This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (now Clean Hydrogen Partnership) under Grant Agreement No 875090. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe Research.

Clean Hydrogen Partnership

Co-funded by the European Union

THE ENGINE OF THE HOME OF THE FUTERE

WATER STOF WIJK

Visit of Pacific Northwest region

October 23, 2025

Kees Boer, Municipality of Hoogeveen

This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (now Clean Hydrogen Partnership) under Grant Agreement No 875090. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe Research.

Het demonstratie-project is mede mogelijk gemaakt door ondersteuning vanuit de Rijksdienst voor Ondernemend Nederland (RVO),
Project nr. TWA2018013 project 'Waterstofwijk Hoogeveen',
onderdeel Regeling nationale EZ-subsidies: §4.2.8 Pilots Waterstof.

Regio Deal Zuid- en Oost-Drenthe

provincie Drenthe

Interreg North Sea Region Stronghouse
European Regional Development Fund

EUROPEAN UNION

GREEN HYDROGEN, THE ENGINE OF THE HOME OF THE FUTERE

Hoogeveen wants to show that green hydrogen can make an important contribution to make a part of the Dutch housing stock natural gas-free, with:

- reuse of the existing natural gas network
- a new hydrogen central heating boiler.

With this pilot we contribute to the knowledge in the Netherlands for the possible upscaling of hydrogen in the built environment after 2030.

