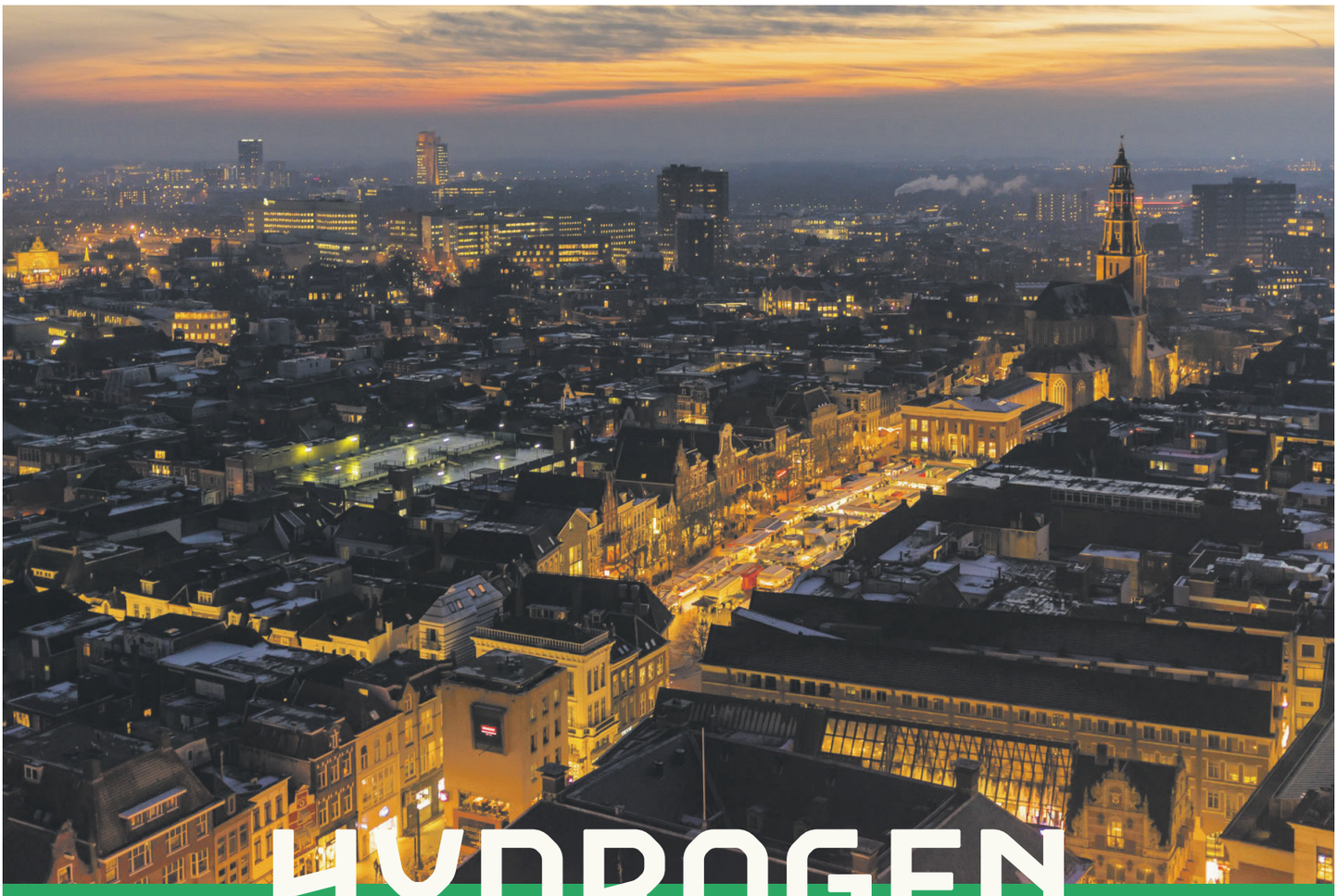
THE DAILY FUTURE



HYDROGEN PIONEERS IN GRONINGEN

Groningen is the beating heart of the future. The Daily Future keeps you informed of all the developments in the city and province. For a smarter, greener and future-proof world, Groningen is the place to be. But who are the pioneers that make this possible, what groundbreaking results are on display and which organizations can benefit?

