

D3.6

Installation & commissioning of hydrogen pipeline installation

A graphical representation of the design, construction, and realisation of X-807: the hydrogen pipeline in Emmen.

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1 Introduction

This report presents a graphical representation of the design, construction, and realisation of project X-807: the hydrogen pipeline in Emmen. The 3.6-kilometre pipeline connects the GZI Next energy hub to Getec Park and represents an important step in the transition towards a more sustainable industrial energy system in the region. By linking a green energy hub to a cluster of industrial companies, the project enables the practical application of hydrogen as an alternative to natural gas.

The report is structured around three key phases of the project: plan and design, construction, and realisation. Each phase is captured not only through descriptive text but also through visual material, providing insight into both the technical development and the spatial context of the pipeline. This graphical approach helps to illustrate the progression of the project and the decisions made throughout its lifecycle.

In addition to the technical aspects, the report highlights the collaboration between infrastructure operators, industry, and public stakeholders. Together, these elements provide a clear and comprehensive overview of how the hydrogen pipeline in Emmen was developed and the role it plays in the broader energy transition.

This deliverable is in line with the Interconnecting H2 Infrastructure Summary Report (D6.4)¹

¹ [Report-Interconnecting-H2-Infrastructure.pdf](#)

2 Planning

The development of project X-807, the hydrogen pipeline in Emmen, followed a timeline consisting of three main phases: plan and design, construction, and realisation. Each phase required careful coordination between stakeholders.

1. Plan and Design (Approx. 12–18 months)

The planning and design phase focused on defining the technical specifications, selecting the pipeline route, and aligning stakeholders. Key activities included feasibility studies, environmental assessments, permitting procedures, and detailed engineering design.

Given the involvement of multiple partners—such as Gasunie, industrial stakeholders, and public authorities—sufficient time was required to ensure alignment of objectives and compliance with regulatory requirements. This phase laid the foundation for a technically sound and future-proof infrastructure project.

2. Construction (Approx. 6–9 months)

The construction phase began in February 2022 and involved the installation of both the hydrogen pipeline and the parallel high calorific natural gas pipeline.

Advanced construction techniques such as Horizontal Directional Drilling (HDD) were applied to reduce environmental impact and accelerate execution. Activities included site preparation, drilling operations, pipe installation, and system integration. Efficient coordination and the parallel installation of both pipelines contributed to a relatively short construction timeframe.

3. Realisation (Approx. 3–6 months)

The realisation phase covered the final steps required to bring the pipeline into operation. This included testing, commissioning, safety verification, and formal handover to operations.

During this phase, the infrastructure was validated to ensure compliance with technical and safety standards. At the same time, industrial users prepared for connection to the new system, enabling the first practical applications of hydrogen within the regional network.

Phase	Duration	Key Activities
Plan and Design	12–18 months	Studies, design, permitting, stakeholder alignment
Construction	6–9 months	Drilling, installation, infrastructure build
Realisation	3–6 months	Testing, commissioning, operational start

This phased planning illustrates how project X-807 progressed from concept to operational infrastructure within an estimated total timeframe of approximately 21 to 33 months

