

Hydrogen Expo

11-13 September, Piacenza, Italy

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Warsaw, 2024

What the Polish Hydrogen Sector Stands for?

Resource Availability:

Poland has abundant coal and natural gas resources that can be utilized for hydrogen production. While most of the world's hydrogen production is based on fossil fuel processes, Poland is gradually transitioning to more environmentally friendly methods, such as water electrolysis using renewable energy.

Infrastructure Investments:

Poland is taking steps to develop hydrogen infrastructure, including the construction of hydrogen refueling stations and hydrogen production plants. One of the goals is to establish a national network of hydrogen stations that will enable the growth of hydrogen-based transportation.

Challenges of Energy:

Transition: With a high share of coal in its energy mix, Poland faces the challenge of decarbonization. Hydrogen is seen as a key element in the energy transition process, especially in sectors that are difficult to decarbonize, such as heavy industry and transportation.

Innovation and Research:

Poland is developing technologies related to hydrogen production and storage, both at the university level and within research and development projects carried out by companies. National research institutes and technology companies are working on innovative solutions that could accelerate the development of the hydrogen industry.





Did You Know That?

Poland has a long tradition associated with hydrogen, which has developed over the decades, influencing the current growth of the hydrogen sector in the country.

Technology Pioneers:

Poland was one of the first countries in Central Europe to begin research on the use of hydrogen in industry. As early as the 1920s and 1930s, experiments with hydrogen as a fuel were conducted, marking an important step in the development of energy technologies in Poland.

Hydrogen in the chemical industry:

Hydrogen was a key raw material in the Polish chemical industry even before World War II, particularly in the production of ammonia, which is essential for fertilizer manufacturing. Poland was one of the leading producers of ammonia in the region.

Polish Hydrogen Valleys:

Poland is developing so-called hydrogen valleys, which are regional technology clusters focused on hydrogen production and application. The Lower Silesian, Silesian, and Podkarpackie Hydrogen Valleys are among the first such initiatives in the country.

Hydrogen in Public Transport:

Polish cities like Konin are pioneers in implementing hydrogen buses in local public transport. This is part of Poland's broader strategy for decarbonizing transport and reducing CO2 emissions.

Institute of Industrial Chemistry:

Since the 1950s, the Institute of Industrial Chemistry in Warsaw has been one of the pioneers in research on hydrogen applications in industry. The institute conducted studies on various aspects of hydrogen production and use, contributing to the development of knowledge about this resource in Poland.

Development of electrolyzers:

In the 1970s and 1980s, Poland was one of the countries actively developing electrolysis technologies, primarily for the chemical industry. These early works on electrolyzers laid the foundation for today's green hydrogen production technologies.

Hydrogen from Biomass:

Poland is one of the few countries in Europe exploring the possibility of producing hydrogen from biomass, an innovative approach to generating green hydrogen.

Hydrogen Production:

Poland is one of the largest hydrogen producers in Europe, mainly due to its chemical industry. The country is now striving to transition its production to more environmentally friendly methods, such as water electrolysis using renewable energy.

What makes us Different ?

Resource Availability

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International Cooperation:

Poland actively collaborates with other European Union countries and international companies in hydrogen technologies. Poland is also part of initiatives like the "European Clean Hydrogen Alliance," which allows for the exchange of knowledge and technology as well as joint development of hydrogen projects.

Challenges of Energy Transition:

With a high share of coal in its energy mix, Poland faces the challenge of decarbonization. Hydrogen is seen as a key element in the energy transition process, especially in sectors that are difficult to decarbonize, such as heavy industry and transportation.

