-Agility ratio.

Interest in hydrogen/fuel cells:
With its long experience and demonstrated know-how with the machining of parts used in cryogenic condition, Dardenne S.A. can provide prototypes machining services as well as design review or feasibiity analysis.

Potential for collaboration:
Partnership with any Design or Project Management company in cryogenic part design and machining.

GDTECH

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Activities:
GDTech, headquartered in Liège, Belgium, is an engineering service company specialist in providing design, numerical modelling and simulation services to major players in aerospace, automotive and energy sectors. GDTech uses first-in-class software suites to help its customers reduce their time to market and enhance the quality of their products by decreasing the number of physical prototypes and trial and errors in the design phase. Domains addressed include equipment and systems design, structural mechanics, fluid dynamics, multiphysics and systems modelling. GDTech covers the entire H2 cycle, from grid to combustion, including production, storage, transportation and fuel cells: • Multiphysics systems modeling (at production, distribution and use levels ; e.g. cryogenic storage management, electrolysis modelling, fuel cell, combustion and heat exchanger) • Design and prototyping of specific equipment: H2 injectors, hydraulic valves, exchangers • Surrogate models for real time simulations (digital twins) • Fluid, structural and thermodynamic analyses related to H2 applications • H2 combustion simulations • Structural analyses (Eurocodes, dynamic analysis, safety assessment) • Modelling of composite pressure vessels.

Interest in hydrogen/fuel cells:
GDTech is involved in several projects using modeling and simulation (at system and detailed levels) to support the efficient deployment of H2–based solutions.

Potential for collaboration:
Projects involving cryogenic storage management, composite tanks sizing,
electrolysis, H2 combustion...

GREENWIN

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Activities:
GreenWin is Wallonia's Cleantech innovation cluster, dedicated to green chemistry, construction / renovation materials and processes, and environment. It is the regional reference interlocutor when it comes to the circular economy, industry 5.0, carbon neutrality, the fight against global warming and adaptations to climate-related risks.
GreenWin serves as a tool that develops and provides access to the financing of innovative partnerships between companies, universities, and research centers.

Interest in hydrogen/fuel cells :
Among the numerous international and regional projects in which it is involved, GreenWin supports the HECO2 project group that aims to decarbonize the Walloon heavy industry. Improving the performance of H2 production by hydrolysis and the development of hybrid plasmalysis are two of the HECO2 projects that are co-funded by GreenWin. CCU technologies are key to use CO2 (+ H2) to produce e-fuels or chemical products. GreenWin and its Members have developed outstanding know-how to do so. GreenWin equally boosts innovation in green hydrogen and in CCU technologies and applications.

Potential for collaboration:
Activation of international collaborative innovation projects with related innovation clusters, R&D&I centers and universities in the abovementioned fields.

GROUPE VERDON

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Activities:
Verdon is a committed player in the sustainable reindustrialization of Europe, a regional leader with four locations in Belgium and the North of France, bolstered by 45 years of experience, Verdon is an industrial EPC integrating solutions in engineering, construction, and maintenance.

Interest in hydrogen/fuel cells:
We design and build hydrogen skids, we have experience working for companies such as John Cockerill, Axens, Lhyfe, ...

Potential for collaboration:
Starting from your P&ID and specifications, we do the detailed design and construction of your hydrogen skids and piping installations according to EN and ASME standards.

H2WIN

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Activities:
The Belgian greentech H2WIN, is a pioneer in the development of technologies to produce Hydrogen and green electricity from water and sunlight through a revolutionary process called H2GREEN. It is inspired by the principle of photosynthesis. Like nature, H2GREEN uses enzymatic catalysts for its Solar-to-X process.
H2WIN is a gamechanger, with its 100 % renewable PGM free catalysts, more efficient, cheaper and less energy-intensive process.

