

Project report

GEROthem[®] DUPLEX geothermal systems

Thermoroad
Vestergårdsmarken DK



Image 1: Thermoroad construction site
 Source: www.termonet.dk

Introduction

The project integrates geothermal heating and cooling with local stormwater management by utilising the road's porous gravel subgrade as both an energy source and a retention basin. This approach enhances energy efficiency, reduces construction costs and ensures a pleasant indoor climate in the new buildings through passive cooling.

The harvested geothermal energy provides heating and cooling for 12 detached houses. Energy is extracted from the ground using GEROtherm® DUPLEX probes, which function as heat exchangers across three vertical boreholes (120 metres deep) and as horizontal collectors. A total of ten probes have been installed.

A probe has been installed alongside the sewer pipe to facilitate wastewater heat recovery. Since effluent temperatures are typically higher than ambient ground temperatures, the probe acting as a heat exchanger adjacent to the sewer line achieves a higher power output.

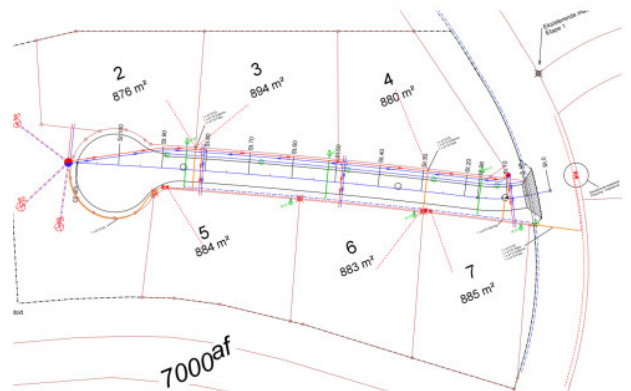


Image 2: Excerpt from site plan
 Source: www.termonet.dk



Image 5: Greater load resistance and stability thanks to reinforced walls on probe foot; PN25
 Low hydraulic resistance due to large cross-sections and welded coupler sockets



Image 3: GEROtherm® probe alongside wastewater pipe
Photo: www.termonet.dk



Image 4: GEROtherm® probe as horizontal collector
Photo: www.termonet.dk

GEROtherm® DUPLEX

The standard geothermal probe which has already proven itself thousands of times.

The multi-functional use of this site and its subgrade also incorporates a stormwater retention basin. This basin is designed to prevent local flooding, while the stored water serves as a supplemental heat source. Using five GEROtherm® DUPLEX probes (120 m), installed as horizontal collectors beneath the road surface, heat is extracted from the water to meet heating demands and transferred back into the water for cooling purposes.

The ingenious multi-purpose application of this "Thermoroad" contributed to the project winning the Lighthouse Award from the European Heat Pump Association (EHPA) in 2025.

Features

- + Increased protection provided by the nubbed design
- + Higher load capacity and stability due to reinforced walls on probe foot; PN25
- + Mounting for GEROtherm® weights and reinforcement brace for the GEROtherm® PUSH-FIX and UNI-FIX. Multifunctional holder for weights
- + Low hydraulic resistance due to large cross-sections and welded coupler sockets
- + Proven mud container in the probe foot with two new ribs that make it easier to use a measuring float.
- + No need for welding on site
- + DIN EN 12201-2
- + Patent No. EP 2 395 301
- + SKZ certified and monitored SKZ certificate No. A278
- + Certified and monitored by KIWA KOMO. Certificate No.: K84660/04

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Image 6: Drilling rig
Source: www.termonet.dk

Project details

Construction site

Thermoroad
Vestergårdsmarken DK

Construction consortium

VIA University College
Hedensted Municipality
Løsning Fjernvarme Amba
Hedensted Spildevand A/S
NCC Construction Danmark A/S
PlanEnergi
EnergyMachines ApS

Drilling company

Varup Termiske Boringer Aps
DK- 3400 Hillerød
<https://varuptermiskeboringer.dk>

Planner for energy and building technology

GeoDrilling ApS
Engsøparken 231, 7200 Grindsted
www.geodrilling.dk

Products used

- 10 GEROtherm® DUPLEX Single-U geothermal probes
PE100-RC, PN 16, OD 40 mm length 120 m



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