

Fuel Cell and Hydrogen Network NRW

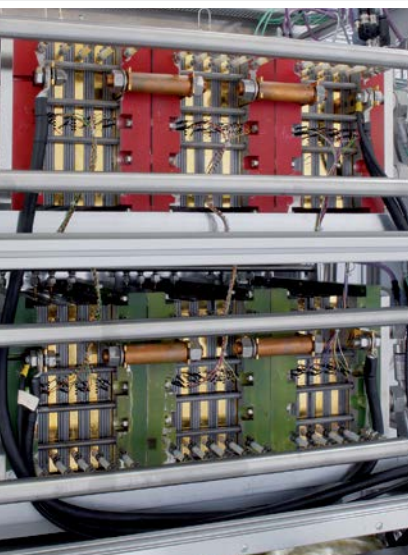
Organisation

The Fuel Cell and Hydrogen Network NRW of the Energy-Agency.NRW is based in the state capital of Düsseldorf and was founded in the year 2000. The Network operates on behalf of the state government of North Rhine-Westphalia and is a part of the energy economy cluster „Energy-Region.NRW“, which is promoted by the EnergyAgency.NRW. In total nine networks in this cluster deal with the subjects of fuel cells and hydrogen, power plant technology, storage and grids, biomass, energy-efficient and solar construction, geothermal energy, fuels and engines of the future, photovoltaics and wind energy.