Interest in hydrogen/fuel cells :
H2WIN develops enzymatic catalysts to produce green hydrogen through an “enzymolyser®»- for PEM electrolysis of water with enzymes - or to consume hydrogen, in order to produce electricity through a bio fuel cell.

Potential for collaboration:
Find a partner for industrial production of bio MEA .

ICS

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Activities:
ICS is a spin-off of the University of Namur, Belgium, with unique expertise in nanotechnology, material characterization, industrial plasma treatment, and numerical modeling. ICS has a very strong innovation capacity: innovation is in our DNA and is a characteristic of our one-stop shop research model: our highly skilled researchers have access to state-of-the-art deposition and analytical equipment answering to the very specific and complex needs of our customers who are looking for disruptive technologies and solutions which are not yet available on the market.

Interest in hydrogen/fuel cells:
ICS provides coating solution for electrodes of fuel cells and electrolyzers and develops coating solutions for hydrogen technologies.

Potential for collaboration:
Looking for electrodes supplier that needs a coating to protect their electrodes.

JEMA

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Activities:
JEMA is a company highly specialized in the design, development, industrialization, production and service of high-performance power supplies. Building on its experience and technology expertise, JEMA has acquired during the last 50 years an extensive knowledge of DC power supplies and subsidiary power applications in relation to particle accelerators, medical applications, metallurgy and industrial processes, from prototype toward industrialization (up to 9 MW).

Interest in hydrogen/fuel cells:
Dedicated power supplies for electrolyzers from prototype to industrial application including customer, end customer and network actor's constraints.

Potential for collaboration:
Potential prospects include manufacturers of electrolyzers and projects holders.

JOHN COCKERILL

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Activities:
John Cockerill Group develops large-scale technological solutions to meet the needs of its time: facilitating access to fossil free energies, enabling sustainable industrial production, preserving natural resources, contributing to greener mobility, enhancing security and installing critical infrastructures. Its offer to companies, States and communities consists of services and associated equipment for the sectors of energy, defense, industry, the environment, transports, and infrastructures.

Interest in hydrogen/fuel cells:
With decades of experience in hydrogen technologies, John Cockerill Hydrogen, a fully owned subsidiary of John Cockerill, is a world leading electrolyzer manufacturer with a broad offering from power source to gas separation, purification and balance of plant. The company designs, builds and maintains pressurized alkaline electrolyzers of up to 6.5MW capacity stacks (1300Nm3 per hour) – among the world's largest – and has delivered ~80 stacks of 5MW or above since 2018. Through its existing manufacturing footprint and its planned global capacity ramp-up, John Cockerill Hydrogen is uniquely positioned to lead the fast-growing green hydrogen production market with specific focus on industrial-scale and utility-scale projects.

Potential for collaboration:
John Cockerill Hydrogen offers best-in-class alkaline electrolyzers technology, ready for large-scale projects and integrated solutions from production to mobility facilities.

MATERIA NOVA

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Activities:
Materia Nova is actively working on ‘Advanced Materials’ products and on innovative and cost-effective processes to produce clean hydrogen, going beyond conventional processes and feedstocks. We are convinced of the importance of developing cost-effective alternative technologies to valorize clean hydrogen and by-products by starting also from others local feedstocks. We are leading research and innovation for Clean and Secure systems integrating H2 and other vectors production/conversion, their storage, transport and uses. We are committed to our industrial partners in their preparation for the massive integration of sustainable processes and strategic choices in the decarbonization process in future energy systems. Materia Nova has strongly supported UMONS for obtaining the granted proposal called «TRL7 Plug&Tests» that targets a unique interconnection of decarbonization technologies on an industrial site to demonstrate the effective operation of various modular energy communities at a pre-industrial scale. Materia Nova has also decided a robust intellectual property protection, filing pivotal patents annually and managing freedom-to-operate aspects.

Interest in hydrogen/fuel cells:
Our focus lies in the advancement of materials and processes essential for generating decarbonated useful forms of energy. In addition, we are specialized in the creation of innovative materials such as coatings and nanocomposite polymers designed for efficient transportation and storage of energy.

