HakaGerodur

Image source lightsphere.ch

Site report

GEROtherm® FLUX geothermal system

Givaudan Innovation Center
CH-8310 Kemptthal

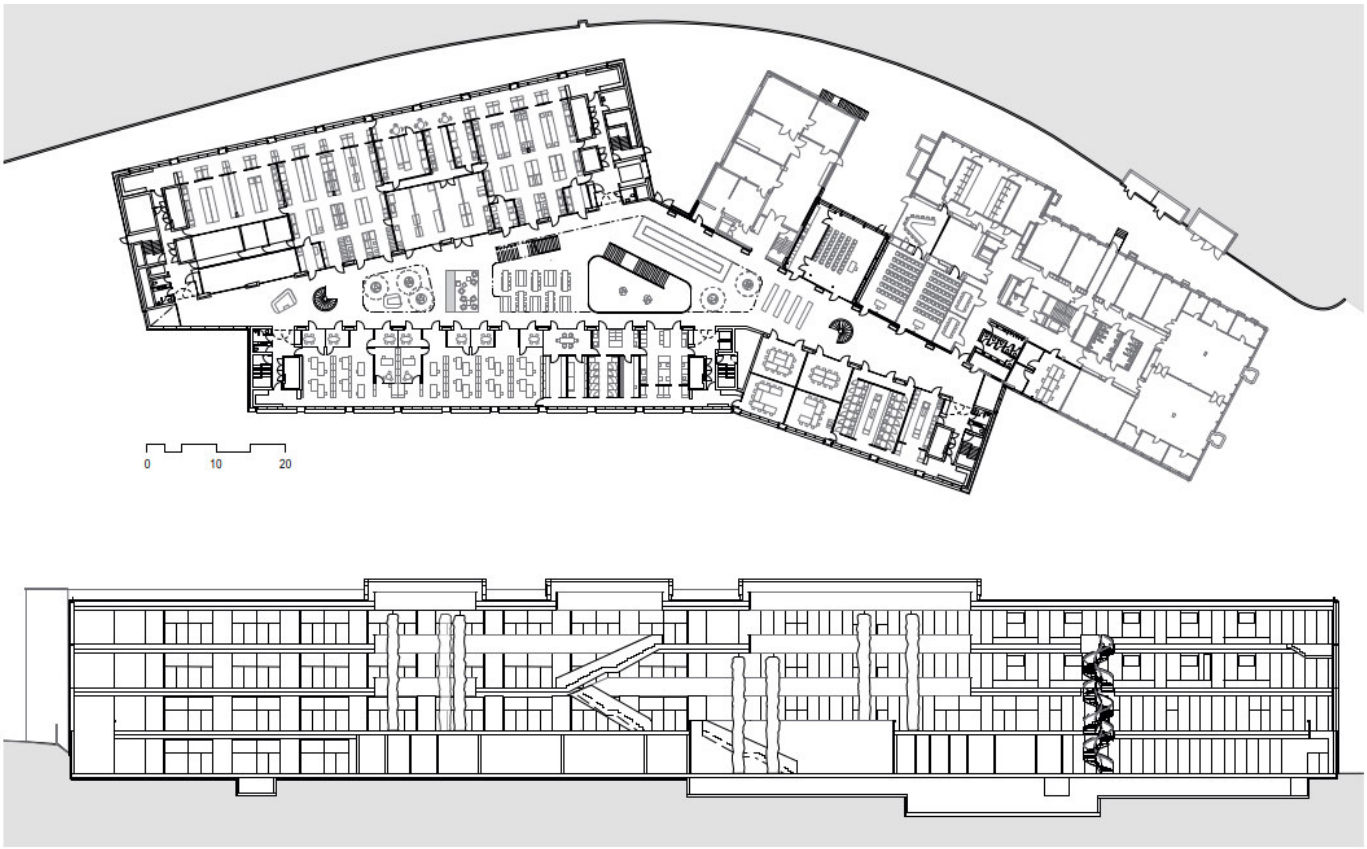

Image source: Bauart Architekten und Planer AG

A new chapter is being written and innovations are being developed on the former Maggi site in Kemptthal. Research and development will soon take place in the new Givaudan Zurich Innovation Center, which is currently under construction. The new CHF 120 million building will be Givaudan's largest and most important research centre. Existing structures will be combined with two new buildings. The space created in between will be used as a representation, communication and exchange area.

All buildings will be integrated into the modern energy system. This modern energy production, by means of heat pumps fed by 73 GEROtherm® geothermal probes, contributes to the most important international sustainability label LEED (v4). With this certification, the gold level is in clear view. This proven, environmentally friendly and sustainable energy generation gives the functional and modern building additional added value.

In the borehole field, 72 GEROtherm® FLUX geothermal probes, with a length of 320 m, were sunk into the ground. The special geological nature of the subsoil required pressure-resistant geothermal probes for drilling depths of up to 320 m.

The company Barmettler Hans & Co AG, which specialises in drilling geothermal probes, was on site with specialised drilling equipment and was able to professionally perform the drilling. Thanks to good preparation and suitably stable weather, the 320 m deep boreholes were completed quickly. These deep boreholes placed the highest demands on the people, machines and materials.