The world is about to change, and Groningen is leading the way in the development of renewable energy. In the field of green hydrogen, it is even one of the leaders in Europe. Not for nothing did Groningen become the very first European region to receive the Hydrogen Valley seal of approval. This delivers great benefits. It is a boost for technological knowledge, a booster for international collaborations and an impulse for innovative activity and talent. Smart pioneers are working together here to create the engine for the new hydrogen economy. With 400 years of experience as an energy region, Groningen has all the necessary knowledge, infrastructure and professionals to achieve a completely new sustainable energy system.

THE MUNICIPALITY AS A STIMULATOR IN THE FIELD OF HYDROGEN

As the hydrogen capital of Europe, Groningen occupies a leading position in the energy transition. An important role here is played by the municipality of Groningen. As a connecting factor, they are establishing contacts between various organizations and helping entrepreneurs get started in the field of hydrogen.

Within the Economic Affairs department of the municipality of Groningen, there are several central themes on which the emphasis is placed. In addition to the health and digital economy, for example, energy is also an important spearhead. And even within the energy theme, there are several pillars on which to focus. Think of reducing CO_2 emissions, maintaining the power supply and making business parks more sustainable. Two employees of the municipality of Groningen who both have a lot to do with this subject are Simon Poelstra and Hemmo de Groot. After a past as entrepreneurs, they have now been working within Economic Affairs for more than 10 years, in recent years with hydrogen as an important dossier. There are several ways in which the municipality of Groningen is promoting the hydrogen economy. For example, the two officials are at the table with major players such as The New Energy Coalition and the Gasunie, in order to create a larger movement together. They also present Groningen as the hydrogen capital of Europe and the place full of interesting education and associated talent. And that's far from all. "We want the hydrogen economy to not only precipitate in the large international companies, but also to benefit regional companies. We want to help local businesses make contacts and get to know each other in order to gain more knowledge and start working together more." says Simon. To find out exactly what entrepreneurs need, they actively go out. Hemmo is the contact person for entrepreneurial questions: "One of my roles is to visit entrepreneurs regularly and attend their meetings to listen to their ideas, issues and doubts. By picking up their questions, we can help them and possibly facilitate them." In doing so, they also regularly meet with various business associations to explore whether things can be taken up together. When a company or association wants something in the field of hydrogen, for example, it may be that they are put in contact with another company that already has more knowledge about this topic. Another option is to involve the Green Hydrogen Booster; a partnership consisting of several colleges and energy companies with the goal of further developing hydrogen. By building a strong network of companies involved in hydrogen, the municipality of Groningen will ultimately make it easier for all entrepreneurs to help build a better world.

FRANK WILSCHUT

As a child already, Frank Wilschut (43) was fascinated by nature. Especially those aspects related to climate change. Therefore, today he works in the field of energy transition. Since there is still a lot more we can do for a more sustainable present and future, we have to make it possible. "In Groningen, we are working on a new world."

At school Frank was a proper star in physics, he really enjoyed it. Not surprisingly, he loved studying Physics in Groningen. Later he graduated in Glaciology, the study of glaciers and ice caps, in Utrecht, but he preferred going back to Groningen every weekend. His study led him to different places, including the glaciers of Canada, an experience he will never forget. "Here we were studying the effects of climate change by looking at the ice caps. We were literally measuring them on the glaciers. It was pretty insane."

In the following years, he worked for, among others, TNO in Utrecht and Economic Affairs and Climate in The Hague. These jobs gave him great satisfaction, but in the back of his mind remained the thought of returning to Groningen one day. In 2022, he took up an important job offer which fulfilled his desire to go back to Groningen. He started to work at the New Energy Coalition. "I didn't come back for the new job only, but for the wide offer that Groningen provides."

Frank now works at Energie VanOns. This is an energy company that works together with 142 local energy cooperatives in many neighborhoods in The Netherlands. The energy cooperatives are committed to making their neighborhoods more sustainable. For example, they work with energy coaches who help local residents save energy, they realize local generation projects such as a windmill, solar roof or solar meadow, and they supply power and gas to their neighbors through Energie VanOns. The great thing is that all the proceeds from the power benefit the whole neighborhood. Frank is the innovation manager, that is responsible for new developments within energy production. He thinks about how Energie VanOns and the cooperatives can respond to these new developments and deal with issues concerning heat networks, energy storage and shared cars.

