GEOthermal Technology for Economic Cooling and Heating

FOUNDATION HEAT EXCHANGER - Large Scale Pilot Site

Implementation costs expected to be 72% lower than an equivalent conventional borehole array, so the whole GHSP system to be 33% more cost effective.

Barcelona FHX Demo Site building process

Description of Barcelona FHX building

- **Typology:** Tertiary building (complex of 4 office buildings)
- **Constructed surface area:** 36,000 m² (at street level)
- **Location:** Barcelona, Spain
- **Climate condition:** Mediterranean climate
- **HVAC Energy Sources:** FHX hybridized with District Heating & Cooling network
- **Hydrogeological data:** medium resistance terrain (medium-fine sands and clays), water table at -5 m

Technical specifications of Barcelona FHX Demo Site

- **Heat Pump:** Manufactured by CLIVET
  - **Type:** WSHN-XEE2 MF30.2
  - **Heating Capacity:** 106 kW
  - **Cooling capacity:** 91.6 kW
- **Expansion Vessel:** 100 L
- **Recirculation Pump:** Grundfos (TPE3 50-240-S-A-F-A-BOQE)

Description of Barcelona FHX Demo Site

- **Foundation Heat Exchanger (FHX):** > 700 m² of thermo-activated screen wall area
- **Heat Exchanger distribution:** 18 BSW and 19 PSW
- **Depth of foundation:** 16 - 18 m
- **Drilling technology:** Screen wall excavation
- **Heat exchangers (HX):** U-loop PEX tubes
- **Geothermal Heat Pump (GHSP):** 106 kW

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This project has received funding from the European Union’s Horizon 2020 Research and Innovation Programme under Grant Agreement No 656889

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