MITIS

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Activities:
MITIS aims to contribute to the reduction of GHG by developing efficient decentralized energy converters employing high speed turbomachinery. MITIS flagship product is a 10kWe oil-free flameless combustion microturbine for CHP, ideal for applications where large amount of heat and/or domestic hot water are required such as nursing homes, swimming pools, hotels, spas, multi-residential buildings, etc. It is also a useful solution for agricultural, waste-water treatment sectors and even landfill applications where the microturbine can directly use raw biogas. The flameless combustion also enables the machine to exploit very low calorific gas and can be used for low LHV biogas or off-gas.

Interest in hydrogen/fuel cells:
MITIS is developing a fuel cell stationary power generation system. The first product is a UPS of 100kWe power based on a LT-PEM stack pressurized by a turbocharger derived from the micro-10 rotor architecture.

Potential for collaboration:
MITIS is looking for early adopters for its new stationary fuel cell UPS system.

MUSTAD

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Activities:
MUSTAD BELGIUM was founded in 1948 and is located in the German-speaking region of Belgium. We manufacture and export high quality mechanical components and assemblies worldwide and develop a long-term relationship with our customers through a program of continuous improvement of our processes, products and services.

Its 70+ highly qualified technicians produce more than 20,000,000 mechanical components that are shipped every year throughout Europe and the United States. Customers are active in various industry branches such as: defense, sports, connectors, hydraulics, mechanical engineering,and fastening. With more than 75 years of expertise in precision mechanics, Mustad disposes nowadays of 80 machines located in 8,000 m² of production area.

NEWELEC

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Activities:
Our shareholder Luminus (EDF Group) invests greatly in renewable energies such as HYDROGEN and spearheads the energy transition. Newelec is participating in this large-scale project by offering its expertise and services.With its full range of services, Newelec is the ideal partner for all your electrotechnical projects. We boast in-house technical know-how in areas such as electrical engineering, installation and maintenance in high and low voltage, cabinet production, automation and supervision as well as instrumentation. Historically, industry represents Newelec's leading business sector in terms of experience and turnover. We are also present in the infrastructure and building sector carrying out all types of complex projects in electrical engineering.

Interest in hydrogen/fuel cells:
We are now busy in the Walloon Region on a prototype project with Luminus.

Potential for collaboration:
Similar projects

NOVANDI

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Activities:
Novandi is specialized in multimodal transport & logistic in Belgium from Liège, Charleroi and Avelgem terminals. We connect Antwerp and Rotterdam to our inland container terminals by barge with more than 2 departures per day.
Novandi is very active in innovation with already 2 barges remote control.
Multimodal transport helps to attain our 2030 CO^2 reduction goals, but Novandi wants to go further by retrofitting 2 barges and built a hydrogen production site on the container terminal in Liège. In association with other key players in the hydrogen sector, this project is expected to be finalized by the end of 2026.

Interest in hydrogen/fuel cells:
Solution of decarbonization for heavy vessels as barges.

PEPPS ENGINEERING

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Activities:
PEPPS is a service company specializing in the digitization of industrial systems. We work extensively in the energy sector with the aim to connect systems for monitoring and enhancing their intelligence.

Interest in hydrogen/fuel cells :
Our focus is to monitor and predict the parameters of electrolyzers, refueling stations, or energy systems to facilitate their operation, improve their engineering, and optimize remote maintenance.

Potential for collaboration:
PEPPS positions itself as a digital partner for industrial players in the hydrogen sector, offering advanced solutions to streamline operations and ensure efficiency.

SICHEM COATINGS

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Activities:
Sichem Coatings specializes in the development and manufacturing of innovative water-based coatings, providing advanced protection in the fields of hydrogen, energy, sustainability, and health, with customization tailored to the specific needs of each client. Our commitment to environmental sustainability is reflected in the use of environmentally friendly formulations, reducing solvent emissions and extending the lifespan of metal equipment.