There are still problems delaying the energy transition. After all, energy is still not affordable for everyone, the generation and consumption of energy is not yet sufficiently simultaneous, and there is grid congestion. Frank hopes to see a turnaround in The Netherlands. "We want affordable, green energy for everyone. Whereas people often didn't want energy generation in their backyard, they would now want it since you can benefit from your own energy."

When Frank is not busy with his impactful work, he can often be found on his racing bike. "Nice tours along the Reitdiep and through villages with medieval churches. You certainly don't find those everywhere." He lives with his wife in a sustainable house in the Groningen village of Middelstum. While before he was stuck in traffic jams or had to stand waiting for a train, he now simply cycles to town. Straight through the meadows, accompanied by godwits, lapwings and other natural beauty. "It is the same travel time as before, but now much more beautiful. A luxury you have to experience for yourself."

MUNICIPALITY OF GRONINGEN LEADS BY EXAMPLE

If you as a municipality want to motivate other people to switch to green initiatives, you must first set a good example yourself. One way in which the municipality of Groningen is doing this is by running part of its vehicle fleet on hydrogen.

The municipality of Groningen aims to be completely CO_2 neutral by 2035. Large trucks that run on diesel and pollute obviously do not fit into that picture. Therefore, the municipality has committed, in an agreement with the government, to allow only trucks that do not emit harmful substances to drive in the Zero Emission Zone (equivalent to a shopping area for commercial vehicles and trucks) as early as April 1, 2025. To achieve this, the municipality is collaborating with several European cities such as Amsterdam, Antwerp and Bolzano, among others. In the REVIVE project (Refuse Vehicle Innovation and Validation in Europe), eight different cities are developing and testing the deployment of 14 hydrogen trucks, supported by money from the European Union. As part of this project, three trucks are being deployed in the municipality of Groningen. In addition, new hydrogen trucks and cars have also been developed from other projects, such as the HyTrEc2, Hector and HEAVENN. It should be noted, however, that at present emission-free cars converted to hydrogen are not always deployable. The running of garbage trucks on hydrogen is very innovative and complex so failures cannot be ruled out.

Currently, 20 vehicles of the municipality of Groningen are running on hydrogen as an energy carrier.

HYDROGEN TECHNOLOGY EXPO

The concept of hydrogen as a clean and renewable energy source is nothing new, but we face a number of technical and economic challenges in its use. The question remains how to fully utilize hydrogen in order to drastically reduce carbon emissions worldwide. Five innovative northern companies will show how they deal with these challenges, proving once again that Groningen is the hydrogen capital of Europe.

LAMBERT INSTRUMENTS

Groningen is rich in technical high-flyers. A prime example is Lambert Instruments. The Groningen-based high-tech organization pushes the boundaries of technology with its advanced imaging solutions. In-house development and assembly form the basis for groundbreaking cameras. From a biomedical sciences researcher seeking to study the behavior of cancer cells, to the study of hydrogen/oxygen rocket engines to minimize atmospheric pollution. Lambert Instruments cameras showed that by using liquid hydrogen and oxygen as fuel and oxidizer in engines, no CO_2 is emitted. This makes space flights, for example, emission-free. With their tireless search for innovation, they are working here to create the world of tomorrow.

CGI

CGI is one of the largest IT and consulting companies in the world. Based in vibrant Groningen, CGI develops data hubs for the international electricity market. CGI sees hydrogen as one of the building blocks for a climate-neutral society. For a future hydrogen Transmission System Operator (TSO), CGI implemented their processes in five weeks in the data platform “CGI AgileDX-Hydrogen. Along with other projects, it shows how IT serves as a catalyst for the green hydrogen industry. Groningen has the energy infrastructure, knowledge and experience. In addition, the province’s location on the North Sea is favorable for wind energy, landfall for hydrogen production and it is a leader when it comes to green hydrogen.

