HC·H2 Helmholtz-Cluster Wasserstoff

HC-H2
Hydrogen News

Issue 4 | 2024

Dear Reader,

The past few weeks have been eventful and I am pleased to again report on a number of projects, events, and news related to hydrogen and structural change in the Rhenish mining area in this issue of the HC-H2 newsletter.

In the “Good news” section, I would like to present two important projects from the region: the **H2HS pilot project launched in September and the H2Giga flagship project DERIEL**, which saw a PEM electrolysis test facility put into operation at Forschungszentrum Jülich.

How economically viable will the use of hydrogen actually be in future? A research report published by the Institute of Energy Economics (EWI) includes an up-to-date analysis, which shows a **deviation from current assumptions regarding market prices**. In addition, a discussion paper on the **use of carbon management and carbon dioxide removal (CDR) for industry in North Rhine-Westphalia** – published by the Wuppertal Institute, Fraunhofer UMSICHT, and IN4climate.NRW – shows significant potential for synergies in the industrial sector.

We are also very pleased to have hosted the **15th HC-H2 Brainergy Park Connect event**. Once a month, guests introduce themselves, their companies, and their activities at Brainergy Park, providing an opportunity to network and establish new partnerships. Only by working together can we continue to develop the location and create plans for the future. We have now also been able to welcome one or two founders to the event. They are currently in the process of **setting up their own company and have chosen the start-up village as a location** to do so. We would like to welcome you to Brainergy Park and look forward to lively exchanges with you in future.

Last but not least, I would like to report on a number of events from the past few weeks (including photos). **We are delighted about the fantastic collaboration** with the event organizers, including the district of Düren, the Aachen Chamber of Industry and Commerce (IHK), the district of Rhein-Kreis Neuss, Wasserstoff Hub Neuss, IN4climate.RR, and Zukunftsagentur Rheinisches Revier. Thank you for letting us be part of these successful events!

We hope you enjoy reading this latest newsletter.

Yours, Vanessa Düster, HC-H2 Netzwerk

Good News

Hydrogen for Heinsberg through H2HS Project

The district of Heinsberg will take an important step towards a sustainable future. On 19 September, the green light was given for the construction of a **hydrogen electrolysis plant for the production of green hydrogen with a hydrogen filling station** powered by renewable energy from the region. The initiators of the H2HS pilot project are the Heinsberg economic development corporation (WFG) and the district in a supporting role. Partners of the project include renowned companies from the region, such as the NEUMAN & ESSER, VEOLIA, BMR energy solutions GmbH, WEP from Hückelhoven, and the Frauenrath Group.

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H2Giga: Electrolyzer Put into Operation

The H2Giga flagship project aims to mass produce electrolyzers for the production of hydrogen, thus helping to ramp up the hydrogen economy. As part of the project DERIEL, a **test facility for an industrial-scale PEM electrolyzer module** was recently put into operation at Forschungszentrum Jülich. There is a particular focus on the extensive analyses that will be used to close existing knowledge gaps about the ageing of electrolysis cells.

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HC-H2 Close Up

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A new building for new hydrogen ideas

The Brainergy Park is changing. Almost every month, bulldozers tear open a new building site at a different location in the innovative business park, which is at the centre of structural change. The Institute for a Sustainable Hydrogen Economy (INW) at Forschungszentrum Jülich has created the most jobs so far. The INW now has 100 employees. It forms the core of our Helmholtz Hydrogen Cluster. And in 2030 or 2031, it will find a **new home in the park in a new research building costing around 90 million euros**. The funding for work phases 1 to 3 of the new building project has now been approved.

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What X-rays have in common with hydrogen?

Hans-Georg Steinrück is the number 1 at the Institute for a Sustainable Hydrogen Economy at Forschungszentrum Jülich. Or to put it more precisely: he is the Director of Institute Division 1 (INW-1). In his presentation at HC-H2 Brainergy Park Connect, the neighbourhood meeting of the park's residents, he explained why **X-rays have exactly the right wavelength to get a more precise impression of what is happening at the atomic level**. Basic hydrogen research benefits from this. The renowned Royal Society of Chemistry recently honoured the INW Director at its annual meeting in Montreal, Canada, as one of the ‘outstanding young researchers working on an energy research topic in the context of energy and environmental sciences.’

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New Ideas for Brainergy Park

In October, HC-H2 hosted the **15th neighbourhood meeting over a working lunch**. The event is aimed at resident companies in Brainergy Park and those looking to move into the industrial park. In September, Deniz Lokurlu provided us with an insight into the use of high-temperature solar thermal energy (parabolic trough collectors, PTCs) in the production of green hydrogen, a key focus in the portfolio of SOLITERM Group GmbH. In addition, the guys from the Jülicher Connective Consult GmbH spoke about their management consultancy in the Rhenish mining area as well as their various successes, challenges, and services.

Focus on the Rhenish Mining Area

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Economic Viability of Using Hydrogen

The Institute of Energy Economics (EWI) at the University of Cologne recently published a research report on the economic viability of the potential use of hydrogen as an energy source in 2030 as well as in 2045. The short study entitled “The financing gap in the hydrogen market ramp-up: **analysis of demand and price scenarios” is based on a cost comparison of greenfield sites for hydrogen applications and conventional processes** in the industrial, transport, electricity, and building sectors. The report analyses the hydrogen price at which the use of hydrogen is more economically favourable than the use of conventional energy sources. For almost all applications and years, the calculated break-even prices are lower than the currently assumed future market prices for hydrogen.

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Future Laboratory at IN4climate.RR

What crucial steps are still needed to get the hydrogen economy up and running in Germany? The meeting of the future laboratory for the industrial use of hydrogen on 26 September focused on two exciting topics to support industry: **IHK Mittlerer Niederrhein’s innovative demand survey procedure**, which was met with great interest, and sustainable rail transport concepts for efficient hydrogen distribution.