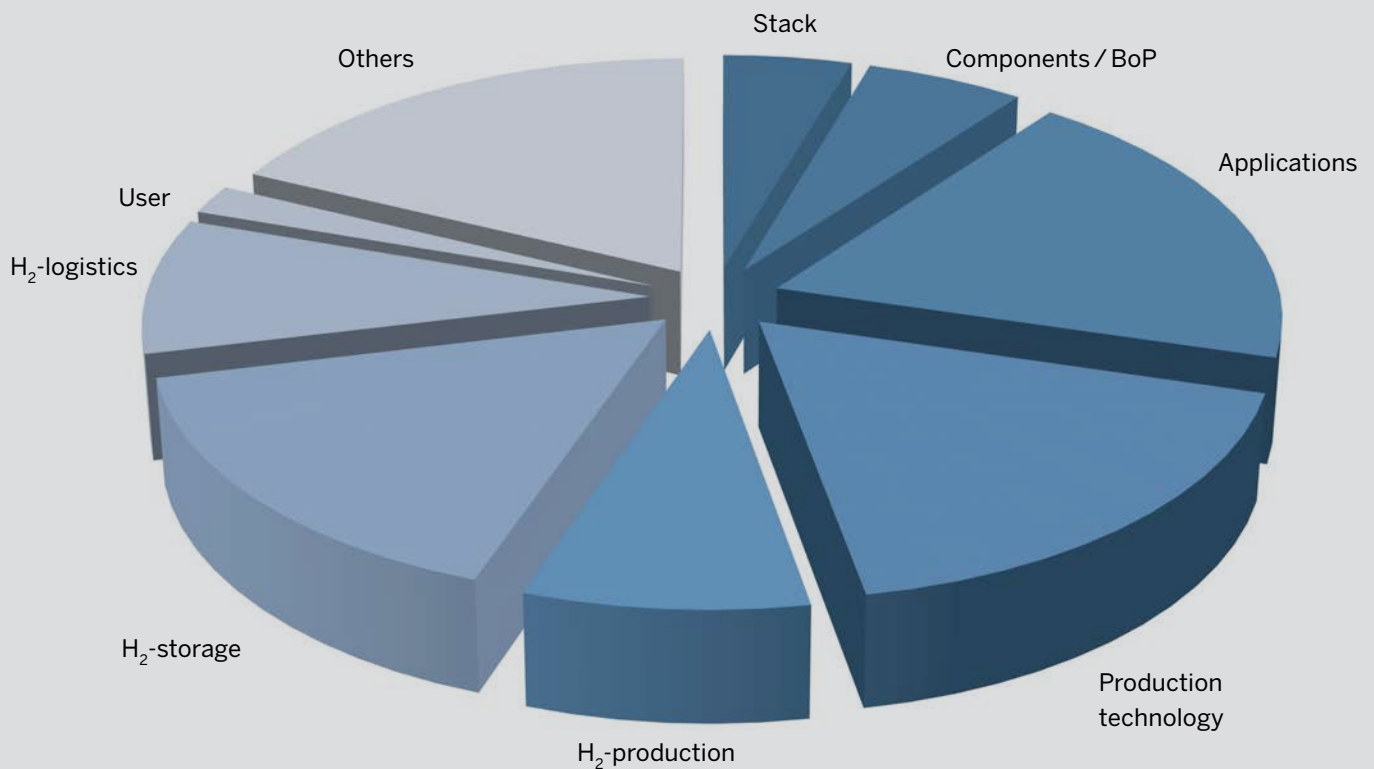
Targets

The objectives of the Fuel Cell and Hydrogen Network NRW include the following:

- further development of fuel cell and hydrogen technologies
- market introduction of applications with fuel cell technology
- use of sustainable produced hydrogen in the energy and transport sector
- positioning of North Rhine-Westphalia as an internationally recognised hub for fuel cell and hydrogen technology.



Structure of network members



Membership structure

More than 400 members of industry and science use the services provided by the Network. Around 70 % of the members are industrial partners (mostly small and medium-sized enterprises), 20 % are research institutes and 10 % come from other areas. The organisations concerned are primarily based in NRW, but some also in other federal states and abroad. The Network is currently the largest of its kind concerned with fuel cell and hydrogen technology in Europe.

A large number of the member companies come from the fields of mechanical engineering and electro technology. These companies had adapted their prior products to meet the special requirements of fuel cell technology. This concerns, for example, system elements such as valves, pumps and power electronics components. But complete fuel cell systems for mobile, stationary and portable applications are also being developed and produced in NRW. Thanks to these operations North Rhine-Westphalia

plays a special role as a location for outstanding fuel cell components, components which are in increasing demand by domestic and international system manufacturers. A further focal area is the hydrogen technology, from production (mainly by electrolysis and reforming) and storage to distribution. Increasingly, there are also potential users such as transportation companies, public utilities or mobile communication operators among its members.

In North Rhine-Westphalia more than 50 institutes at universities and research facilities are involved in fuel cells – e.g. in the fields of material development or production technology – or developing technologies for hydrogen generation on the basis of non-fossil sources, such as solar energy and biomass.

The entire spectrum of products and services can become retrieved online at the Network's Internet site from its electronic database.



Membership of the Network

Companies or research institutes who already operate in the field of fuel cell or hydrogen technology or who wish to do so can be members of the Fuel Cell and Hydrogen Network NRW. It is not a prerequisite that they have their head office in North Rhine-Westphalia. Similarly other forms of institution (chambers, associations, etc.) and interested individuals can also participate in the work of the network.

Application for membership can be submitted via the Internet site www.fuellcell-nrw.de. The membership is free of charge. An active participation in our expert groups or projects is expressly desired. Currently the focus is on the expert groups "H₂-System", "Power-to-gas" and "Market introduction".

Services offered

The range of services provided by the network breaks down into the following areas:

- **Initiation of co-operative and single projects:**
Project determination, location of partners, assistance in implementation, initial consultancy on funding
- **Internationalisation:**
Initiation of international co-operation, Acquisitions and delegations, Participation in international associations and partnerships
- **Information and communication:**
Conferences and workshops, platforms and expert groups, competence atlas, online fuel cell product database, information about technologies
- **Public relation:**
Homepage, newsletter, joint stands at international trade fairs, publications in trade press, presentations at home and abroad,
- **Settlement:**
Acquisition and monitoring of interested companies, Support of regional economic development agencies, location information, initial consultancy
- **Qualification:**
Student competition „Fuel Cell Box“, Company visits.