CONSORTIUM WATERSTOFWIJK HOOGEVEEN

Visser & Smit Hanab
brengt energie

Nedstack

Liander

ARCADIS

bam

COGAS

DNV·GL

ENEXIS
NETBEHEER

Royal HaskoningDHV

gasunie

JP ENERGIESYSTEMEN

BEKAERT

Gemeente Hoogeveen

GasTerra

Green Planet
today for tomorrow

Hanzehogeschool Groningen

provincie Drenthe

NAM

IFV Instituut Fysieke Veiligheid

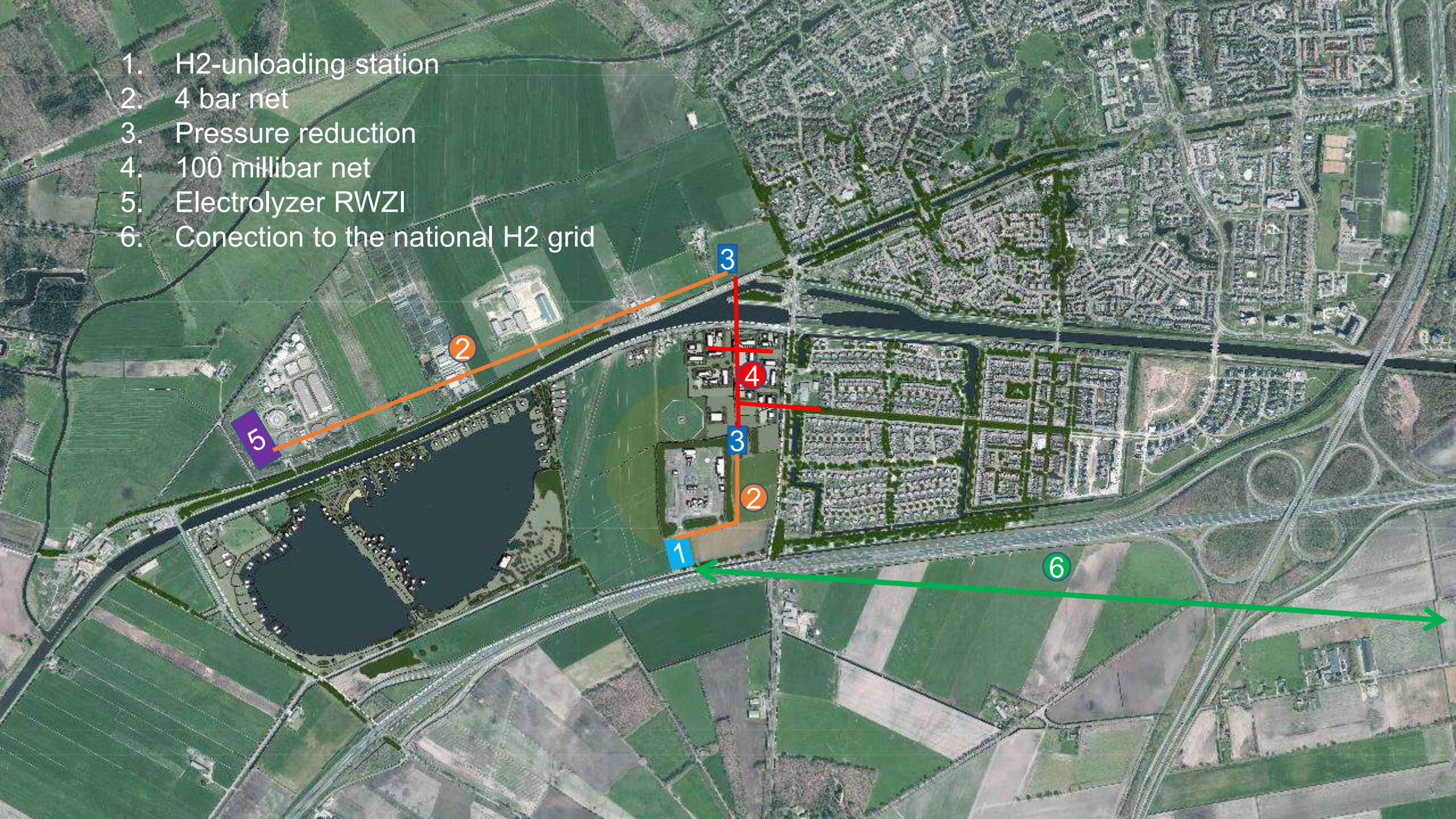
STORK
A Fluor Company

New Energy Coalition

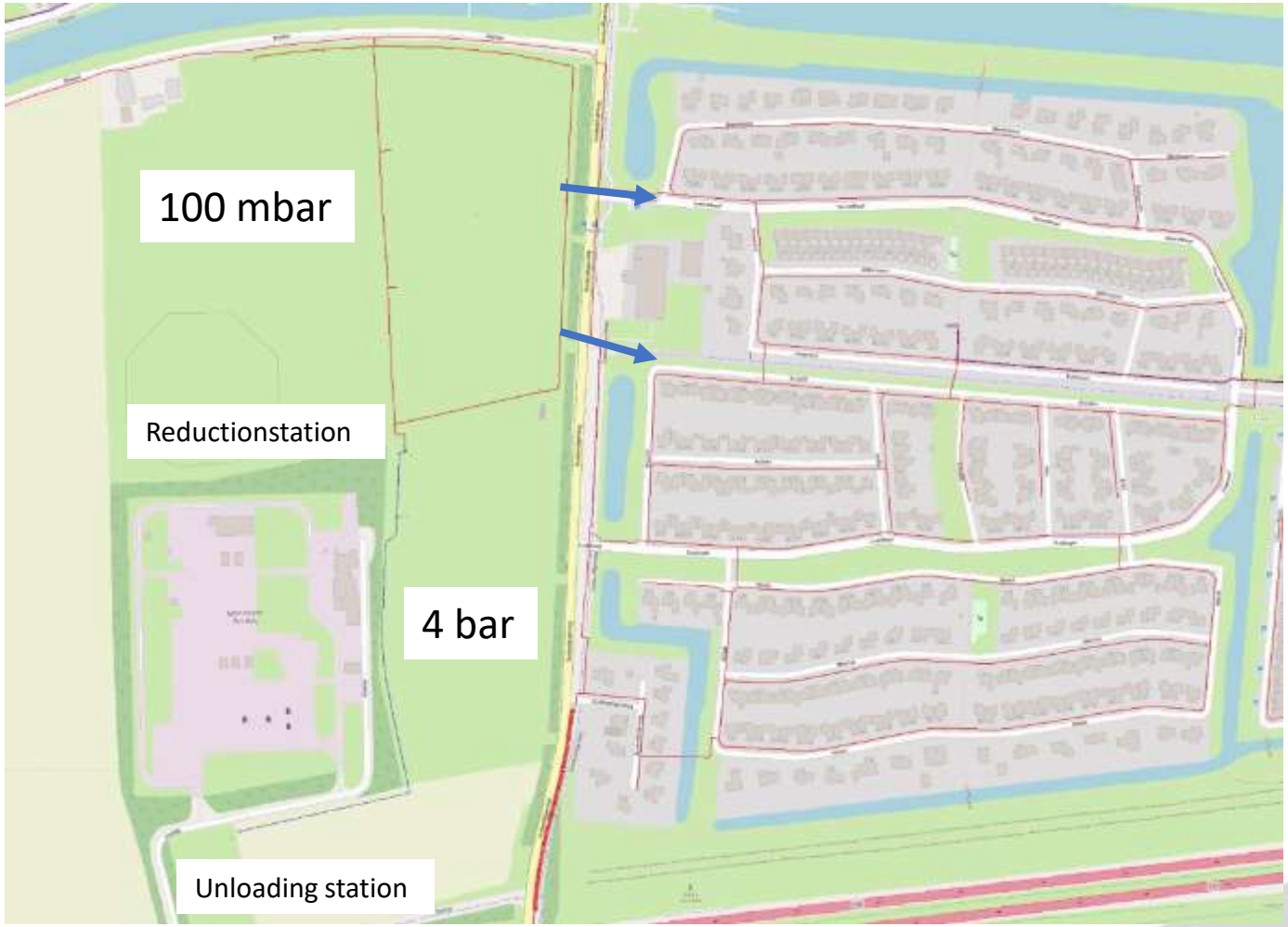
WATER STOF WIJK

Hydrogen District Hoogeveen

1. Realizing the hydrogen network
2. Connecting 100 new-build homes in Nijstad-Oost
3. Conversion of 100 to 427 homes in the existing Erflanden district from natural gas to hydrogen, by reusing the existing natural gas network and replace the natural gas boilers with hydrogen boilers.


1. H2-unloading station
2. 4 bar net
3. Pressure reduction
4. 100 millibar net
5. Electrolyzer RWZI
6. Conection to the national H2 grid
3
2
5
4
3
2
1
6

Hydrogen distribution network



HYDROGEN VALLEY

WATERSTOFHOOGEVEEN

PRODUCTIE GROENE WATERSTOF (H_2)

WATERSTOF TINY HOUSE

DOC33
Duurzaam Ontwikkel Centrum

H_2 BACKBONE

HEAVENN

H_2 AANSLUITING DUITSLAND

WATERSTOF HOOGEVEEN

NIJSTAD-OOST
Aansluiten nieuwe woningen

ERFLANDEN
Omzetten bestaande woningen

H_2 AANSLUITING INDUSTRIE

FASE 1
Aanvoer in tubetrailers

FASE 2
Electrolyzer bij Rioolwaterzuivering Echten

FASE 3
Aansluiten op H_2 Backbone

H_2 AANSLUITING EMMEN

H_2 AANSLUITING MEPPEL

This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking now Clean Hydrogen Partnership under Grant Agreement No 875090. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe Research.

