HakaGerodur

Image source HakaGerodur AG

Project report
GEROtherm® FLUX

Heating system renovation at Langäcker primary school
CH-8444 Henggart

Image source: HakaGerodur AG

Image legend: Probe field with taped earth probes (yellow) after drilling

The heating system of the Langäcker primary school should be built as ecologically and economically as possible. A Viessmann Vitocal 350-G PRO heat pump with a heating capacity of 170 kW and a cooling capacity of 132 kW is supplied with ground energy from 12 GEROtherm® FLUX probes, 320 m long. This probe field provides the basic energy from the ground for the heat pump to heat and cool the primary school building.

This proven, environmentally friendly and sustainable energy generation gives the primary school building additional added value.

12 GEROtherm® FLUX geothermal probes with lengths of 320 m were sunk on the borehole field. Due to the drilling depth of 320 m, special emphasis was placed on the high safety and pressure resistance of the probes. The GEROtherm® FLUX geothermal probes have been developed for drilling depths of up to 320 m and offer the corresponding safety.

<Image legend: Probe field with taped earth probes (yellow) after drilling

>Image legend: Palletised ground probe with grouting tube

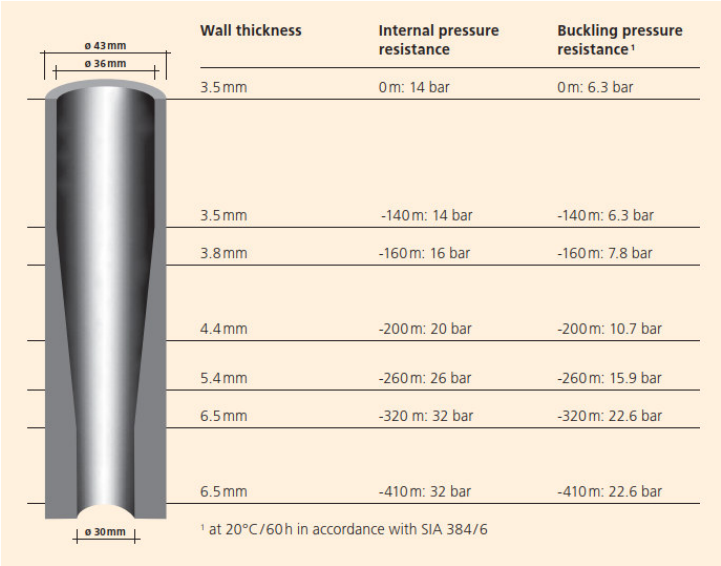
Image legend: Drilling rig with GEROtherm® FLUX probes

The company Barmettler Hans & Co AG, which specialises in geothermal probe drilling, was on site with selected drilling equipment and carried out the drilling expertly. On the well-prepared drilling field, the 320 m deep boreholes were able to be drilled quickly. These deep boreholes placed the highest demands on the people, machines and materials.

GEROtherm® FLUX geothermal probes will save energy. At the same time, greater depths can be developed economically. Additionally, the safety and longevity of the geothermal probes is increased.

Product features:

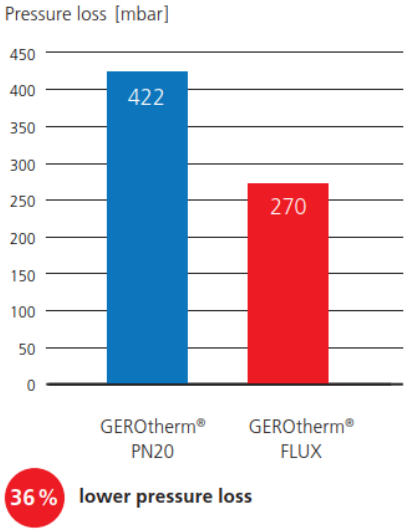
- Optimised hydraulic pressure drop
- Pressure resistance up to 32 bar
- Significantly improved buckling pressure resistance in the lower section
- Optimum heat transfer
- 100% plastic materials
- Installation conditions similar to the standard probes
- 36% less pressure loss = energy cost savings
- High safety and durability