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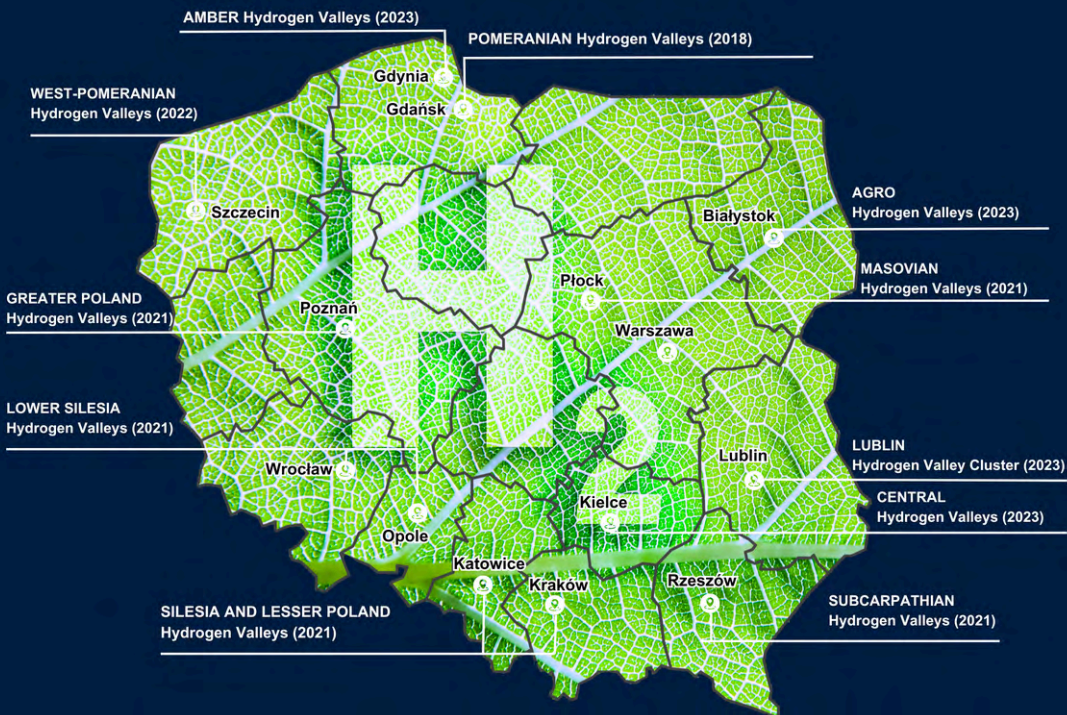


H₂solutions
from

POLAND

Polish Hydrogen Valleys Innovation Ecosystem

- Poland has become one of the fastest-growing countries in hydrogen technology, attracting international partners and emerging as a leader in Central Europe.
- Polish hydrogen valleys are a key element of the decarbonization and energy transformation strategy, integrating hydrogen production, distribution, and usage across various sectors of the economy.



Source: Industrial Development Agency JSC (ARP)- [more info](#)

- Poland stands out with its innovative approach, utilizing local resources and industry to develop low-emission technologies, placing the country at the forefront of European energy transformation.
- Hydrogen valleys, such as those in the Podkarpacie region, actively collaborate with neighboring countries, enhancing their significance within the European hydrogen technology network.
- Poland's hydrogen sector is closely linked with local universities and research institutes, supporting the development of innovative technologies and positioning Poland as a leader in this field within the EU.

The Polish Investment and Trade Agency

The Polish Investment and Trade Agency (PAIH) is a leader in export and investment, operating on dozens of markets around the world. As the first contact point it consultancy is a partner for entrepreneurs on the domestic and foreign markets. PAIH is a modern institution which belongs to the Polish Development Fund Group (PFR).

The Polish Investment and Trade Agency's (PAIH) mission as a Government Agency is:

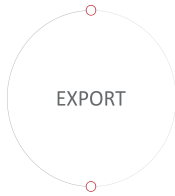
- To enable small - and medium-sized companies to reach their full potential in exporting their products and services around the world
- To support potential investors in Poland by providing comprehensive and up-to-date information services regarding legal and tax aspects, location as well as on the available financial incentives
- To promote 'Poland as a Brand'

How we can help ?

PAIH's experienced team of experts with a hands-on approach and excellent understanding of the needs of entrepreneurs will ensure that your projects will move as fast and smooth as possible.