HOLTHAUSEN CLEAN TECHNOLOGY

In the world of energy a zero-emission future is no longer a pipe dream, at least not according to Holthausen Clean Technology. This Groningen family business is known for its progressive solutions for the transition to greener fuels and sustainable mobility. For more than 11 years, they have been working to build a future where emissions are a thing of the past. Among their notable achievements is the conversion of diesel vehicles to powerful hydrogen-electric hybrids and the “Hesla” (Tesla on hydrogen). These technological marvels have not only attracted attention in The Netherlands, but their impact also reaches far beyond. Holthausen is pulling the cart to a zero-emission world.

AUTONATIONAL

For more than four decades, Autonational has been developing innovative composite machines for customers in markets such as aerospace, automotive and energy at home and abroad. The innovative tacklers from the North see hydrogen as a crucial turning point in the energy transition, but also recognize that hydrogen brings it challenges of storage and transportation. Autonational is an expert in filament winding: the solution for hydrogen storage. Hydrogen is stored in pressure vessels with extreme strength requirements. Autonational’s filament winding process manufactures pressure vessels with a focus on huge strength and lightweight design. The distribution of green hydrogen starts here.

WE - DOUBLEYOUENERGY

At WE - doubleyouenergy, they share an ambitious vision: hydrogen, the energy carrier of the future, is the key to a sustainable world. With a long-standing background in the oil and gas industry, WE - doubleyouenergy has shifted course toward renewable energy sources, with green hydrogen in particular. Passion drives the company to create innovative solutions that go beyond traditional paths. From hydrogen bikes to hydrogen electrolysers, storage systems and fuel cells - all hydrogen applications defy the norm. WE - doubleyouenergy joins forces to build a more sustainable and cleaner world for future generations. The Groningen region, of gas knowledge and expertise, is the ideal breeding ground for innovation.

ENERGY INNOVATOR IN ACTION:
LORENZO SQUINTANI AND THE HYDROGEN REVOLUTION IN GRONINGEN

In the dynamic world of energy and sustainability, Lorenzo Squintani shines. A professor of energy law and the driving force behind the Wubbo Ockels School of Energy and Climate at the University of Groningen, Prof. Squintani has made his mark in understanding legal rules for advancing sustainable energy systems. He brings together researchers, teachers and students to develop interdisciplinary collaborations. A pioneer in the field of public participation, his research lays the foundation for every voice in energy decision-making.

Important is the focus of prof. Squintani's research on people's involvement in the transition to renewable energy. Over the past three years, his in-depth analyses have led to insights on adapting law to the preferences of ordinary people, giving vulnerable groups a voice in the development of projects such as rural wind farms. With a keen eye for inclusivity and justice, prof. Squintani seeks ways to embed the transition to renewable energy at the core of our society. "The path to a zero-energy society should be systematic and based on scientific approaches to manage the uncertainties so closely associated with this complex change," prof. Squintani said. He advocates an adaptive theory approach, in which the process of trial and error gives way to a thoughtful scientific framework (Adaptive Theory Approach).

Lorenzo Squintani's view of developments around hydrogen is forward-looking. He says, "I am convinced that hydrogen is a potential gamechanger for a sustainable future, but further research remains necessary to understand and master the complexity of the hydrogen economy. In this, the University of Groningen is taking the lead, with extensive expertise and multidisciplinary collaboration."

"HYDROGEN IS A POTENTIAL GAMECHANGER"

Together with leading universities in Spain and Finland, the University of Groningen is joining forces in the Theresa project. Not only that - in the inspiring Phaethon project, it is working closely with universities in Cyprus and Denmark.

The coordinated effort to embrace hydrogen as an essential element in the energy transition has ensured that Groningen, the birthplace of prof. Squintani's research, has been put down as the 'Hydrogen Capital of Europe'. The unique combination of political commitment, economic investment and interdisciplinary collaboration has led to the creation of the first 'Hydrogen Valley' in Europe. This progressive initiative has attracted the attention of not only market players, but also social partners and knowledge institutions. Groningen remains a global beacon of innovation and sustainability, a true Hydrogen Valley.

JOINED FORCES

In Groningen, we joined forces. Here we can do it. In our own way. Thanks to the warm hospitality in the North, networking feels like second nature. HyNorth, Green Hydrogen Booster, New Energy Coalition and VNO-NCW MKB Noord talk about the cross-pollination between the thriving community of companies, institutions and knowledge centers.