Wall thickness	Internal pressure resistance	Buckling pressure resistance[1]
3.5 mm	0 m: 14 bar	0 m: 6.3 bar
3.5 mm	-140 m: 14 bar	-140 m: 6.3 bar
3.8 mm	-160 m: 16 bar	-160 m: 7.8 bar
4.4 mm	-200 m: 20 bar	-200 m: 10.7 bar
5.4 mm	-260 m: 26 bar	-260 m: 15.9 bar
6.5 mm	-320 m: 32 bar	-320 m: 22.6 bar
6.5 mm	-410 m: 32 bar	-410 m: 22.6 bar

[1] at 20°C/60 h in accordance with SIA 384/6

FLUX wall thickness distribution and pressure resistance



Ethylene glycol: 20 % | Temperature: 12°C
Volumetric flow: 1.8 m³ / h | Length: 320 m
Double-U: ø 40/43 mm | Brine circulation pump: Grundfos MAGNA 80–60 F

The probe field was routed to a manhole type 3 with approximately 1,000 m of connection pipes de 50 mm of the type GEROtherm® PE100-RC/PN16 including electrofusion coupler moulded parts such as sockets and elbows. This shaft consists of a PE100 coiled pipe that is groundwater-tight. Built into it are: PE steps, a PE platform for slip resistance and the collectors/distributors de 180 × 24.6 mm including the probe connections. The groundwater sealing was completed with a wall sealing collar around the dome. The outer shaft diameter is approximately 1,440 mm, the length is 3,070 mm and the height is approximately 2,200 mm. The plastic cover can be walked on up to 200 kg.

Special electrofusion coupler sockets de 43/40 mm were used for the transition of the geothermal probes to the Y pieces.

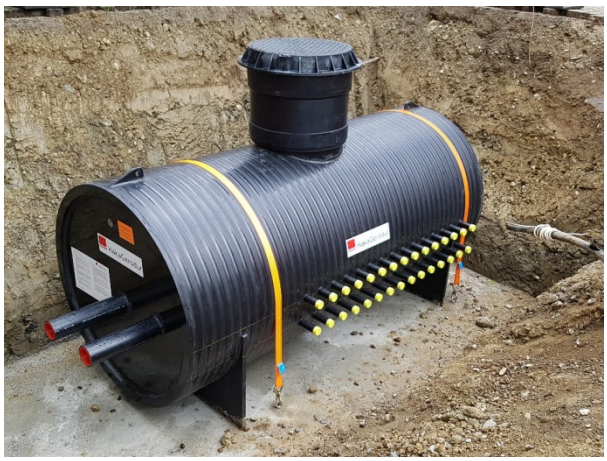


Image legend: Shaft type 3

The special distributors for this property are installed in the outer shaft.

The SAVE de 180 × 24.6 mm collectors/distributors with 15 outlets (3 reserve) are equipped with ball valves and inline setters. Each of these shaft manifolds can be shut off with an EBRO DN 125 shut-off damper. Thermomanometers, drains and vents complete the system. In this way, each probe can be optimally integrated into the probe network and achieve its best performance.

Image legend: Interior view with SAVE 180 collector and distributor

Project data

Construction site:
Langäcker primary school
CH-8444 Henggart

Client:
Langäcker primary school
Real estate department
CH-8444 Henggart
www.primarschule-henggart.ch

Architect:
esw Architekten AG
Wülflingerstrasse 36
CH-8400 Winterthur
www.beparchitekten.ch

Engineering office for energy supply:
Russo Haustechnik-Planung GmbH, Jan Sommer
Lagerplatz 21
CH-8400 Winterthur
Tel. +41 (0)52 555 02 02
www.rosso-htp.ch

Drilling company:
Barmettler Hans & Co AG
Gwärbi 325
CH-5054 Moosleerau AG
www.erdenergie.ch

Products used:
12 GEROtherm® FLUX Geothermal probes Pressure-resistant up to PN32
made of PE 100-RC de 40 mm, length 320 m
12 grouting tube PE-HD de 32, length 327 m
12 EWS UL40 weights, 24 kg
1 shaft type 3 with 12 (3 reserve) connections
1 flow distributor SAVE de180 × 24.6 mm with 12 outlets de 50 mm and plastic ball valve
1 return distributor SAVE 180 × 24.6 mm with 12 outlets de 50 mm and inline setter Adjustable valves

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