



Second Geofit Training On-the-ground experience

BORDEAUX PILOT

27th SEPTEMBER 2022 – On Line Toni GALINDO (COMSA)



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Content



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Collected Data: a full one year of pre-intervention monitoring

- ✓ Cooling power [kW] / consumption [kWh]
- ✓ Heating power [kW] / consumption [kWh]
- $\checkmark\,$ Heating floor Inlet T $^\circ\,$ / outlet T $^\circ\,$
- \checkmark Indoor condition T° / HR% / CO₂
- $\checkmark\,$ Outdoor conditions T $^\circ\,$ / HR% / Wind and Irradiation

2. GEOFIT system – 1 of 2



GEOFIT SYSTEM	BORDAUX – IUT CIVIL ENGINEERING
Simulation and demand modelling	Heating power = 15 kW (corridor and conference room) Cooling power = 15 kW (office, conference room and director's office)
Drilling/excavation	 After soil scanning completed by IDSGEO, it was unfeasible to install the 8 initial energy baskets proposed (16 are the optimal in terms of HP performances). Finally: 1 vertical bore hole has been set up at the beginning of May (100m depth) 2 earth baskets have been installed to complete the energy ground source Earth basket burying done in August 2021 with GroenHolland
GSHP	Reversible hybrid heat pump by electricity and gas, adsorption and compression HP (gas boiler and buffer tank, adsorption unit, chiller unit). Power output: 20-25 kW heating; 15 kW cooling. Refrigerant with GWP (water and propane). HP operational control system integrated. Delivered on site on November, 15 th

2. GEOFIT system – 2 of 2



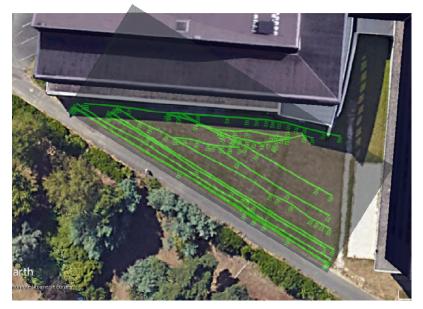
GEOFIT SYSTEM	BORDAUX – IUT CIVIL ENGINEERING
Operation strategy	Monitoring and control rules not easy to change due to the impossibility to change the BMS
Retrofitting	No additional retrofitting works were foreseen
FOC installation	Energy baskets monitoring system
BEMS	HP stand alone control system For a better reliability of data transmission and to ease the installation, installation of a new partial BMS system.

3. GHEX design - Spot





Spot for GHEX installation



Soil scanning results (each green line is a buried network)

- The detected buried network does NOT allow installing 8 earth baskets on the defined spot
- > 1 Vertical bore hole set up to complete the energy ground source

3. GHEX design – Earth basket

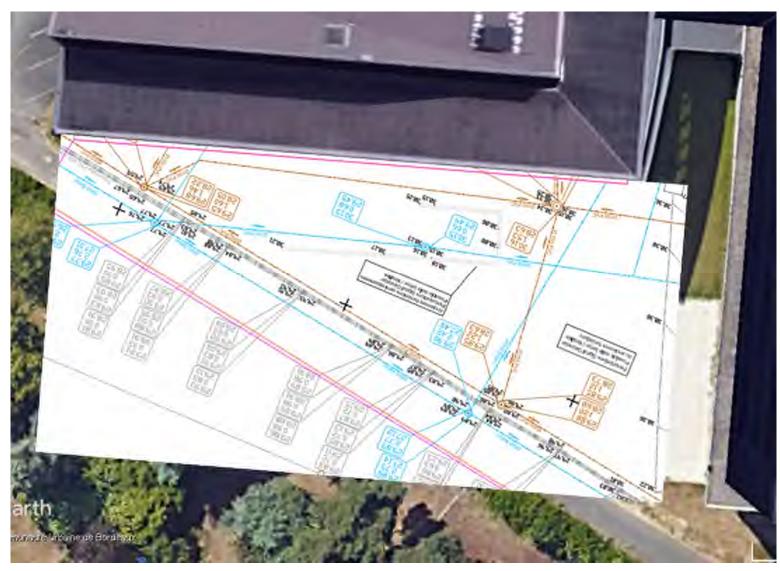


Earth basket design:

- 3m height
- 1.4m diameter
- 21 coils, diameter 32mm, SDR 11
- 2 earth baskets, in addition to the vertical bore hole ground source