- Information packs, macroeconomic, legal, sectoral data
- Preparing lists of potential polish business partners
- Organizing B2B meetings and business missions
- Analysis of export potential
- Verifying business partners
- Support in contacts with Government Agencies

Key areas of Polish Investment and Trade Agency



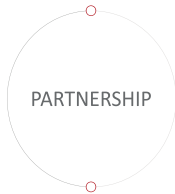
Supporting Polish Exports with particular emphasis on SMEs. Only in the first half of 2023, with PAIH support:

1. 333 export contracts signed, worth over 25 mln. EUR
2. 4721 Polish and 1426 foreign clients supported
3. Over 2600 B2B meetings organized



Facilitating investments in Poland and abroad
Support of FDI in Poland

1. 25+ years of service for foreign investors looking to invest in Poland
2. 1000+ total projects completed in Poland
3. 30 bln. EUR total estimated projects value, pledged to create over 250 thous. new workplaces



Cooperation with public administration and business environment institutions in the implementation

Where Can You Find Us?

Network of Foreign Trade Offices (ZBH)





Polish Business
Partners



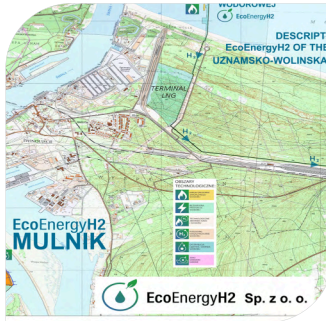
COMPANY NAME: EcoEnergyH2

WEBSITE: <https://ecoenergyh2.pl>

PRODUCTS: Underground warehouses in salt caverns/ gas-hydrogen urban cogeneration plant/ production of green hydrogen through electrolysis of water from Baltic offshore renewable energy sources/terminal for LH2 and NH3 import, regasification, and conversion to H2/rail distribution of H2, ship bunkering, and refueling stations/hydrogen pipeline transmission.

EcoEnergyH2

CERTIFICATES: A concession from the Ministry of Climate and Environment for the exploration of rock salt deposits in the salt dome in the area of Świnoujście city (Wolin Island), along with a contract for its mining use. An application has been submitted to obtain a concession for the exploration of rock salt deposits in the salt dome in the area of the Szczecin Lagoon.



The company EcoEnergyH2 Sp. z o.o. operates as a startup with the goal of establishing a regional hub for hydrogen energy development in the town and port of Świnoujście, located in the West Pomeranian Voivodeship of Poland. This hub, known as the EcoEnergyH2 Hydrogen Energy Complex, is part of a targeted investment—a business project focused on developing and implementing a decarbonized, low- and zero-emission economy based on the principles of sustainable development. The project aims to create a synergy of industrial hydrogen technology chains.

COMPANY NAME: **Ennovation Technology**



WEBSITE: <https://ennovationtech.eu>

PRODUCTS: Electric motors; lithium-ion batteries; vehicle controllers, charging controllers; Battery Management Systems (BMS), battery cooling systems; onboard chargers, integration of drive systems; conversion of combustion engine vehicles to electric/hydrogen; homologation testing.

CERTIFICATES: ISO 9001



As Ennovation Technology, we provide complete electric drive systems and battery systems for trucks, buses, construction machinery, and boats. We design and manufacture drives, batteries, controllers, electronic components, and power electronics. We offer solutions for both battery-electric vehicles and fuel cell-powered vehicles. We provide full drive integration and support in the homologation process. We have ready-made drive kits, as well as design solutions from scratch for individual orders. We also perform conversions of combustion engine vehicles and machinery to electric ones, where we replace the combustion drive with a battery-electric or fuel cell electric drive.

COMPANY NAME: **G-ENERGY S.A.**



WEBSITE: <https://genergy.pl>

PRODUCTS:

The company specializes in designing, supervising, and constructing gas infrastructure across all pressure ranges. It executes contracts for key entities in the gas industry, including major operators like the ORLEN Group, PGNiG Technologie S.A., and Gas Transmission Operator GAZ-SYSTEM S.A. G-ENERGY S.A. is committed to contributing to the country's decarbonization efforts and is a signatory of the "Sectoral Agreement for the Development of the Hydrogen Economy in Poland."



