



WaterstofNet

WaterstofNet

The catalyst for sustainable hydrogen projects

Development, coordination, creation, evaluation, and communication

Hydrogen

Opportunities and developments

International energy forecasts research promises a bright future for hydrogen as an energy carrier. When produced sustainably, hydrogen offers a variety of advantages:

- Ecology: low emissions, low noise;
- Energy: it is not a fossil fuel;
- Innovation high-tech development;
- Economy: new industry;
- Autonomy: less dependent on oil cartel countries;

EUROPE

Europe recognizes the importance of hydrogen. For this reason, the EU has launched the Fuel Cells and Hydrogen Joint Undertaking. The FCH-JU combines the efforts of European industry, knowledge centres and regions working on hydrogen applications. Between 2014 and 2020, it will invest EUR 1.3 billion in the programme.

STRONG HYDROGEN REGION

Via the Interreg Project "Hydrogen Region", coordinated by WaterstofNet, the region Flanders and the southern Netherlands has been developed into a leading hydrogen region in Europe.

In line with European and regional ambitions, a regional eco-system of more than twenty participants is working actively to implement hydrogen as a sustainable energy carrier.

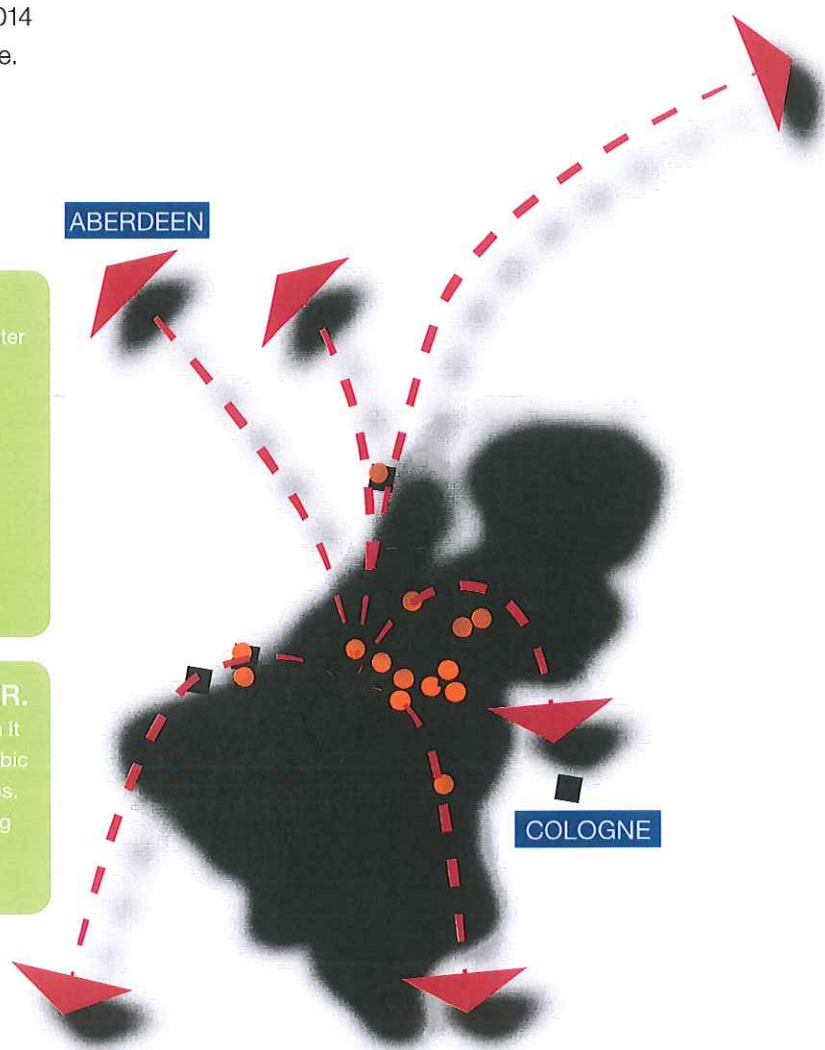
Working through this system, WaterstofNet builds systematically on its leading role, both locally and abroad.

HYDROGEN POWERFUL AND LIGHTWEIGHT.

- is the lightest element in the periodic table - fourteen times lighter than air; 1 Nm³ (normal cubic meter) of hydrogen gas weighs 90 grams;
- is colourless, odourless, and non-toxic;
- is not an energy source, but an energy carrier;
- can be produced of a wide variety of resources;
- has an enormous capacity for energy storage, even in small quantities;
- can be stored under pressure in transport vehicles at 350 or 700 bars;

HYDROGEN SUSTAINABLE ENERGY CARRIER.

