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Visualisation of the status of the study contract
Source: Nightnurse Images GmbH, Zurich

Project report
GEROtherm® FLUX

New construction of the BELLARIA residential complex CH-8038 Zurich-Wollishofen

Image 1: Surroundings map
Source: Michael Meier und Marius Hug Architekten AG

Introduction

In a historic urban oasis in Zurich-Wollishofen, the new BELLARIA residential development is being built just a few minutes from the lake and Zurich city centre.

The 172 rental flats of the new building project are distributed over four elevated longhouses and four point blocks in the lower row.

Heat generation: For each building group/system (1 × longhouse and 1 × point block; 4 sections with 16 FLUX geothermal probes each), energy is generated via a separate geothermal probe field.

The probe connection is made in a buried plastic shaft, which is placed outside the building.

Two DN 125 pipes lead directly from the EWS distributor to the heating centre.

Image 2: Volume model
Source: Michael Meier und Marius Hug Architekten AG

Image 3: Drill rig in use

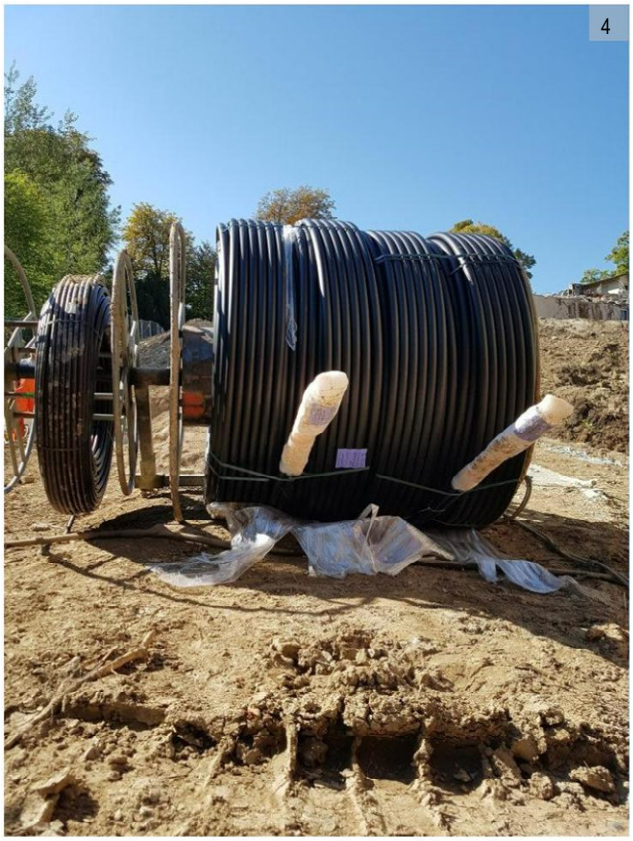
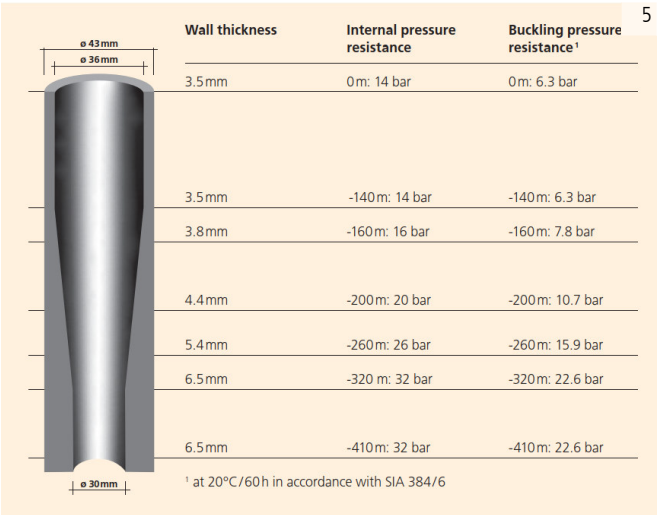


Image 4: The GEROtherm® FLUX geothermal probe ready for use

GEROtherm® FLUX geothermal probes for demanding use at depth

64 GEROtherm® FLUX geothermal probes, each 320 metres long, were sunk into the ground. The drilling company was on site with two drill rigs. The innovative, 320-metre-long GEROtherm® FLUX geothermal probes de 43 mm PN32 were expertly sunk. Following this, the drill holes were backfilled using a special hydraulic binder containing natural materials like clay and bentonite. Each geothermal probe was tested and the results logged using a measuring device for pressure and flow tests (in accordance with SIA 384/6).



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

Image 5: Wall thickness distribution and pressure resistance of a GEROtherm® FLUX geothermal probe

GEROtherm® geothermal probes and distributors prove themselves every day when used for modern energy production. They are characterised by being particularly easy to prepare for installation on construction sites, are designed for high loads and stability, and the modular system components simplify planning. Competence and experience with our own production and logistics play an important part in meeting the quality demands of our customers. That is why we offer all of the components from a single source and have certified them all as a system.

A pressure-resistant geothermal probe has been developed for depths of up to 410 metres. The new GEROtherm® FLUX geothermal probe provides many benefits compared to the solutions available to date:

- The pressure loss in operation compared to a PN20 geothermal probe is significantly reduced.
- Greater safety thanks to internal pressure resistance up to a depth of 320 metres.
- Improved buckling pressure resistance offers benefits when using heavier or more conductive grouting material.

The GEROtherm® FLUX geothermal probe is a full-plastic solution. This makes it corrosion-resistant with a service life of over 50 years, compliant with SIA 384/6.

The patent number for this geothermal probe is:
EP 2 706 308.

Image 6: Drilling team at work

Image 7: Geothermal probes already sunk, backfilled and pressure-tested

Project data

Construction site
BELLARIA residential complex
172 rental flats
Bellariastrasse/Bellariarain
CH-8038 Zurich-Wollishofen

Client
Helvetia Schweizerische
Lebensversicherungsgesellschaft AG
St. Alban-Anlage 26
CH-4052 Basel

General contractor
Allreal Generalunternehmung AG
Eggbühlstrasse 15
CH-8050 Zurich
www.allreal.ch

Architecture
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Architekten AG
Binzstrasse 12
CH-8045 Zurich
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Drilling company
Hans Barmettler & Co AG
P.O. Box 18
Gwärbi 325
CH-5054 Moosleerau
www.erdenergie.ch

Planner for energy and building technology
eicher+pauli Luzern AG
Arsenalstrasse 21
CH-6010 Kriens
www.eicher-pauli.ch

ALCO Haustechnik AG
Leutschenbachstrasse 45
CH-8050 Zurich
www.alco-haustechnik.ch

Products used
- 64 GEROtherm® FLUX geothermal probes PE100-RC, PN32, de 43 mm, length 320 m
- 3 GEROtherm® geothermal probes PE100-RC, PN16, de 40 mm, length 210 m
- 4 manholes, type 3 with 16 connections
- 4 SAVE 180 collectors/distributors each with 16 outflows, fitted with ball valves and hyline setter
- 67 grouting tubes PE-HD de 25 mm
- 67 weights EWS UL40 24 kg
- 4,000 m GEROtherm® connection pipes PE100-RC, PN16, de 50 mm including all necessary fittings

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