

# HyNed China

Fuelling the hydrogen sector with sustainable and smart solutions



# NL

Netherlands

# Europe embraces the hydrogen challenge

The EU has identified hydrogen as one of six key strategic areas where major action and investments are required. Aligned with its 2019 European Green Deal, the EU has a strategic interest in new opportunities for redesigning Europe's energy partnerships. A 'European hydrogen backbone' – a pipeline network of almost 23,000km – will, for example, be made ready by 2040 and will run through various EU countries including the Netherlands.



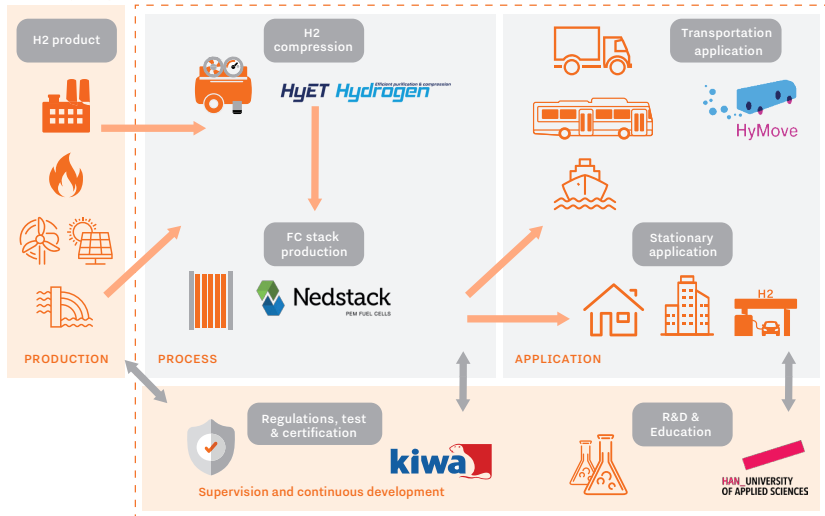
## China and the Netherlands both outline clear hydrogen visions

In China, the potential of hydrogen in addressing climate challenges, complementing the use of other renewable energy sources like wind and solar PV, is recognised in national and local policy. The country has witnessed a growing interest in hydrogen as an alternative fuel for automotive and energy storage.

Focusing strongly on sustainability and innovation, the Netherlands builds on the potential of hydrogen, phasing up to 2030, as part of its 2019 National Climate Agreement. The Dutch government support for R&D, feasibility studies and business cases contributes to the development of an ambitious and high-quality hydrogen sector. International cooperation, however, is needed to fuel the hydrogen sector even further.

**Let's collaborate to realise an innovative hydrogen economy!**

## Dutch Hydrogen Industry Ecosystem



## What can the Netherlands offer?

- As the second largest producer of so-called ‘grey hydrogen’ in Europe, the Netherlands has a lot of experience in handling hydrogen safely.
- The Netherlands has a complete hydrogen supply chain, thanks to a strong cluster in and around Arnhem (East Netherlands) and the first ‘European Hydrogen Valley’ in the northern part of the country.
- A large production capacity for all processes, in which hydrogen plays a role, that adds up to a possible annual amount of hydrogen in industry of total 18.3 bcm. This is equivalent to 1646 kton/y of hydrogen or 198PJ/y based on lower heating value (LHV).
- Research institutions with an extensive knowledge of gas and electrolysis technology. Furthermore, the 2019 National Climate Agreement includes the ambition to scale up electrolysis to approximately 500 MW of installed capacity by 2025 and 3-4 GW of installed capacity by 2030.
- A very strong gas infrastructure with a large pipeline capacity, which in the future can be repurposed to transport clean hydrogen.
- The world-class port of Rotterdam which functions as a gateway to the European market.

# Partners



**HyMove** is the Netherlands only fully integrated H2 fuel cell power generators supplier. Manufacturing top quality fuel cell systems as power modules in heavy-duty applications, such as buses, trucks, construction equipment, agricultural vehicles, inland vessels, and stationary power modules. Current products include 30kW, 45kW and 60kW fuel cell power generators. The HyMove hydrogen fuel cell power modules save up to 30% H2 consumption and durability. The fuel cell systems are developed for easy integration, plug&play, into any application. HyMove fuel cells are suitable as an energy source for all possible powertrains and can be tailored to the application.