Interest in hydrogen/fuel cells:
Sichem's CoataFence systems offer water-based coatings to prevent hydrogen diffusion, providing superior protection for hydrogen equipment and promoting environmental responsibility. These eco-friendly coatings address hydrogen technology challenges by ensuring the durability of production units, transport equipment, and storage facilities. Utilizing patented water-based formulation technology, CoataFence coatings can be applied without restrictions on size or geometry, making them practical and environmentally friendly. They effectively prevent hydrogen diffusion, ensuring long-lasting protection and minimizing environmental impact. CoataFence's product range supports sustainability efforts in the hydrogen industry, with activities divided into production and transport/storage, facilitating high-performance outcomes.

Potential for collaboration:
Develop innovative water-based coating solutions to prevent hydrogen diffusion, providing sustainable and environmentally friendly protection for various equipment in the hydrogen industry.

TECHNIFUTUR

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Activities:
Created in 1991, Technifutur® is the largest vocational training center in Wallonia (Belgium) in 3 main domains of activities: numeric, industry and mobility.
Technifutur® has been working on hydrogen training and awareness sessions since 2014. At first, Hydrogen was considered in our training as one of the alternatives to fossil fuels in the automotive sector. Then, specific dedicated content has been developed in 2018 (through the participation to a FP7 FCH/JU project on Hydrogen training program) on Fuel Cell Hydrogen for the automotive technicians.
Nowadays, the development of training on other fields of activities of the hydrogen sector are approached mainly on industrial topics.

Interest in hydrogen/fuel cells:
Technifutur® organizes vocational training for all target groups (workers, jobseekers and schools). Hydrogen is one of the topics in our catalogue as well as electro mechanics, welding, piping, industrial maintenance which are also related to hydrogen sector.

Potential for collaboration:
Technifutur® is looking for partners to develop contents on hydrogen technologies: companies, universities, R&D centers or training centers willing to share technical information's, good practices, didactic equipment's, ...

TECHNOCHIM

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Activities:
Technochim SA specializes in premium preparation, treatment, and protection of, primarily, stainless steel equipment and infrastructure. We take pride in ensuring the high quality of your production against chemical and biological contaminations and in enhancing the longevity and performance of your critical assets.
A recognized leader in the Stainless-Steel Equipment Rouging challenges, mastering mechanical, chemical, electro-chemical and enzymatic processes, providing in-house and on-site operational services, we serve in a high variety of demanding sectors such as Pharma, Life Sciences, Food, Cosmetic. Our expertise in high-quality surface preparation and finishing makes us a partner of choice for critical parts treatment in sectors like Nuclear, Geo-Energy and Aeronautics Industries. Beyond Stainless steel expertise, Technochim is expanding its scope of application to Aluminum and Titane alloys as well as Additive Manufacturing Parts processing.

Interest in hydrogen/fuel cells:
Preventive and Curative Equipment and Infrastructure Corrosion protection and treatment

Potential for collaboration:
Find a partner empowering our prospection capabilities, product distribution, Service expansion.

TECHNORD

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Activities:
The Technord industrial group specializes in the integration of industrial projects in electricity (Low, Medium and High Voltage, Connected Power), Automation and Process Control, Industrial IT and MES/MoM, and Industry 4.0 technologies (Internet of Things-IoT, Data Science & Analytics, Digital Twin, Artificial Intelligence) to guarantee optimal productivity, flexibility and predictability of its clients' industrial processes. Technord supports its customers throughout the entire project life cycle, from design to commissioning. Technord's customers are active on the internet, cement, lime, agri-food, pharmaceuticals, cosmetics, renewable energy, aeronautics, metals, and more. Founded in 1945 in Tournai (Belgium), where its head office is located, the family owned Technord Group now employs more than 400 staff and as many subcontractors. It has a turnover of around €120 million, 25% of which is generated outside Europe: the group operates worldwide through its 12 subsidiaries.