4. GHEX installation – Soil scanning details

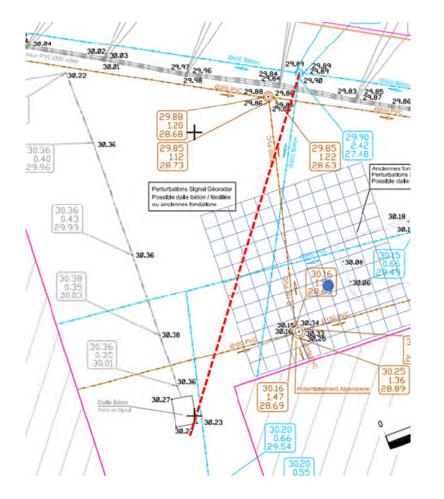


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Soil scanning completion on Bordeaux University demand (performed by ECR-Environnement)

4. GHEX installation – V. borehole drilling



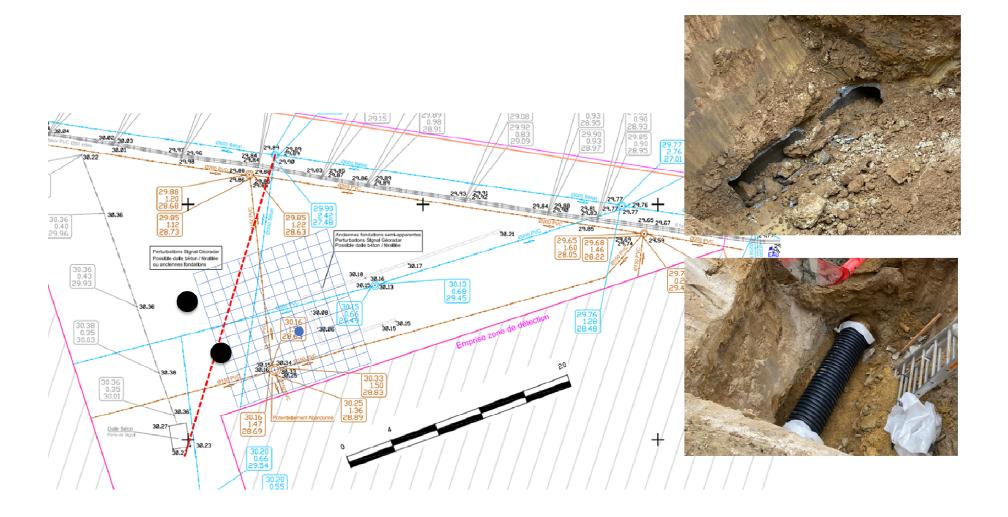


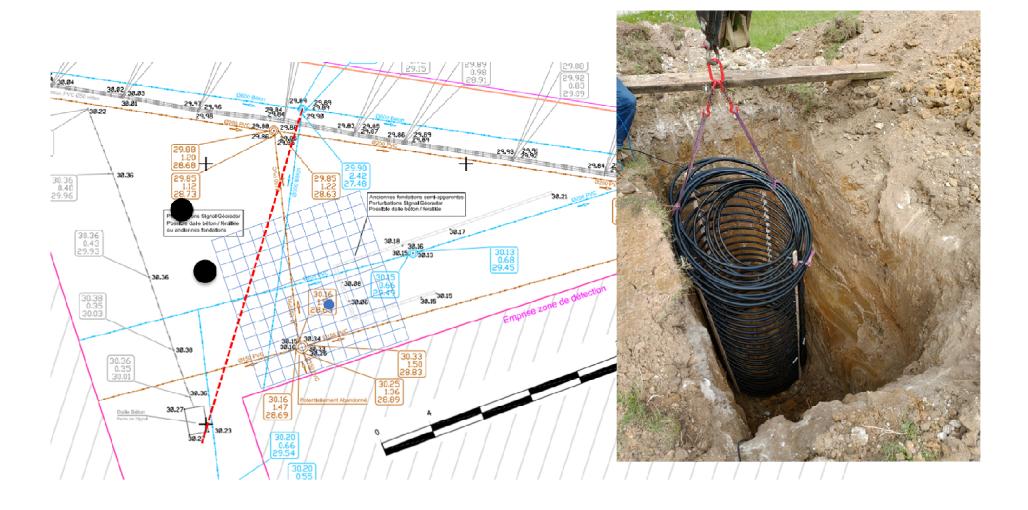




100m depth, 2 probes

4. GHEX installation – On Site Works – 1 of 3





4. GHEX installation – On Site Works – 3 of 3



5. Heat Pump installation

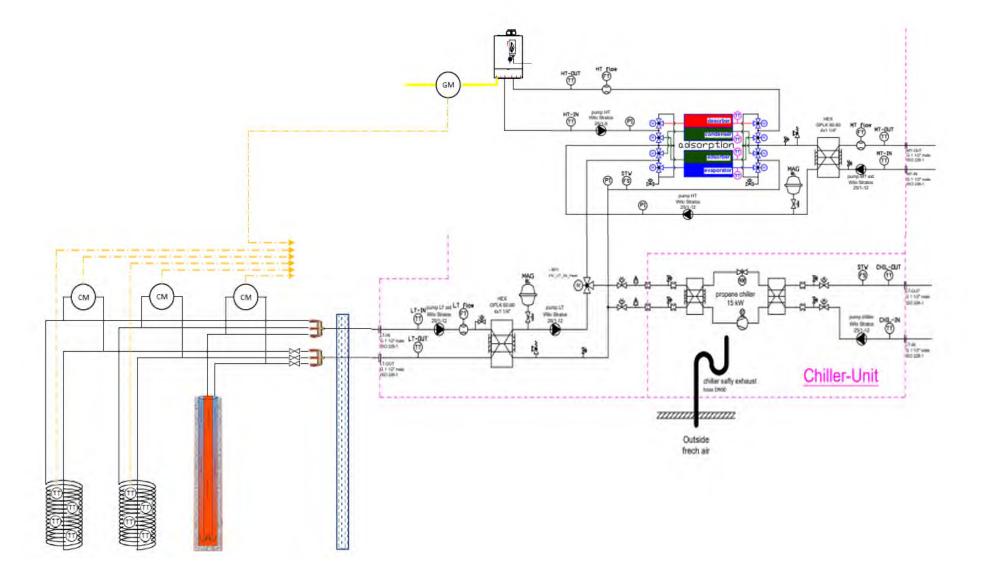


- ✓ Heat pump received onsite on November 15th 2021
- Heat pump data transfer: standalone

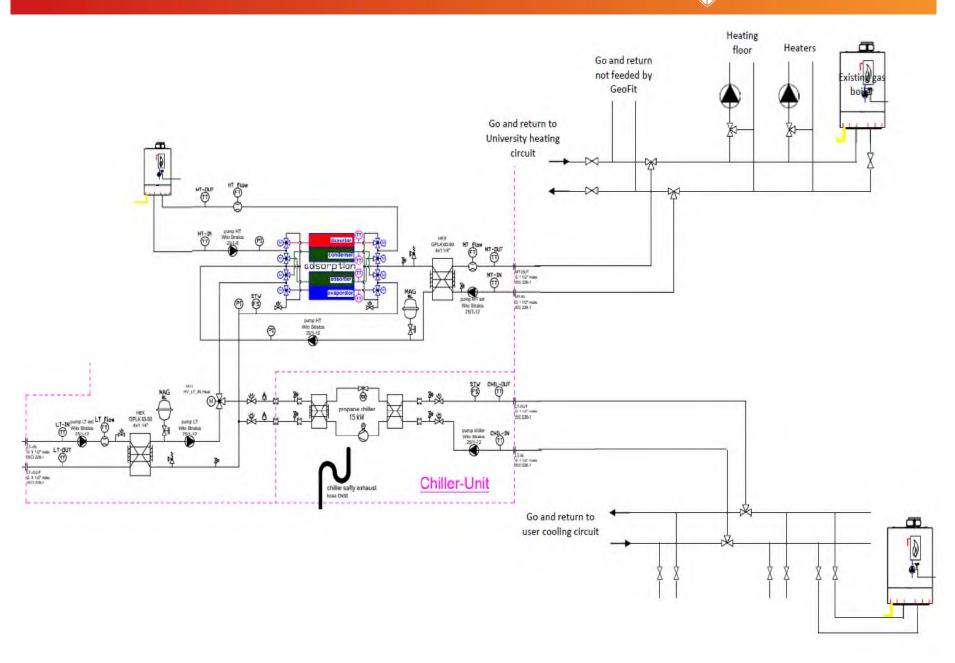


6. Overall installation (upstream HP)





6. Overall installation (downstream HP)



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FIT

7. Last installations works



- Plumber works finished in last spring.
- Installation of data acquisition system is now ready.
- Data transfers have been realized satisfactory (from earth basket fiber optic, from HP and from distribution system).
- Data storage: gathering of all data for energy production, consumption, building comfort, heat pump, baskets, vertical geothermal probes, gas consumption, electricity consumption, etc.) in one database with the same measurement interval (1 min, 10 min,...).



Thank you for your attention





SMART GEOTHERMAL

WP7 team