3 From planning to design

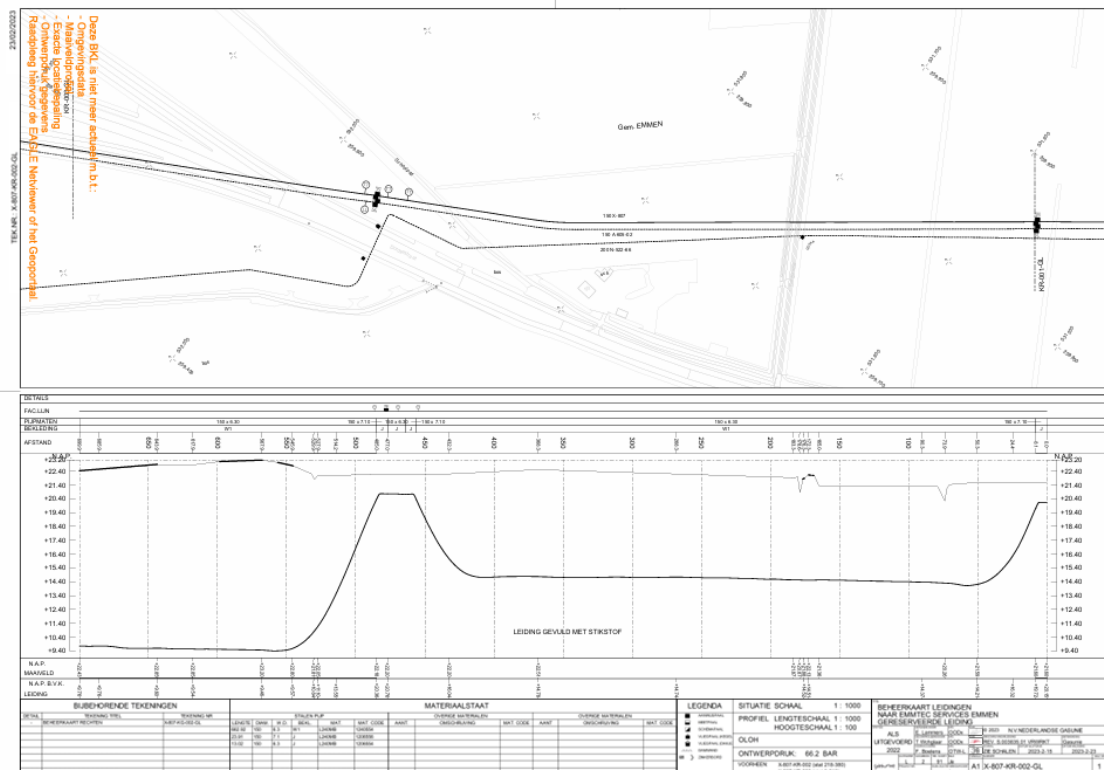
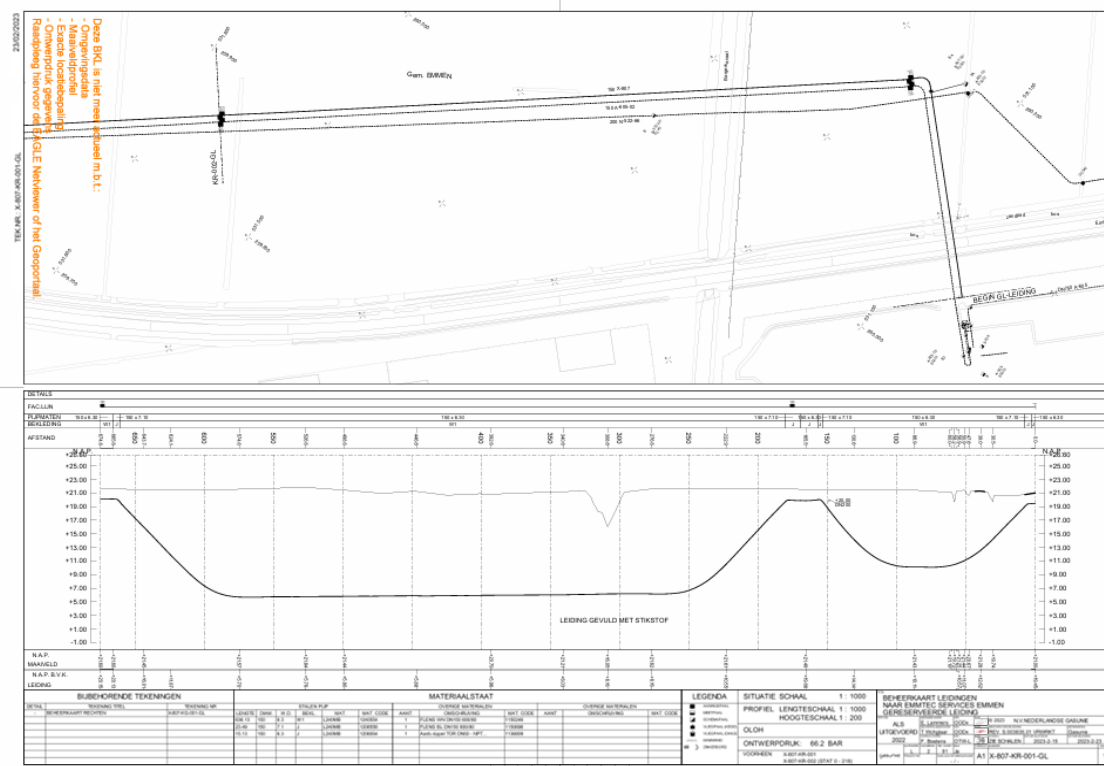
The development of the hydrogen pipeline between the GZI Next energy hub and Getec Park in Emmen originates from the growing need to make industrial energy systems more sustainable. With declining natural gas production from the Groningen field and increasing demand for low-carbon energy solutions, stakeholders in the region identified green hydrogen as a viable alternative.

The planning phase brought together a broad coalition of partners, including Gasunie, NAM, Shell, Engie, the Province of Drenthe, the Municipality of Emmen, and various educational institutions. Together, they aimed to establish a fully integrated hydrogen value chain covering production, transport, and end use. The GZI Next site was positioned as a strategic green energy hub, acting as the starting point for hydrogen distribution.