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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

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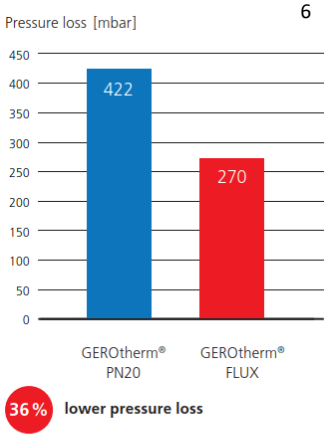

Ethylene glycol: 20 % | Temperature: 12°C
Volumetric flow: 1.8 m³ / h | Length: 320 m
Double-U: ø 40/43 mm | Brine circulation pump: Grundfos MAGNA 80–60 F

Following the sinking of the probes, the boreholes were backfilled using a special hydraulic binder containing natural materials like clay and bentonite. Each geothermal probe was tested and logged using a digital measuring device for pressure and flow tests (in accordance with SIA 384/6) specially developed for geothermal probe systems.

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. Manholes and SAVE collectors and distributors, which have been individually adapted to the technical requirements of large-scale systems, optimally complement a geothermal system.

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The probe field was divided into two shafts. The manhole type 4 with 14 connections and a manhole type 4 with 58 connections, each with a special cover for 12.5 t transportation support, were installed in the ground under the roadways.

The two probe fields are led with the connecting lines to two buried plastic shafts. Plastic flow and return manifolds are installed in the shafts. The SAVE 250 collector/distributor with 58 or SAVE 180 with 14 de 50 mm connections are at the heart of the system. These are equipped with plastic ball shut-off valves, filling and draining valves and flow regulating valves. Because of this, each geothermal probe can be optimally integrated into the probe network and achieve its best performance.

1 GEROtherm® FLUX geothermal probe on a reel, ready for sinking
2 Drilling rig with GEROtherm® FLUX geothermal probe in the sinking process
3 Electronic flow and pressure meter
4 Probe prepared for flow, pressure and temperature control according to SIA 384/6
5 Wall thickness distribution of the GEROtherm® FLUX geothermal probe
6 Comparison of pressure loss equal to GEROtherm® FLUX geothermal probe versus PN20 geothermal probe

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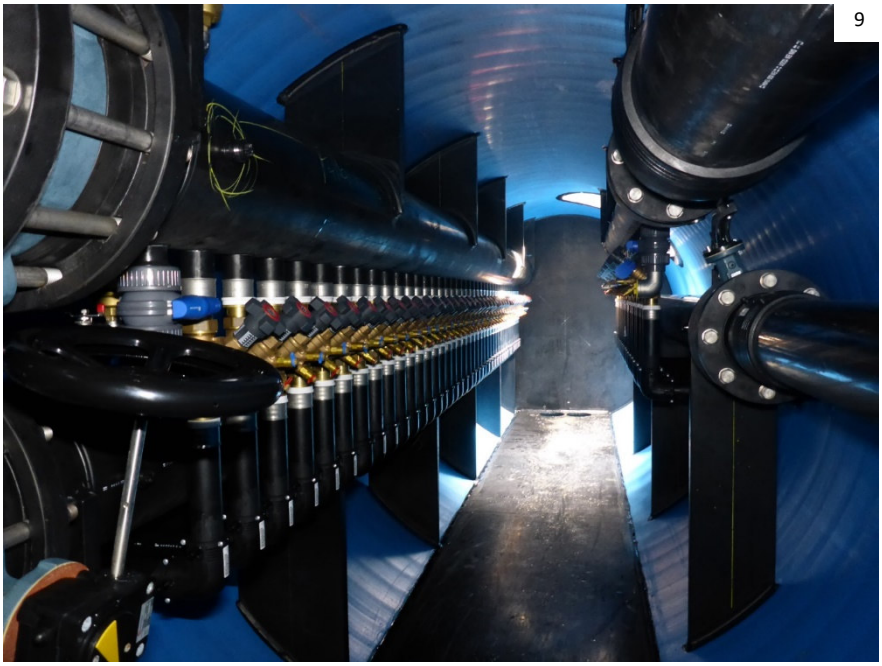

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7 Insertion of the manhole type 4 with 58 connections
8 Manhole 4 with 14 connections ready for insertion
9 Interior view of manhole type 4 with SAVE 250

Project data

Construction site:
Givaudan Innovation Center
CH-8310 Kemptthal

Client:
Givaudan Schweiz AG
CH-8310 Kemptthal
www.givaudan.com

Architect:
Bauart Architekten und Planer AG
Zimmerlistrasse 6
CH-8004 Zurich
www.bauart.ch

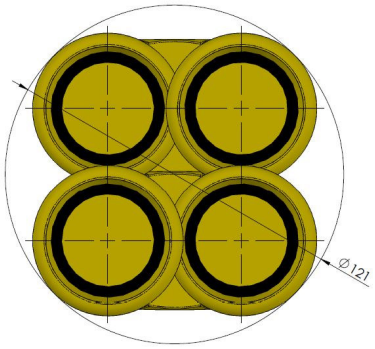
Engineering office for energy supply:
Beag Engineering AG
Eichgutstrasse 2
CH-8400 Winterthur
www.beagag.ch

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

Products used:
72 GEROtherm® FLUX
Geothermal probes up to PN32
Made of PE 100-RC de 43 mm
Length 320 m
72 grouting tubes PE-HD de 32
Length 327 m
72 weights 24 kg

Manhole type 4 with 14 connections collector/distributor SAVE 180 with 14 outlets de 50 mm and plastic ball valve for the flow and Oventrop regulating valve in the return

Manhole type 4 with 58 connections collector/distributor SAVE 250 with 58 outlets de 50 mm and plastic ball valve for the flow and Oventrop regulating valve in the return



Max. diagonal dimension

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