HyMove has access to technology for each step in the hydrogen supply chain, offers consortium development for regional/national and international green hydrogen supply chains.

[www.hymove.nl](http://www.hymove.nl).



**Nedstack** is a leading player in the PEM fuel cell industry with a strategic focus and unique track record on the high power and mission critical domain. Nedstack is a global market leader in this segment and lays claim to having built worlds longest running PEM fuel cell system (>70k running hours), worlds first megawatt-sized PEM Power Plant (2011) and worlds largest PEM Power Plant deployed in the field to date (>2 MWe). Nedstack believes the commitment to new energy solutions is triggering a huge momentum for PEM fuel cell solutions. And moreover that the industrialisation strength of the Chinese industry promise will be not only a base for fuel cell demand, but is likely to become a global hub for fuel cell supply in the future.

[www.nedstack.com](http://www.nedstack.com).



**HAN** University of Applied Sciences is one of the five largest universities of applied sciences in the Netherlands and offers high-quality, practice-based education to more than 30,000 students. HAN's centres of expertise provide tailored research to companies and institutions. HAN has

established many partnerships with universities, global companies, research centres and institutions all over the world. HAN is setting up a shared facility hydrogen lab for applied hydrogen technology research and development. The HAN Master Programme 'Engineering Systems – Sustainable Energy' likes to welcome Chinese students. [www.hanuniversity.com](http://www.hanuniversity.com).



**HyET Group** develops technologies that enable the large-scale introduction of decentrally generated renewable energy. The group ensures performance and cost parity between renewable and traditional fossil energy applications. HyET Solar supplies efficient flexible and lightweight PV products for cost-effective solar power. HyET Hydrogen is leading in electrochemical hydrogen purification and compression, the missing link in hydrogen mobility. Introducing the first viable Electrochemical Hydrogen Compressor (EHPC), the HCS 100. The group based in Arnhem is expanding its focus to the USA with a subsidiary, HyET Hydrogen LLC based in California.

[www.hyethydrogen.com](http://www.hyethydrogen.com).



**Kiwa** is a world top 20 leader in Testing, Inspection and Certification (TIC). With certification, inspection, testing, training and consultancy services, it creates trust in its customers' products, services, processes, (management) systems and employees. With its services, Testing, Inspection, Certification, Training, Consultancy clients can ensure their fleet and equipment are safe and in good condition, whether used on roads, rails, waterways at airports, harbours or elsewhere in this internationally-oriented and rapidly developing market.

[www.kiwa.com](http://www.kiwa.com).



**HyNed PIB China** works in close collaboration with other PIB programmes, such as: PIB H2 Japan and PIB H2 Australia.

# PIB HyNed-Hydrogen China

Supported by the Netherlands Enterprise Agency, HyNed focusses helping China to fulfil its emission-free hydrogen ambitions. The Dutch companies participating in the public-private HyNed partnership produce a full range of efficient and long-lasting products and components for the hydrogen market. At the same time, HyNed provides a platform for introducing Chinese fuel cell technologies and component suppliers to suitable partners in the Netherlands.

HyNed distinguishes itself by covering the entire supply chain of hydrogen application technologies. Every partner has specific and unique knowhow and products. Each with its own complementary role in the total hydrogen supply chain from production to distribution. This includes hydrogen compression, fuel cell stacks, fuel cell system development and integration, fuel cell innovation and hydrogen regulations and certification.

Besides the energy supply and automotive applications, HyNed also supports European projects with hydrogen solutions for inland shipping. As a traditional maritime trading country, the Netherlands plays an important role in making zero-emission inland shipping a global norm. HyNed is specifically open to new opportunities for international cooperation with the objective of unleashing the power of hydrogen in the worldwide shipping industry.

Sino-Dutch cooperation in the field of hydrogen fuel cells can open up new avenues for developing clean technology for manufacturing goods in an increasingly competitive energy market. Together, we can explore how we can utilise hydrogen technology for building resilient infrastructure. Thus creating economic opportunities through cooperation between companies and research institutions and stimulating innovation (SDG9).

The PIB HyNed is part of the programme 'Partners for International Business'. This public-private partnership includes the Netherlands Enterprise Agency, a government agency with access to a global network of embassies, consulates and Netherlands Business Support Offices (NBSOs).

# Curious to learn more? Get in touch!

Visit us: [www.tradewithnl.nl/en/H2China](http://www.tradewithnl.nl/en/H2China)

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