Interest in hydrogen/fuel cells:
To help our customers realize their future hydrogen production, storage and distribution projects, we offer comprehensive and flexible solutions that draw on the expertise of all our departments: from industrial electricity (HV/LV) to automation and SCADA for the command and control of hydrogen installations, via Data Science (prediction models, modelling, data correlation, etc.), without forgetting our expertise in EMS (Energy Management System) integration.

Potential for collaboration:
Industrial partners for studies and projects in the abovementioned fields

TWEED

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Activities:
TWEED's priority is to encourage investment and innovation in the energy and water sectors by mobilizing companies, research institutes and official authorities, around projects. Its aims are:
• Networking : to provide a meeting place to facilitate contacts and exchanges of experience, and to enable energy and water players to know each other better
• Mapping : to understand and raise awareness of the sectors, markets and players involved in the value chains of the energy and water sector
• Innovation : to support industrial and investment projects through partnerships and commercial ties, and to increase innovative capacity and competitiveness
• International : to promote the expertise of its members at national and international level
• Partnerships : to encourage the sharing of knowledge and the exchange of good practices, also at international level, and create synergies with other groupings, clusters and competitiveness clusters in the energy and water sector
• Knowledge Centre: to be a center of expertise and a reliable partner for stakeholders concerned by the environmental challenges of energy and water.

Interest in hydrogen/fuel cells:
TWEED along with political decision-makers, industrial players, R&D players and universities has created «H2Hub Wallonia». This ecosystem enables all players to position themselves in the H2 value chain. In particular, TWEED promotes the use of green hydrogen in Wallonia.

Potential for collaboration:
International partnerships with similar organizations

ULB

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Activities:
ChemSIN (formerly Chani) is a research service of the Faculty of Sciences. Research activities focus on the chemistry of atmospheric plasmas (F. Reniers), Catalysis (T. Visart), electrochemistry (T. Doneux) and nanoelectrochemistry (J. Ustarroz). The studies cover various aspects of the chemistry of surfaces and interfaces since they relate to the modification, characterization and study of the reactivity of surfaces.
These studies are carried out at the solid-solution interface and at the solid-gas interface relate to the modification of surfaces (metals, metal electrodes and polymers) by chemical or electrochemical means, by self-assembly as well as by plasma techniques. Thin films, organized monolayers and nanostructured surfaces can thus be produced and characterized.
Characterizations involve the use of a wide range of advanced (nanoscale) electrochemical methods, spectroscopy, microscopy, as well as contact angles.
The surface properties are evaluated mainly in connection with the development of "intelligent" materials, biosensors and electrocatalysis (environmental electrochemistry, batteries, fuel cells, electrolysis), electrodialysis, biocompatibility, development of barrier layers,...

Interest in hydrogen/fuel cells :
Development and experimentation of hydrogen production (new H2 water electrocatalyst, atmospheric and electrolysis plasma, new catalysts for the steam reforming of mathane and water gas shift). Production and characterization of thin layers for fuel cells and for the storage and transport of ammonia.

Potential for collaboration :
Interest in collaboration for the abovementioned fields

ULIEGE

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Activities:
Founded more than 200 years ago, the University of Liège accommodates almost 28 000 students in its 11 faculties that are spread across 4 campuses.

Interest in Hydrogen / Fuel cells:
Researchers at ULiège are very active in the hydrogen field throughout the whole value chain; Production, Transport and Use.
Hydrogen – Production
Study of hydrogen production from renewable resources by thermochemical approaches • Process modeling • Customized processing and characterization of solid electrode and electrolyte materials

Hydrogen - Transport
Transmission network: Feasibility study of a global-grid, IP through the use of hydrogen • Numerical simulation of fluid-structure interactions e.g. transient effect in cryogenic valves and sloshing in tanks

Hydrogen - Use
Conversion and storage Development of low temperature fuel cell catalysts • Characterization and assembly of PEM fuel cell materials and characterization of PEM fuel cell stacks • Process modeling of fuel switching to hydrogen • High flux processability of innovative ceramic materials for (green) hydrogen production and storage • Interactions between metallic materials and hydrogen, covering hydrogen embrittlement and failure diagnosis.
Power to X Use of hydrogen for CO2 hydrogenation reactions • Process modeling and optimization • Experimental design of pilot-scale benches for CO2 capture and re-use
Vehicles Design, optimization and simulation techniques for the study and design of electrochemical storage and conversion systems.