The sustainability of hydrogen depends on the manner in which it is produced. At present, the industrial world uses 500 billion cubic metres (m³) each year as a raw material for production purposes. However, the majority of this hydrogen is produced by reforming natural gas. Sustainably produced hydrogen is created by the process of electrolysis using wind or solar energy.





WaterstofNet develops sustainable hydrogen projects

Together with industry and governmental authorities, **WaterstofNet** develops and realises sustainable hydrogen projects and roadmaps to enable zero-emission transport and energy storage. Its central focus is on Flanders and the Netherlands.

ZERO-EMISSION TRANSPORT

Vehicles using hydrogen create no emissions and little noise. Their fuel range and refuelling time are comparable to vehicles running on traditional fuels. Hydrogen can be used in buses, forklifts, waste collection vehicles, watercraft, and cars.

ENERGY STORAGE

With its relatively low specific weight and high energy density, hydrogen is feasible for storing energy.

Peak production of renewable energy generation, such as solar and wind, can cause problems for the power grid's stability and its operation. Converting surplus renewable energy into hydrogen creates an energy buffer and helps stabilize the energy grid. The produced hydrogen can be used in transport vehicles. During periods of energy scarcity, it can be used to generate electricity. Hydrogen can also be added to the natural gas grid (power-to-gas) or be used as a raw material for chemical products (power-to-chemicals).

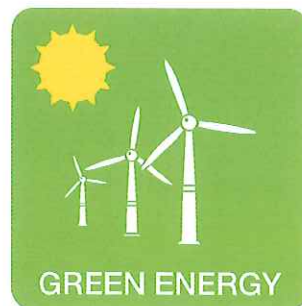
WATERSTOFNET'S CORE ACTIVITIES

- develops and builds **sustainable hydrogen projects**;
- creates **roadmaps** for hydrogen refuelling infrastructure (H₂ mobility) and energy storage, referred to as 'power-to-gas';
- develops and coordinates **industrial ecosystems** involving hydrogen;
- facilitates **cooperation** between industry, policy-makers, researchers, and education;
- **communicates** with policy-makers, stakeholders, and the general public about hydrogen;
- is a partner in **European hydrogen projects**, including HighVLOcity, Don Quichote, and HyTrEC;
- **cooperates** with other **European hydrogen regions**;
- is active in **international hydrogen networks**, such as the International Energy Agency (IEA);

Developments

POWERTO GAS

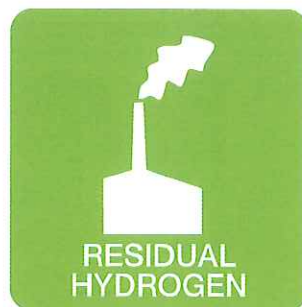
Roadmap for power-to-gas projects.



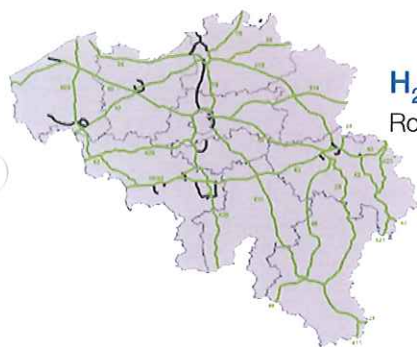
ELECTRICITY



H₂



EDUC

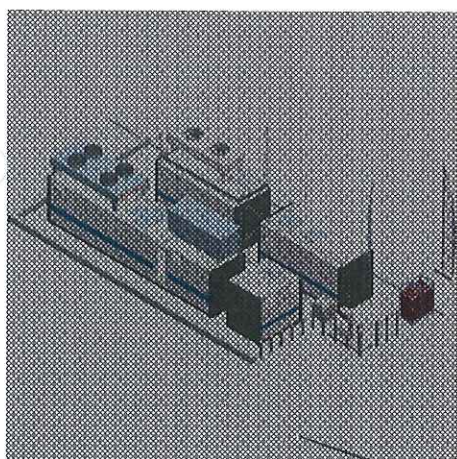


H₂-MOBILITY IN BELGIUM

Roadmap for fuel infrastructure.

HYDROGEN IN SMART-GRID APPLICATIONS

Expansion of refuelling station at the Colruyt Group.