G-ENERGY S.A. is a publicly listed company on the NewConnect market of the Warsaw Stock Exchange, specializing in the energy sector with a focus on gas and hydrogen services. We offer experienced design and executive staff, and we collaborate with Polish universities on hydrogen technology. We seek investment partners interested in modern technologies (hydrogen, gas) in Poland and neighboring countries, as well as partners for design and construction projects. Through our subsidiary, KOTŁO-REM Sędziszów, with nearly 40 years of experience, we aim to develop comprehensive services for hydrogen boilers in partnership with interested parties.

COMPANY NAME: HydrogenTech



WEBSITE: <https://hydrogentech.pl>

PRODUCTS: Innovative DFC solid oxide fuel cells and their stacks - patented in many countries, double sided active layers, fully ceramic, easier to seal, better suited thermal expansion coefficients, lower thermal capacity – quicker startup; design and construction of advanced hydrogen systems; modular hydrogen laboratories

**HYDROGEN
— TECH —**

CERTIFICATES: The design of a stack is protected by the worldwide patents: USA Patent US 8,778,550B2, Polish PL 220309B1, European EP 2722915B1, fuel cells is protected by: US 8968959, GB 2484434, DE 112010002963, RU 2502158, PL PAT.21334. Product awards at International Invention Fairs: Paris, Cracow, Kielce, Taipei.



Founded in 2018, HydrogenTech is a research and development startup located in Krakow. We are engaged in the production, development and commercialization of world innovative solid oxide fuel cells, stacks and their systems. Our team has experience to carry out work in hydrogen consulting, integration of hydrogen systems and fuel demand assessment. We have production and test laboratories developed by the our team for testing fuel cell stacks and electrolysis and other hydrogen technology. In the coming years (2025/27), we plan to launch the first SOFC fuel cell factory in Poland with a capacity of 5MW/y. Our financial guarantor are the funds: Black Forest SICAV-SIF and EC Business Creation.

COMPANY NAME: mPOWER GREEN TECH
WEBSITE: <https://mpowergreentech.com>
<https://mpowergt.com>



**mPower
Green Tech**

PRODUCTS: Green H2 from a full range of waste biomass at Methane conversion to syngas and then to H2 via water gas shift Dispersed production of electricity & heat in mobile CHP Containers SynGen Reactor – cold-plasma, catalytic reactor for reforming/converting carbonaceous pollutants to clean syngas (H2/CO).

CERTIFICATES:

1. Patent Convention Treaty - positive review of the Int'l Patent Application for the SynGen (cold plasma/catalytic) Reactor.
2. Patent Convention Treaty - positive review of the Int'l Patent Application for the compact, horizontal, cross-draft Pyrogasifier.



**Before and after SynGen.
Tars reformed to clean syngas.**



mPower is a Polish-Canadian-owned company with a lab near Warsaw. Its science team has developed breakthrough technology reducing CHP power plants by 90% to fit in mobile 20-foot containers for on-site production of green power or Green Hydrogen from a full range of waste biomass. Mobility makes the leasing model possible. On-site power or H2 generation means lower CO2 & transport costs and less risk from cyber attacks. Polish and Canadian government grants helped advance the prototype to full 3rd-party testing validation. mPower has developed relationships with companies worldwide with biomass waste potential and demand for green power or H2. Co-investment, licensing models are possible.

COMPANY NAME: **PESA Bydgoszcz SA**

WEBSITE: <https://pesa.pl>



PRODUCTS: The production of zero-emission vehicles, including hydrogen-powered locomotives and passenger trains, is the key element of the "Green Pesa" strategy, which assumes the maximum reduction of the carbon footprint both, in the production and operation of rail vehicles.