WATERSTOF WIJK

Expected activities in the home

- replace boiler
- replace gas meter
- pressure testing
- H2 sensors

De waterstof cv-ketel

- 24/28kW CW4 100% waterstof cv-ketel (veldtest toestel)
- Vergevorderd stadium van ontwikkeling
- Geassembleerd op nieuw ontwikkelde productielijn met end of line test

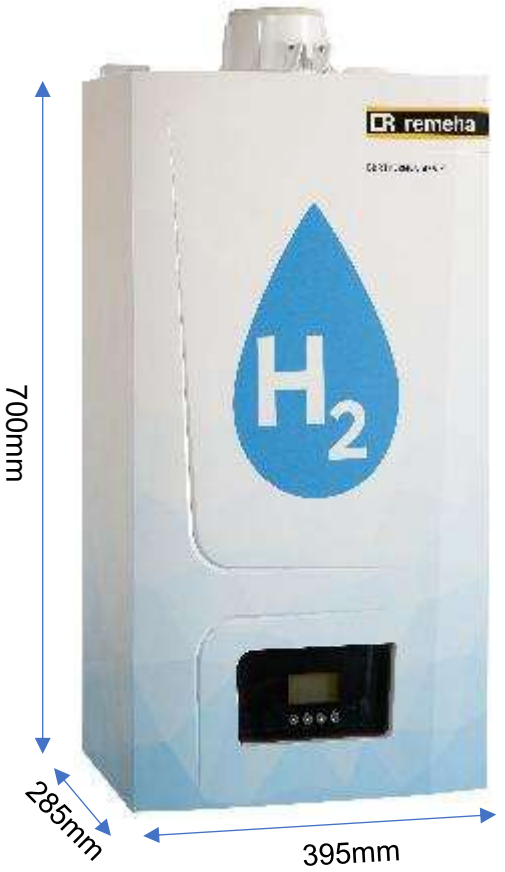
Gelijkenissen aardgasketel

- Afmetingen
- Gasvoordruk (20-30mbar)
- Comfortsoftware
- Prestaties en rendement

- Bruikleenovereenkomst
- Twee jaar na plaatsingsdatum

Afwijkingen aardgasketel

- Ketel verzegeld
- Vlamterugslagbeveiliging ingebouwd
- H2-lekdetectiesensor
- Extra veiligheidssoftware
- Geen CO2 uitstoot



Waterstof in combinatie met warmtepomp

Up to 70% gas reduction

Hybride heatpomp

Positioning

A solution that is safe, comfortable and affordable;

A solution that must be taken into account;

A solution that keeps options open;

A solution that creates space for gradualness;

A solution with opportunities after 2030?

Public support

Residents Council Hydrogen Erflanden

- Independent residents council
- Independent project leader employed by the residents

Involving the residents

- Working groups with professionals and residents
- Collecting feedback: what is important for the resident?
- Translating feedback to the project and thus safeguarding the interests.

BOUWEN VAN H_2 TINY HOUSE

+ WATERSTOF WIJK
+ BEDRIJFSLEVEN
+ ALFA-COLLEGE
  ENERGIE EN DUURZAAMHEIDSCENTRUM
= TINY HOUSE

WATERSTOF TINY HOUSE


IN HET WATERSTOF TINY HOUSE
remeha
remeha
Regio Deal
Zuid- en Oost-Drenthe
Alfa college
AGC


WELKOM IN HET WATERSTOF TINY HOUSE
DUTCH TECHZONE
HYBRIDE


WWW.H2PLANET.EU/NL
IJSJE?
WATER STOF
PRAAT MEE OVER WATERSTOF
MAN

Green Deal H2-Wijken

Green Deal

Hanzehogeschool Groningen
University of Applied Sciences

Monitor Waterstofwijk Hoogeveen, eerste peiling informatiebehoefte en draagvlak

WATERSTOFWIJK

DNV

Inventarisatie waterstofveiligheid in en om woningen in pilotprojecten

Een uitgave van DNV in opdracht van het Ministerie van Economische Zaken en Klimaat

Rapport nr.: 24-1153, versie 8.0
Datum: 25 juli 2024

Pilotprojecten waterstof in de gebouwde omgeving

Leerervaringen

>> Duurzaam, Agrarisch, Innovatief en Internationaal ondernemen

WATERSTOF WIJK

Hydrogen testnetwork EnTranCe, Hanze University Groningen

RENDO, Cogas en BAM Energie & Water

Test network H2: a learning and safe environment for practical experience with hydrogen in the built environment in the field of safety, management and maintenance.