WATERSTOFNET REFUELLING STATIONS

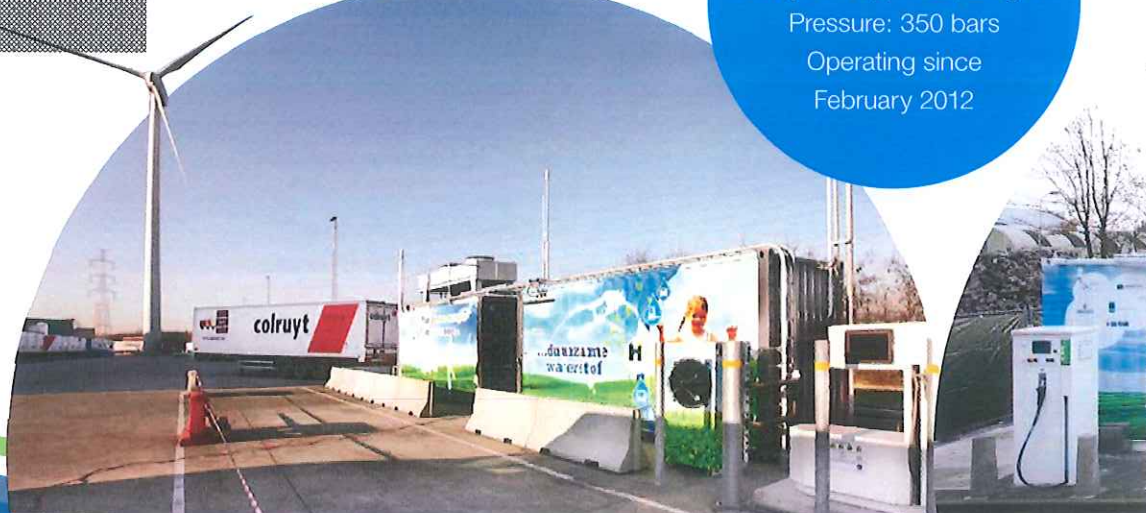
Flanders

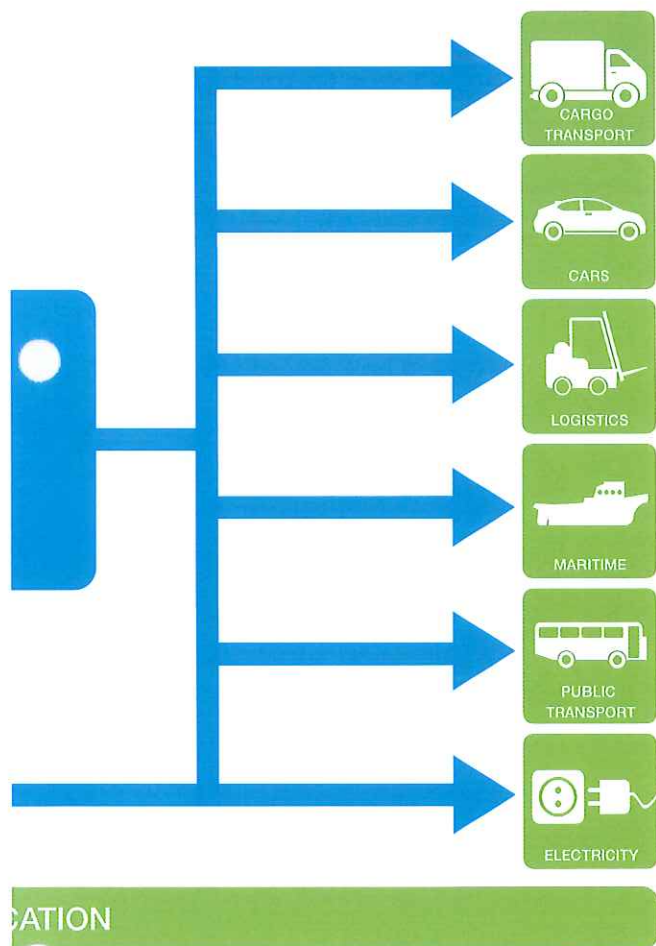
Colruyt Group, Halle, Belgium

Pressure: 350 bars

Operating since

February 2012





HEAVY DUTY TRANSPORT

Hydrogen-powered waste collection in Eindhoven, the Netherlands.



CARS

Hydrogen-powered car at WaterstofNet.



LOGISTICS

Hydrogen-powered forklift (test programme).



MARITIME

Hydrogen-powered vessels.



PUBLIC TRANSPORT

Bus using a hydrogen fuel cell
five buses operate in Antwerp for
De Lijn bus operator.



ELECTRICAL GENERATION

1 MW fuel cell plant using
hydrogen as a by-product.



Southern Netherlands

AutomotiveCampusNL, Helmond,
the Netherlands
Pressure: 350 and 700 bars
Operating since
November 2013



Met steun van de
Vlaamse overheid



Ministerie van Economische Zaken



AGENTSCHAP
ONDERNEMEN



WaterstofNet



Europese Unie
Europees Fonds voor Regionale Ontwikkeling



WaterstofNet vzw

Open Manufacturing Campus
Slachthuisstraat 112, bus 1
2300 Turnhout
Belgium

T +32 (0) 14 401 219

www.waterstofnet.eu