CERTIFICATES: 1. ISO 9001:2015 2. ISO 14001:2015 3. ISOTS 22163:2017
4. ISOTS 22163:2017 5. DIN 6701 6. EN 15085-2 CL11 w dziedzinie D,P,M,S



PESA is the largest rolling stock manufacturer in Poland. It employs nearly 4 thousand employees in its plants in Bydgoszcz and Mińsk Mazowiecki, and it cooperates with more than 1,500 companies with the total of several dozen thousand employees. PESA trains and trams run in all Polish regions and most large cities as well as in over a dozen European countries. PESA trams are used, among others, by the inhabitants of Warsaw, Wrocław, Gdańsk, Kraków, Kiev, Sofia, Seged, Cluj and Iasi. Our vehicles carry passengers of e.g. German DB Railways, Italian Trenitalia, Czeskie Drahry or PKP Intercity.

COMPANY NAME: **PGE ENERGETYKA KOLEJOWA S.A.**

WEBSITE: <https://pgeenergetykakolejowa.pl>

PRODUCTS:

The PGE Capital Group is Poland's largest energy sector company with respect to sales revenues and net profit. Thanks to the combination of its own fuel resources, power generation and distribution networks, PGE guarantees a safe and reliable power supply to over 5 million households, businesses and institutions.



Energetyka Kolejowa



PGE Energetyka Kolejowa, part of the PGE Group, has 20 licensed fuel stations and 62 fuel stations for its own use. In the future, the company plans to transform this activity into a supply of H2 for the Polish rail sector and support the development of green hydrogen railways.

COMPANY NAME: **PGNiG Technologie**



WEBSITE: <https://www.technologiepgnig.pl>

Production Division

PRODUCTS: Our Oil & Gas Infrastructure Production Division merges multi-generational experience with modern business practices, designing and manufacturing custom oil and gas equipment, as well as steel structures. We offer equipment for various pressures, suitable for both neutral and aggressive environments. Our main clients include leading Polish and international oil and gas companies, such as ORLEN SA, Exalo Drilling S.A., and MHWirth AS, among others.

CERTIFICATES: 1. API as per API Spec. Q1 and API 6A (licence 6A-0595) 2. PN EN ISO 9001:2009, PN-EN ISO 14001:2005, PN-N 18001:2004, issued by UDT-CERT Warsaw, meeting the requirements of QMS 3. 97/23/EC Directive, issued by UDT-CERT Warsaw 4. Det Norske Veritas Rules for Classification of Offshore Drilling and Support Units, issued by Det Norske Veritas Poland for welded steel structures 5. UDT Inspection Office Laboratory – laboratory testing certificate.



PGNiG Technologie S.A. is a Polish company excelling in high-quality product manufacturing, driven by innovation and openness. We achieve this through a skilled team of managers and engineers, modernized production facilities, and rigorous quality control in our laboratory. We hold API Spec. 6A and API Spec Q1 licenses, among other certifications. As a market leader in engineering, construction, and maintenance services for the oil and gas industry in Poland, our products are also recognized in international markets such as Norway, Ukraine, Germany, Czech Republic, Pakistan, and Libya. Our upgraded production plant, equipped with CNC machines and innovative processes, enhances safety and precision.

COMPANY NAME: **SIMPLE H2**

WEBSITE: <https://simpleh2.com>

PRODUCTS:

- PEM Electrolyzers • Energy Storage Systems based on Electrolyzers and Fuel Cells • Power Generators with Hydrogen Storage • Green Hydrogen Refueling Stations • Customized Hydrogen Solutions • Hydrogen Refueling Stations (HRS)



CERTIFICATES: SIMPLE H2 is in the process of implementing quality standards in manufacturing facility.



SIMPLE H2, the first Polish manufacturer of PEM electrolyzers, is leading the revolution in sustainable hydrogen production. Operating without external financing, the company showcases self-sufficiency, boasting 100% Polish capital. With sales representatives in the USA and India, and recent recognition at CES Las Vegas, the company is poised for global expansion. Engaging in discussions with the UAE and the USA regarding the opening of local facilities signals their commitment to mass production. The entity has initiated R&D activities this year on proprietary fuel cells, which it plans to implement into production next year, along with hydrogen storage tanks and Hydrogen Refueling Stations (HRS). SIMPLE H2 offers a unique opportunity for investors to secure exclusive licenses for their cutting-edge technology. This allows for the potential to establish a strong market presence in any chosen country, leveraging the company's advanced solutions in hydrogen production.