Implementation

Partners

Hydrogen network including the H2 meter

Hydrogen discharge station

Hydrogen receiving station

Energy supplier

Hydrogen boilers


SAMENWERKINGSOVEREENKOMST
1E FASE WATERSTOFHUB NOORD-HOLLAND
10 MEI 2022


WATER
STOF
WIJK

Progress

New-build homes Nijstad-Oost: all plots have now been provisionally sold and the plans are now being worked out for building permits.

Preliminary study electrolyser completed, feasibility phase starts soon.

Start lobby together with RENDO for creating a regional hydrogen network that can be connected later with the national hydrogen infrastructure.

Gasunie has modified the system to get the odorization in order, then connection of first home.

Decision-making for up-scaling in municipal council prepared

"Please be patient“: How to ensure public support now that the start of the project is being postponed time and again?

First 9 homes:

9 households signed pilot agreement before summer 2024.

Intention was to connect 9 homes in September 2024

Due to odorization challenge, no real homes connected at this time.

The message is; "Please be patient“

Keep up to date.

Problems with current natural gas boiler solved immediately

Energy price April 2024 applies unless price is lower now.

Public Support

For the rest of the neighborhood (427 homes):

- First connect 9 homes and then a resident survey about the plan to become natural gas free neighborhood.
- Then city council decides to scale up to 100 hydrogen connections.
- Plan to become a natural gas free neighborhood (magazine): to make sure there is a perspective for the other 327 homes
- 3 options: hydrogen, hybrid heat pump, all electric
- Free energy advice of the municipality tailored to the specific home and lifestyle, so that residents can make an informed choice.

Odorization is a challenge

- The system must be able to serve one home but also to serve 200 in the end. That in combination with odorization of hydrogen at low flow is a complex task.
- System adjusted: odorant did not mix sufficiently with the hydrogen. Now partial flow of hydrogen is heated so that the odorant evaporates, works well
- New problem during testing: measurement errors due to large temperature differences in the morning and evening
- This month a new odorant system from another manufacturer was installed, with good results.
- Decision at the end of October, planning the conversion of the first 9 homes.


23
1049
2
Westfalen
MS W 2027

The Hydrogen Chain in Hoogeveen

Hydrogen Hoogeveen is a pilot project within the national program “Aardgasvrije Wijken” In this project, we are exploring how to heat neighborhoods without using natural gas. We are gathering knowledge and examining what is needed to use hydrogen on a larger scale after 2030. This includes technical solutions, hydrogen boilers, safety, well-trained installers, and clear legislation.

On this page, we show the steps we are taking, who is involved, and what we are learning from this project.