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Removing CO_2 from the Atmosphere in NRW

What exactly do carbon management and carbon dioxide removal (CDR) mean for industry in North Rhine-Westphalia (NRW)? In the recently published discussion paper on the use of CDR for industry in NRW, researchers from the Wuppertal Institute, Fraunhofer UMSICHT, and IN4climate.NRW examined the fundamentals, potential, and conflicting goals of this technology. A projection of the potential for permanent CDR in industry shows that **CDR can build on existing industrial processes and that there is significant potential for synergies**. In particular, the paper outlines the high level of potential in biogenic carbon capture and storage (BioCCS). This involves biological waste and residues – in which atmospheric CO_2 is bound – being used as fuels for industrial processes.

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Future climate space in the Oecher Lab

From 4 November, the Oecher Lab will be showing the so-called Future Climate Space for six months. The Oecher Lab is a facility of the city of Aachen where citizens can find out about ideas for the future in various areas. The next focus, called ‘**Future Space’ at the Oecher Lab, is the topic of climate and the city's path towards climate neutrality**. The Helmholtz Hydrogen Cluster is taking part in the Future Climate Space and will be presenting its plans for the hydrogen economy of the future in the Rhineland region using its Lego model. Unless there are other obligations, the model will be part of the Zukunftsraum Klima. The Oecher Lab is located at Kapuzinergraben 19D in Aachen.

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HC-H2 Documentary Series

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Who am I? Molecular Profiles

“We are a whole family of various liquid organic substances. **We are able to bind hydrogen (H_2) and then release it again**. Our family includes toluene, dibenzyltoluene, and benzyltoluene. Research into our family began in the early 1980s and continues to this day, meaning our family is constantly growing. Since we can be preserved through multiple storage processes, we are also referred to as deposit bottles for H_2. We are liquid organic hydrogen carriers (LOHCs).”

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Events

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Family Festival in Neuss

At the 10th family festival in the Rhein-Kreis Neuss district, there was a lot going on amid glorious sunshine. There was plenty to see for young and old alike at the free event, which took place on the Dycker field near Schloss Dyck. **Associations, organizations, and social institutions from the region, as well as numerous district institutions, were represented** at around 110 stands positioned along a stretch of roughly 1.2 kilometres. Forschungszentrum Jülich and the Helmholtz Cluster for a Sustainable and Infrastructure-Compatible Hydrogen Economy (HC-H2) were part of the event’s structural change village.

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Hygo Hydrogen Awards Presented

The Hygo hydrogen awards are well-established in Düren. **For the third time, the district of Düren handed out awards to three outstanding prize winners** in the categories “Young Researchers”, “Hydrogen Champion”, and “Start Up Innovation”. More than 100 guests were invited to the Kulturmuschel venue in Jülich’s Brückenkopf-Park, and celebrated the award winners during a ceremony moderated by district administrator Wolfgang Spelthahn.

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Jobs in Focus

During an event on the subject of **hydrogen as a driver for the job market here in the Rhenish mining area**, stakeholders from industry and research met for an in-depth discussion on how hydrogen technologies are already being put into application in the region. In the district of Düren’s “Seen & Entdecken” (lakes and discoveries) forum, there was general agreement that hydrogen not only supports the energy transition, but that innovative technologies also provide opportunities for the job market.

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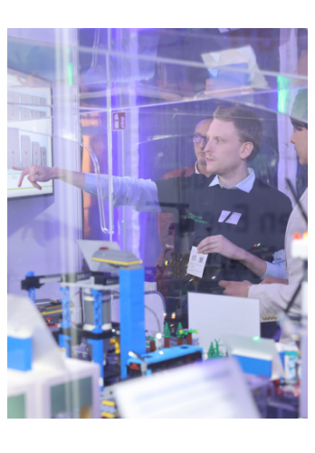
A Night of Science



On 13 September, the **fifth Night of Science took place at Heinrich Heine University Düsseldorf (HHU)**. Scientists and participating institutions, including the Helmholtz hydrogen cluster (HC-H2) and Forschungszentrum Jülich, presented their work at numerous activity stations, in presentations, and in panel discussions. With more than 55 activities, there was a wide range of information on offer for those in attendance.

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Hydrogen Trade Fair at the Brückenkopf-Park

Just like the Hygo hydrogen awards, the district of Düren’s hydrogen trade fair is a firm fixture for the region. Once a year, **numerous exhibitors meet up to give the general public an insight into a variety of hydrogen initiatives**. Alongside the exhibition stands at the Kulturmuschel venue in Jülich’s Brückenkopf-Park, there was a supporting programme of specialist talks this year, including one from the Helmholtz hydrogen cluster.

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Hydrogen Day at Gut Gnadental

Following a successful launch last year, the Rhein-Kreis Neuss district’s hydrogen hub hosted the 2nd Hydrogen Day. In addition to an exhibition, selected schools as well as interested citizens were invited to a supporting **programme with a hydrogen show lab and a hydrogen-themed journey through time.** The first-ever hydrogen digitalk was then held in the evening in cooperation with the Digitale Stadt Düsseldorf network.

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Upcoming Events

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Hydrogen Industry Day in Neuss
12-13 November 2024, Gut Gnadental

Hydrogen meet&connect Network Meeting
13 November 2024, Herzogenrath

Network Meeting Hydrogen
26-27 November 2024, Berlin

16. »HC-H2 Science Spotlight« – Special
13 November 2024, online

Strukturwandelsafari in the Rhenish Mining Area
Regular Announcements

2. Strukturwandeltagung – Structural Change in Coal Mining Areas
27-28 November 2024, Mönchengladbach

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