The design of the pipeline focused on creating a reliable and future-proof connection between GZI Next and the industrial cluster at Getec Park. The selected route spans approximately 3.6 kilometres and was carefully planned to ensure efficient integration into the existing energy infrastructure. Additionally, the project included the parallel design of a high calorific natural gas pipeline, enabling a phased transition for industrial users from conventional gas to more sustainable alternatives.

This integrated approach ensured that both current energy demands and future sustainability goals could be addressed simultaneously, supporting economic resilience and safeguarding employment in the region.

Engineering drawings of the hydrogen pipeline



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4 Construction

The construction of the hydrogen pipeline began at the end of February 2022. The project involved the simultaneous installation of two pipelines: one for hydrogen and one for high calorific natural gas. This combined construction approach improved efficiency and minimized disruption to the surrounding area.

A key technique used during construction was Horizontal Directional Drilling (HDD). This method involves drilling a horizontal path underground over long distances, after which pipeline segments are pulled into place. By avoiding continuous trench excavation along the pipeline route, HDD significantly reduces environmental impact, limits surface disruption, and accelerates the construction process.

The construction works required careful coordination between multiple stakeholders, including contractors, engineers, local authorities, and industrial partners. Safety, environmental protection, and continuity of operations in the surrounding industrial areas were central considerations throughout the process.

By applying advanced construction techniques and integrated planning, the project demonstrated how modern infrastructure can be developed efficiently while maintaining a strong focus on sustainability and minimal environmental impact.









Conformiteitverklaring Veiligheid, Gezondheid en Milieu

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Kopie conform

Project	GZI Next fase 1 H2 leiding		
Projectnummer	TV 20.P.1887	Investeringsnummer	S.003835.01
Beheerder	Gresnigt N.M.A. (Nadia)	Projectmanager	Geuzinge J. (Jarno)
Leidingnummer	x-807	Installatienummer	
Stationsnummer		Locatienummer	
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Hiermee verklaren wij op grond van de resultaten van de verificatieactiviteiten conform het Rapport projectverificatie dat ten aanzien van de Veiligheids-, Gezondheids en Milieuaspecten de genoemde installatie, station of leiding kan worden gebruikt voor het gestelde doel.

Afdeling Veiligheid, Gezondheid en Milieu

Opgemaakt door Focal point	Naam focal point: Binnenpoorte, Rob Afdeling: VI 	
Autorisatie	Handtekening Manager V: 	Datum: 11-4-2023

Afdeling VGM inspectie (RvA registratienummer I068 Inspectie)
N.V. Nederlandse Gasunie Dit formulier hoort bij procedure VGM_3.3-21 VGM_5-3.3-21B, versie 2, 20-05-2010
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Declaration of Compliance with Safety, Health and Environmental Requirements

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5 And Realisation

The realization of the hydrogen pipeline² marks a significant milestone in the energy transition of the Emmen region. The successful completion of the 3.6 kilometre connection between GZI Next and Getec Park establishes a crucial link between green energy production and industrial consumption.

With the pipeline now in place, industrial companies at Getec Park are better positioned to transition towards cleaner energy sources.

At the same time, the parallel installation of the high calorific natural gas pipeline ensures energy supply security during the transition period.

The project highlights the importance of collaboration between infrastructure operators, industry, and public authorities. Gasunie's role as transmission system operator proved essential in delivering a reliable and future-oriented energy network. Regional authorities emphasized the strategic importance of hydrogen in strengthening economic competitiveness and maintaining employment.

Overall, the realization of this pipeline demonstrates how hydrogen infrastructure can be effectively implemented in practice. It serves as a concrete example of how industrial regions can transition towards sustainable energy systems, positioning Emmen and GZI Next as frontrunners in the development of a green hydrogen economy.



² [Waterstofleiding in Emmen aangelegd › Gasunie](#)

6 What's next?

The realization of project X-807, the hydrogen pipeline in Emmen, marks an important first step in the development of a broader hydrogen infrastructure in the Netherlands. This regional connection between GZI Next and Getec Park is part of a larger national ambition to establish a comprehensive hydrogen network that links industrial clusters, storage locations, and international import routes.

At the national level, Hynetwork— a subsidiary of Gasunie—has been tasked with developing and operating this hydrogen network. The rollout of this infrastructure is planned in phases, starting with the major industrial regions and gradually expanding to create an interconnected system across the country.

A key principle in the development of the national hydrogen network is the reuse of existing natural gas infrastructure wherever possible. More than half of the future hydrogen network is expected to consist of repurposed pipelines, supplemented by newly constructed sections where necessary. This approach allows for faster implementation, cost efficiency, and reduced environmental impact.