Main focus of the network's operations is on the initiation and co-ordination of co-operative projects. To date the state government of North Rhine-Westphalia and the European Union (European Regional Development Fund – ERDF) have provided around 115 million euro for 110 projects. The project's themes range from the development of single system components, such as compressors and sensors, to developments and trials for complex fuel cell applications, e.g. fuel cell and hydrogen buses.

To promote young scientific talent in North Rhine-Westphalia, the Network organises for a number of years the school student competition „Fuel Cell Box NRW“, which attracts the participation of about 500 school students every year.

Further information can be found on the website www.fuellcell-nrw.de

NRW – the hydrogen state

In North Rhine-Westphalia the parameters are extremely favourable for the development, production and market launch of fuel cell technology:

- In NRW there are around 350 million Nm³/a (= 31.000 t/a) of industrial residual hydrogen available, primarily from chlorine-alkali electrolysis. Theoretically around 260,000 fuel cell cars could be powered with this.
- The hydrogen pipeline that has existed since the 1930s in the Rhine-Ruhr region (with a total length of about 240 km) can serve as the nucleus for setting up a hydrogen infrastructure, substituting rendering the previous transport of gas by road.

These parameters form the basis for the activities within the NRW Hydrogen HyWay.

NRW Hydrogen HyWay

The lead project „NRW Hydrogen HyWay“, initiated in 2008, forms the strategic framework for different activities in the field of fuel cells and hydrogen technology. The program focusses on:

- Conversion and storage of renewable electricity in the form of hydrogen, including subsequent use in the energy system
- Infrastructure for the introduction of hydrogen as innovative fuel for transport
- Demonstration of fuel cell vehicles with focus on public transport, commercial vehicles and special applications (supplementing passenger car applications federal/EU funded)
- Research, development and demonstration of fuel cell-based distributed combined heat and power plants, virtual and hybrid power plants
- Research and development for technical optimisation and cost reduction, pre-commercial demonstration of new developments in the larger field tests.