Potential for collaboration :
In all of the abovementioned fields

UMONS (TRMI)

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Activities:
The Thermal Engineering and Combustion Unit (TRMI) is the laboratory that brings together all research and teaching activities of the UMONS around heat transfer, and combustion. By specializing our research activities on energy in buildings and industry, as well as its sustainable production, we contribute to tackling the engineering challenges of today and tomorrow: Towards sustainable energy for all! More specifically, the expertise of the research group can be found in the modelling, designing, and experimental testing of novel small-scale, highly flexible and efficient, carbon-clean solutions towards sustainable cogeneration in decentralized applications, with a particular focus on micro gas turbines.

Interest in hydrogen/fuel cells:
The lab offers numerical expertise and experimental expertise for hydrogen combustion in industrial micro gas turbine combustors, including flame studies, the impact of dilution and the design of 100% hydrogen combustors.

Potential for collaboration:
In terms of experimental equipment, the research unit has three micro gas turbines of different sizes (3, 20, and 100 kWe), capable of (partially) using hydrogen and suitable for testing advanced cycles, including humidification and exhaust gas recirculation. These turbines are fully equipped with sensors to measure cycle performance and emissions. The research unit is open to sharing these facilities for future collaboration.

UMONS (TRMO)

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Activities:
In the field of Sustainable Industrial Processes, the phenomenon of solid-gas/vapour sorption is a major R&D activity of the TRMO Lab: (thermodynamic and kinetic measurements, modelling of phenomena at the microscopic and macroscopic levels, process modelling, life cycle assessment (LCA), techno-economic analyses, development of experimental devices). Various applications include the storage of natural gas, the design of CO2 capture processes, the separation of compounds from air, the purification of gases, the characterization of porous solids as well as catalytic conversion for e-fuels production. Moreover, the lab performs modelling of complex energy systems at district scale and studies topics such as heat storage, compression and sorption heat pumps (experimental studies, prototyping, development of simulation tools, measurement of on-site performance).

Interest in hydrogen/fuel cells:
The Thermodynamics laboratory is active in 3D modelling of alkaline electrolysers such as a three-phase electrolyser for the decarbonation of calcium carbonate to simultaneously produce quicklime and H2. Its other activity relates to the catalytic hydrogenation of CO2 to produce e-fuels. Research activities involve the modelling of conversion to H2 to methanol and H2 to methane, and also laboratory-scale experimental pilots (H2 to methanol and H2 to paraffin) for testing catalysts and determining the parameters of reaction kinetic models.
Life cycle analysis is carried out on all processes.

Potential for collaboration:
Participation in EU funded projects with H2 related research (such as the design of an integrated reactor to produce H2/O2/CO2 for CCU applications)

UNAMUR

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Activities:
LARN has extensive expertise in the deposition of high-performance thin films by vacuum method (PVD) and ion beam analysis. Over the past decade, they have developed unique know-how in the deposition and characterization of thin films using state-of-the-art equipment and combining experiments and theoretical simulation. Understanding the growth modes and physico-chemical properties of films is at the core of research activities while solving technical problems of companies in various fields, including hydrogen technologies:
• Evaluation of the degradation of mechanical performance in various metallic materials subjected to very high hydrogen fluxes by IBA
• Study the performance of lithium targets under very high hydrogen fluxes
• Characterization of hydrogen into material by ion beam analysis
• Coating for fuel cells and electrolyzers electrodes
• Development of new plasma product/process in relation to energy production and storage.

