



PROJECT COM2HEAT (MOOI322012)

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Progress report

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Project information & Author

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Project total budget	€ 3.817.747
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Progress report

This progress report provides an overview of the results achieved during the reporting period.

The project and its partners have made significant progress toward the design and delivery of fully composite components as part of a composite (geothermal) heating system.

The preparations for the design and installation of a fully composite test- and demonstration site at the RCSG Rijswijk location has started and are expected to complete after summer (~September 2025).

This composite demonstration system will be used as a proof of concept and to verify and explore the performance specifications of such a composite heating system. Furthermore it is used to develop and finetune system design and routing models for composite heating systems which are being developed as part of the project. To ensure knowledge transfer an educational track is part of the project delivery, allowing for users to gain hands-on experience working with composite components in a geoheat system.

In the original project plan two composite demonstration sites were envisaged, a composite heat network in Schiebroek, and a geoheat system in Rijswijk (per above). The activities surrounding the Schiebroek heat system have been suspended due to changing market conditions and commercialization efforts. The originally planned activities and results are integrated and transferred to the Rijswijk demonstration site.

Despite this change in the original scope and plan, and some minor delays in the design and delivery of fully composite system components, the project has achieved major milestones and made rather promising steps toward the delivery of a fully composite functional geothermal system.

Grant provider

This project is being carried out with a Top Sector Energy subsidy from the Ministry of Economic Affairs and Climate, implemented by the Netherlands Enterprise Agency. The specific subsidy for COM2HEAT concerns the MOOI subsidy round 2022.

Public project summary

Cause

The Netherlands has the ambition to accelerate the transition away from natural gas for heating the built environment. An important responsibility is to keep the energy transition affordable for large groups in the Netherlands and to strengthen energy-related economic activities. Collective heat networks integrated with various sustainable sources, such as solar heat and geothermal energy, in combination with heat storage, provide a reliable, affordable and large-scale solution for 5-7 million homes and buildings. However, costs can be substantially reduced in terms of construction, installation, maintenance, electricity for pumps and heat loss reduction by using composite material instead of metals. Composite material has been used in the process industry for decades. The advantages of composite are that it is resistant to corrosion and precipitation, is 4 to 5x lighter than steel with up to 4x lower ecological costs and production takes place locally. At national level, billions can be saved in this way on direct costs and emission-related costs. However, not all components are available in composite, which means that rapid implementation is not yet possible.

Purpose of the project

The aim of this project is to develop and disseminate knowledge and an ecosystem for the design, production, installation and operation of collective heating systems built entirely of composite material. The system aspects of this project are cross-company and sector-wide. Stakeholders from the value chain work together in this unique consortium; the end users, the design and service companies, the composite manufacturing companies and academics. A top-down framework of system requirements will be developed and then the essential subsystems and components will be developed with necessary new manufacturing technology. The composite subsystems are functionally tested and then integrated in Rijswijk to test the physical interfaces and perform system flow tests. The ambition is to raise the subsystems and the integrated system to a TRL level of at least 6 and possibly 7 (ready for scaling up). The test system in Rijswijk is also suitable for the education and training modules that are also included in this project for vocational training and knowledge dissemination. developed in and outside the sector.

Results

In this project, knowledge is developed for the design, construction and maintenance of collective heat production and distribution networks made entirely of composite material to substantially reduce CAPEX and OPEX. The project consortium consists of partners from the entire value chain: end users/heat companies, project developers/designers, installation/service companies and production/manufacturing companies and partners who develop training modules for technical training. Heat companies and consumers benefit from the substantial cost reduction of the infrastructure to keep the heat supply affordable. The market for collective heat production and distribution systems offers the composite manufacturing industry in the Netherlands a unique opportunity to supply components in the Netherlands and internationally. Sufficient people with the right expertise is a precondition for scaling up. In this project, training material is developed for professional education/training for the use of composite material in the heating sector. Companies benefit from this in order to meet a growing need for technical professionals.

Short description of the projects planned activities

WP	Activities	Lead
1. Preconditions and system requirements	1.1 Total heat system	Enertrans
	1.2 Component requirements (in network and heat sources)	ECW
	1.3 Specifications prototype systems in Schiebroek and Rijswijk	WEP
2. Product design and development manufacturing technology for essential subsystems	2.1 Piping and Connections	Compipe
	2.1.1 Main pipes and connections heat work	Compipe
	2.1.2 Composite coil tubing and connections for interfacing between components	EScom
	2.2 Geoheat system	TNO
	2.2.1 Well design - case study	WEP
	2.2.2 Sand screen	HP Well Screen
	2.2.3 Casing	Huisman Geo
	2.2.4 Wellhead	ACP Technology
	2.2.5 Degasser	CPT
2.2.6 Heat exchanger	Danfoss	
2.3 Solar thermal system	EScom	
3. System integration at Rijswijk and Schiebroek location and execution of test program	3.1 Installation plan, HSE, RIE for location Schiebroek	Enertrans
	3.2 Installation plan, HSE, RIE for location Rijswijk (RSCG)	TNO
	3.3 Test plan with circulation heating network Schiebroek	Enertrans
	3.4 Test plan with sealing, flow performance and integrity tests in Rijswijk	TNO
	3.5 Realization and release for testing + execution of tests Schiebroek	Enertrans
	3.6 Realization and release for testing + execution of tests Rijswijk	TNO
4. System design, routing design models and scale up	4.1 Analysis of the available design and routing models	EScom
	4.2 Expansion of the existing models for the design of composite heating systems	Erasmus
	4.3 Validation of the model with data from test locations	Erasmus
	4.4 Outlook further upscaling region, network, connection	Enertrans
5. Training, knowledge assurance	5.1 Exploring the demand for (new) skills (phase I)	TNO
	5.2 Develop educational activities for practical learning (Phase II).	TNO
	5.3 Implementation in practice (Phase III).	ROC

Location(s) where the project is carried out:

The models, subsystems and components are developed, built and tested by the project partners above. The developments are coordinated with the consortium to guarantee that the interfaces and connections are developed in such a way that the subsystems can be connected to each other at the planned demonstration site in Rijswijk during the summer of 2025.

MOOI mission to which the project is submitted:

MOOI-missie	Innovatiethema
B – Gebouwde omgeving	2 - Duurzame collectieve warmtevoorziening op basis van volledig elektrisch, hybride of met een zeer laag, laag of midden temperatuur warmtenet voor woonwijken, bedrijventerreinen, kantoor- of winkelgebieden)

Public publications about the project

An article by TW.nl titled “Nieuwe leidingen voor warmtenetten: geen staal maar composieten”, accesible via this link: [Nieuwe leidingen voor warmtenetten: geen staal maar composieten - TW.nl](#)

Spin off within and outside the sector

No spin-off has yet emerged within or outside the sector.