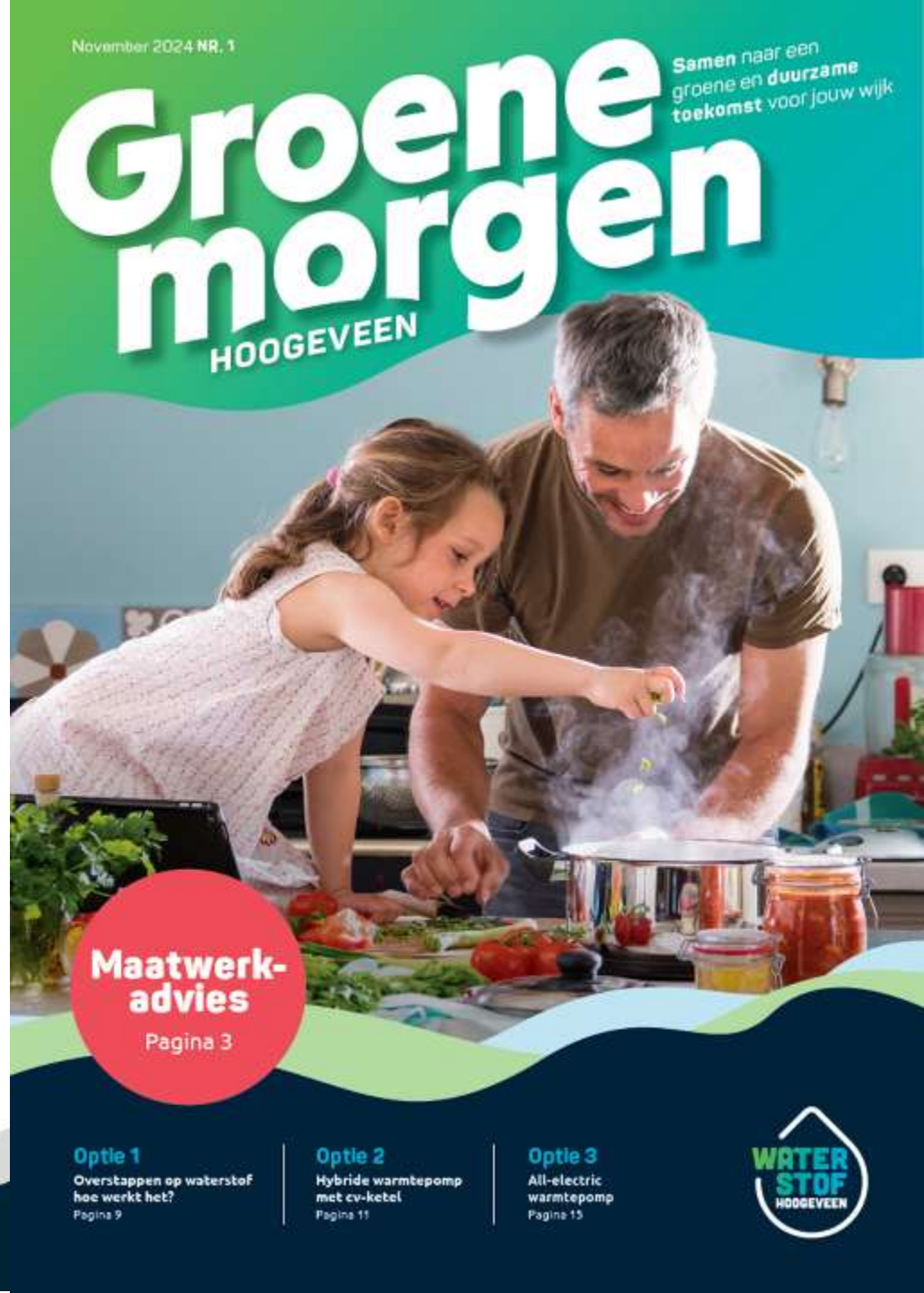
Next steps

Connection of homes tot Hydrogen

- Odorisation in order
- Connecting the first 9 homes
- Resident survey
- Municipal council decision to scale up to 100 homes in existing neighborhood
- Planning for scaling up in Erflanden
- Planning installation of hydrogen boilers in 100 new-build homes

Availability of affordable green hydrogen

- Ensuring with partners that the pilot ammonia cracker is realized
- hydrogen via pyrolysis of biogas from manure
- Feasibility study electrolyser
- Lobby regional hydrogen network and connection to national infrastructure
- Smart Energy Hydrogen Hubs



Contact Details

Kees Boer
Projectmanager Hydrogen District| Municipality of Hoogeveen
The Netherlands
+31 646382093
k.boer@dewoldenhoogeveen.nl

Gemeente Hoogeveen

WATER STOF WIJK

WATERSTOF WIJK