COMPANY NAME: **Torpol Oil & Gas Sp. z o.o.**



WEBSITE: <https://torpoloilgas.pl>

Torpol Oil&Gas

PRODUCTS: Comprehensive engineering across all branches; Procurement based on own or external design; Construction - We possess our own resources enabling construction of technological installations; Gas compressors/packaging We work hand in hand with gas compressor manufacturers and distributors to offer the design and packaging of compressors like: piston, rotary screw, rotary vane, centrifugal, axial, vortex.



We are a strong team of specialists with expertise gained over the years. We implement projects in the following sectors:

1. Hydrogen industry,
2. Crude oil and natural gas Complete installations for the processing of crude oil, natural gas, LPG, condensate, formation water and compression of gas,
3. Petrochemical and chemical industry,
4. Packaging of gas compressors Compressors with complete equipment, i.e.: drive unit – electric, gas engine or gas turbine coupling, separators, pulsation bottles, coolers lubrication, fuel and control systems acoustic enclosure and other elements.

COMPANY NAME: **WindTAK**

WEBSITE: <https://www.windtak.pl>



PRODUCTS:

1. Product vortex generators: passive aerodynamic technology that improves the efficiency of wind turbines by up to 5%.
2. Product 5GVG by WindTAK: system of aerodynamic sensors, 5G/IoT gateway and cloud-based algorithms using machine learning and digital twin to reduce operational costs and lower the LCOE by up to 7%.

CERTIFICATES: ISO, USPTO provisional patent



WindTAK is a manufacturer of 5GVG by WindTAK technology, which improves the energy efficiency and reduces the operating costs of existing onshore wind farms. The company uses a combination of aerodynamic science, proprietary IoT devices and the latest advances in digital twin and machine learning technologies. The company has a presence in CEE, the USA and Canada, and has been in business since 2018. Currently, the company is expanding its operations in the Northern American market and Europe actively seeking business development opportunities as well as partnerships.

COMPANY NAME: Your Energy Transition Services Sp. z.o.o

WEBSITE: <https://yets.eu>

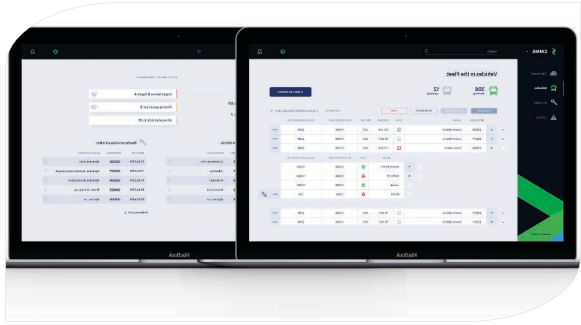
PRODUCTS: Currently product portfolio consists also Remote Predictive Maintenance device and we offer engineering as a service. One of 80 engineers can design and lead projects in electrical / mechanical engineering, develop software or design electronic boards from the scratch to the working prototype.



YETS

Your Energy Transition Services

CERTIFICATES: Electrical qualification certificates, inclusive leadership, business communication, sales & customer relationship management, creative skills for innovation.



Your Energy Transition Services (YETS) was established in 2024 as a result of professional experiences of founding partners in energy transition sector and electromobility. YETS took over a role of one-stop shop for clients who have an idea they want to be involved in energy transformation, but they need experts to make it properly. YETS cooperates with experienced partners and is involved in several projects for battery energy storage and hydrogen infrastructure (H2 electrolyzers and power genesis) in Poland and Central Eastern Europe.

NOTES:

The Polish Investment and Trade Agency

50 Krucza Street
00-025 Warsaw
+48 22 334 99 55
paih24@paih.gov.pl

Foreign Trade Office in Milan

Via Broletto 46
20121 Milan

Aleksandra Leoncewicz

Head of Foreign Trade Office
aleksandra.leoncewicz@paih.gov.pl

Anna Czuba Minesi

Business Development Manager
anna.czuba@paih.gov.pl

Joanna Musialik

Expert
joanna.musialik@paih.gov.pl