Interest in hydrogen/fuel cells :
LARN, a cutting-edge research laboratory at Unamur (Bel excels in thin film deposition and analysis, leveraging state-of-the-art equipment to enhance surface performance across diverse applications, including engineering, optics, medicine, and mechanics, with a focus on hydrogen technologies and innovative plasma processes for energy production and storage.

Potential for collaboration:
Coatings for PEMFC and PEM electrolyzers, coatings for hydrogen barriers.
Analysis of hydrogen in materials
Simulation of thin film growth

V2I

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www.optrion.be

Activities:
V2i offers a full range of customized services in the field of mechanical vibrations, with both theoretical and experimental expertise. These include predictive simulations, test validations and monitoring of measurements.
V2i also develops complete automated systems for quality control (based on image analysis, metrology and AI) for defects detections in the surface finish and welded joins.
Optrion develops and markets a camera for non-destructive testing (NDT) of composite structures. The system is based on an optical metrology method called stereography. It also develops user interfaces and offers a range of certified training courses in optical based NDT methods.

Interest in hydrogen/fuel cells:
Offering services in vibration testing, numerical simulations, behavior monitoring
Quality control of flow channels patterns on plate (fuel cell stack)
Quality control (based on image analysis, metrology and AI) for surface finish
Quality control for welded joins
NDT on pressure vessels. (NDT of high-pressure composite H2 tanks.)

Potential for collaboration:
Find a distributor for OPTRION's camera and customers for vibration testing
and analysis.

VIRYA H2

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Activities:
Virya H2 is a pioneering force in sustainable hydrogen generation with activities, including development, funding, construction, and operation of sustainable hydrogen production facilities. We are developing megawatt-scale electrolysis facilities in Belgium, the Netherlands, and Germany. Our primary objective is to supply sustainable hydrogen to industries and heavy mobility facing substantial decarbonization challenges, facilitating a seamless transition to sustainable energy sources. With over a decade of experience, our achievements include a 1 MW hydrogen production demonstrator in Halle, integrated refuelling stations providing public access to renewable hydrogen, and the introduction of 44-ton heavy-duty hydrogen-powered trucks in logistics. Our operational expertise encompasses on-site production of sustainable hydrogen utilizing both PEM and alkaline technologies. We possess specialized knowledge across various mobility applications, from heavy-duty vehicles to buses, inland waterways, and maritime. We are member of the Virya Energy group, a leading Belgian-based sustainable energy conglomerate active in onshore wind, rooftop solar, renewable energy services (GEO XYZ and Fluves), and sustainable mobility (DATS 24). Our installed capacity approaches 500 MW in renewable energy generation sites in Belgium, France, Poland, Portugal, and India.

Interest in hydrogen/fuel cells:
Virya H2 is active in the development, construction and operation of renewable hydrogen production sites, including the distribution towards the end user.

X-RIS

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Activities:
X-RIS specializes in the development and supply of cutting-edge digital radiography solutions for the industrial non-destructive testing and security sectors. The product range features X-ray portable generators and detectors as well as standard and custom-made systems controlled by its proprietary software. Our equipment and in-house developed software, Maestro, allow to identify defects within parts using various settings, filters and modules (Maestro CT, Maestro RT,...)
Our innovative hardware and software solutions address various production challenges thanks to high-speed inspection, computed tomography, and real-time control, ensuring efficiency in operations.
Some references: Ariane Group – Safran – Total – SABCA – Sonaca – Nexter – CPP – FBI – Cyclife – Solvay – SETTAS – SCI – Pursuit – MTU Aero Engines, etc.

Interest in hydrogen/fuel cells :
Our solutions can be used for quality control during and after the manufacturing process.

Potential for collaboration:
We would like to offer non-destructive testing solutions to ensure the quality of hydrogen/fuel cells.