Looking ahead, the timeline for further infrastructure development includes:

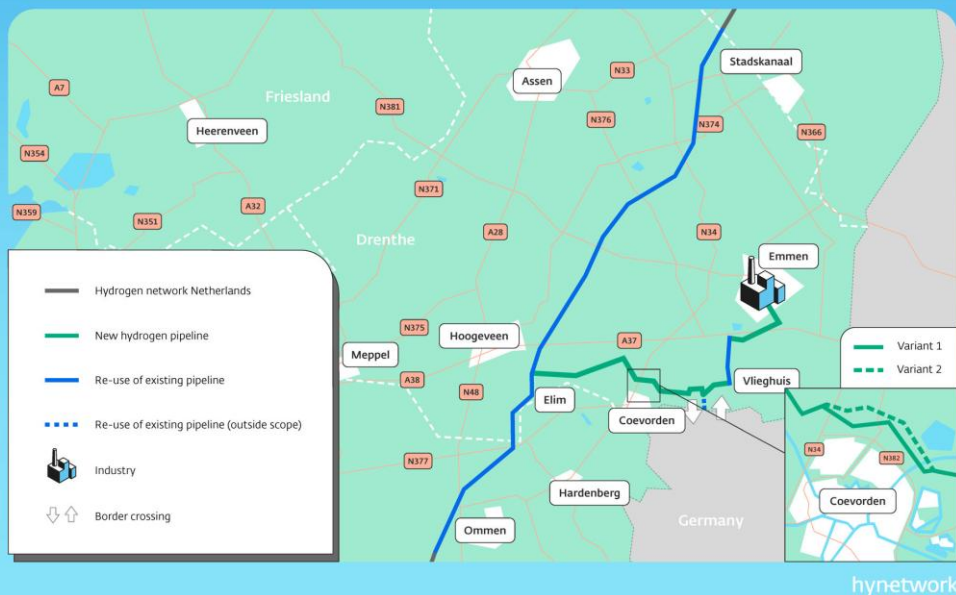
- Expansion of hydrogen networks in major industrial regions (ongoing since 2023, starting in Rotterdam)
- Gradual interconnection of regional clusters into a national backbone
- Integration with hydrogen storage and import facilities
- Development of cross-border links to support international hydrogen trade

Waterstofnetwerk Nederland



For the Emmen region, this means that the X-807 pipeline is not an endpoint, but a building block within a larger system. As the hydrogen network continues to expand, the local infrastructure will become part of a national and eventually European hydrogen value chain.

Hydrogen network Drenthe Overijssel



The graphical representation of X-807 in this report therefore not only illustrates a completed project, but also situates it within the evolving timeline of future hydrogen infrastructure developments.

Planningsdates per trajectory

Fase 1: Rotterdam (2026)		
Tracé	P50*	P90**
3. Rotterdam	2026 Q1	2026 Q3

Fase 2: Industrieclusters aan de kust (in of voor 2030)		
Tracé	P50	P90
1. Noord-Nederland	2029 Q2	2030 Q1
2. Noordzeekanaalgebied	2030 Q1	2030 Q4
4. Zuidwest Nederland	2029 Q4	2030 Q3
5. Scheemda-Oude Statenzijl	2029 Q4	2030 Q3
14. Schoonebeek-Vlieghuis	2029 Q2	2030 Q1

Fase 3: Verbinden (2031 - 2033)		
Tracé	P50	P90
6. Spaarndam-Mijnsheerenland	2031 Q4	2032 Q4
7. Rotterdam-Boxtel	2031***	2032
8. Limburg	2032 Q2	2033 Q2
9. Ommen-Ravenstein-Boxtel	2031 Q2	2032 Q2
11. Angerlo-Zevenaar	2031 Q2	2032 Q2
17. Mijnsheerenland-Rhoon-Pernis	2031 Q4	2032 Q4

Fase 4: Versterken (jaartal nader te bepalen, maar na 2033)		
Tracé		
10. Ommen-Winterswijk		
12. Den Helder-Beverwijk		
13. IJsselmeerroute		
15. Sanderbout-'s Gravenvoeren		
16. Maasvlakte-De Hoek		

19 november 2024 - 1.0

7 Conclusion

The realization of the hydrogen pipeline between GZI Next and Getec Park marks an important milestone in the transition towards a more sustainable industrial energy system. By establishing a direct connection between a green energy hub and an industrial cluster, the project enables and accelerates the adoption of hydrogen in practice.

The project demonstrates the value of an integrated approach, from planning and design to construction and completion. The combined installation of both a hydrogen pipeline and a high calorific natural gas pipeline allows for a phased transition, ensuring energy supply security while moving towards more sustainable solutions.

Furthermore, the project highlights the importance of collaboration between the transmission system operator, industrial partners, and public authorities. This cooperation has resulted not only in an efficient and technically robust realization, but also in a shared vision for the role of hydrogen in the future energy system.

Overall, the hydrogen pipeline in Emmen serves as a concrete and replicable example of how infrastructure projects can support the energy transition, strengthen regional economic resilience, and contribute to the development of a future-proof industrial ecosystem.