GREEN HYDROGEN BOOSTER

The Green Hydrogen Booster project encourages green hydrogen innovations, especially for small and medium-sized enterprises (SMEs). Led by EnTranCe, part of the Hanze University of Applied Sciences in Groningen, extensive discussions have been held with hundreds of companies, and hydrogen projects have been started with some 30 SMEs. The main goal is to develop hydrogen products or services and thus fuel economic activity in the region. Through the Hydrogreenn and EnTranCe network, they are joining forces to share knowledge and increase the expertise of SMEs in the Northern Netherlands in the field of hydrogen. With an extensive ecosystem and an existing (natural) gas infrastructure, Groningen has an excellent starting position in the field of hydrogen. In Groningen, we do what we say and say what we do.

HYNORTH

At HyNorth they are convinced that the North is ahead in the hydrogen economy, and this vision is becoming a reality in Groningen, Europe's Hydrogen Valley. The challenges posed by hydrogen are complex and time-consuming for individual companies. HyNorth is taking the lead here by working with companies, knowledge institutions, governments and other triple helix stakeholders. HyNorth acts as a chain director, and the specific characteristics of the North of the Netherlands contribute to this. Consider, for example, the significant potential for large-scale wind energy and the extensive expertise in gas transportation and trade. Setting up a hydrogen economy: no one can do it alone.

NEC

New Energy Coalition (NEC) is rooted in the north of the country and is a co-driver in the development of a green hydrogen economy in the North of the Netherlands. With more than 120 dedicated partners and members, all rich in knowledge, expertise, innovative thinking and willpower, the coalition is a powerful dynamo for sustainable change. By actively pooling their capabilities and working synergistically with strategic partners, their shared vision is becoming a reality: accelerating the energy transition. A course on which NEC continuously facilitates new knowledge, develops innovations, drives talented students and professionals, and in which they are connectors of parties and initiatives in the hydrogen chain. Here they have a common goal: to make the world a little nicer every day and to contribute to the (social) prosperity of the North of the Netherlands.

VNO-NCW MKB NOORD

As the largest business and employers' association in the North, VNO-NCW MKB Noord has a major impact in the current energy transition. The association strives for a versatile energy mix, in which green hydrogen plays an important role. Working closely with innovative and leading entrepreneurs and partners, including the Hydrogreenn network, VNO-NCW MKB Noord is at the forefront. This stimulates innovations and creates opportunities for economic growth and employment in the North of the Netherlands. VNO-NCW MKB Noord joins forces, which is the key to both public and private results, such as the green industrial developments in Eemshaven and the increasing number of hydrogen refueling stations in the North of the Netherlands.

THE GRONINGEN ECOSYSTEM

Groningers love space. In the literal sense: vast landscapes, untouched salt marshes, the vast mud flats, a distant horizon.

But also in the figurative sense: the space to develop and unfold. You get that space here. Plenty of it.

"THE LINES ARE VERY SHORT BETWEEN COMPANIES THEMSELVES AND BETWEEN COMPANIES, KNOWLEDGE INSTITUTIONS AND THE MUNICIPALITY"

Energy, health, food and digitalization: these are the themes through which work is being done on the world of tomorrow in Groningen. These pillars work separately but are also inextricably linked. In the Groningen ecosystem, talent, entrepreneurs, partners and investors work together. "The lines are very short between companies themselves and between companies, knowledge institutions and the municipality. The municipality is ready to help both existing and new companies get started and land them in the right place, in terms of housing, subsidies and also other components." says Hemmo de Groot, contact person for entrepreneurial questions at the municipality of Groningen. An example of a collaboration that came about partly because of these short lines of communication is the Green Hydrogen Booster. This is a partnership between educational institutions such as Hanzehogeschool and Noorderpoort, with companies such as Gasunie, BAM and Gasterra. Together they realize the further development of hydrogen. They do this by also involving other SMEs in this process and helping them along the way. A fine example of Groningen parties joining forces and working together for a better world. All with the down-to-earth typical Groningen mentality.

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ER GAAT NIETS BOVEN GRONINGEN