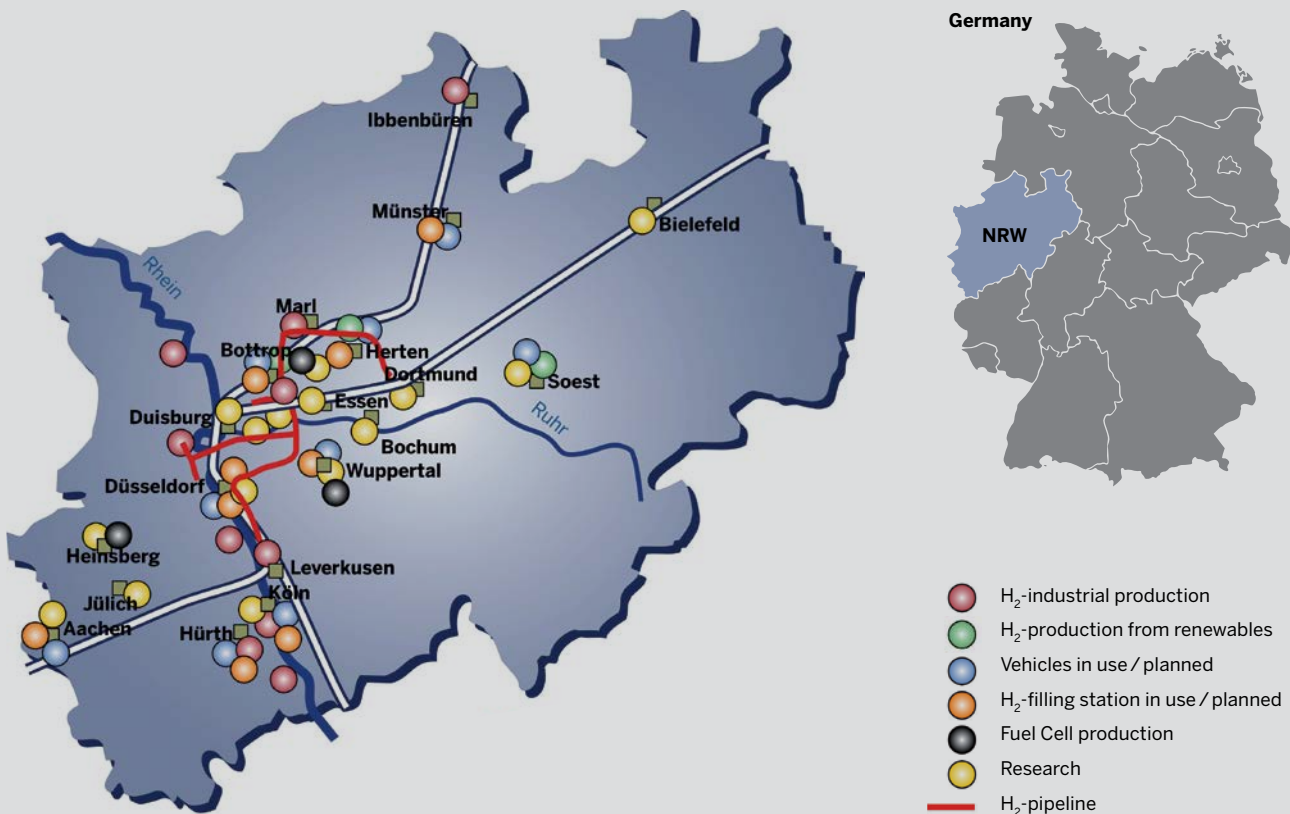


Further funding possibilities

In addition, NRW supports as first federal state the market introduction of fuel cell cogeneration with attractive funding conditions within the program „progres.nrw – program area CHP“. The funding is primarily for small and medium-sized enterprises (SME) in North Rhine-Westphalia. In addition to conventional CHP demonstration projects of innovative CHP (including fuel cells) will be supported, regardless of performance and investment.

The activities of NRW are organised in coordination with and addition to the „National Innovation Program for Hydrogen and Fuel Cell Technology (NIP)“. The NIP was set up to accelerate research and development as well as market preparation of products of these innovative technologies.

The same applies for the European Fuel Cells and Hydrogen Joint Undertaking (FCH JU), a public-private partnership to support this technology in Europe.





Other activities

Project "Clean Energy Partnership"

The Clean Energy Partnership (CEP) was established in 2002 as joint initiative of politics and industry in the National Innovation Program Hydrogen and Fuel Cell Technology (NIP). Partners of CEP are technology, oil and energy enterprises as well as most main carmakers and three leading public transport companies. Beside Berlin and Hamburg associated partners of the CEP are the federal states North Rhine-Westphalia, Baden-Württemberg and Hessen. The network represents North Rhine-Westphalia and is involved in different working groups. In this context, various fuel cell vehicles are demonstrated in NRW. These vehicles can be fueled at a 700-bar hydrogen filling station in Dusseldorf. More filling stations are planned in NRW. The network advises the CEP on the choice of suitable locations.

EU Regions Partnership HyER

North Rhine-Westphalia is represented in the EU Hydrogen, Fuel Cells and Electro-mobility in European Regions Partnership HyER. HyER has set itself the objective to accelerate the market introduction of fuel cell technology in general and of electric mobility on the basis of electricity (battery) and hydrogen (fuel cells), together with the necessary infrastructure in particular. Around 40 regions with relevant activities in these areas work together in the partnership. HyER represents the interests of the regions in Brussels and also takes an active part in projects, conveying the results therefrom back to the regions.

Impressum

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