

Interesting Heat Pumps Installations



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- The Biggest Czech Installation with boreholes
 - Heat loss 1300 kW

- Finished 2006
 - Preparation 23 months
 - Installation 4 months





Heat side

- Heat Pumps
 - ✓ 10 units IVT Greenline D 70
 - ✓ Heating power is 700 kW

- Heating
 - ✓ Underfloor heating
 - ✓ Radiators
 - ✓ Air conditioning
 - ✓ Domestic Hot Water

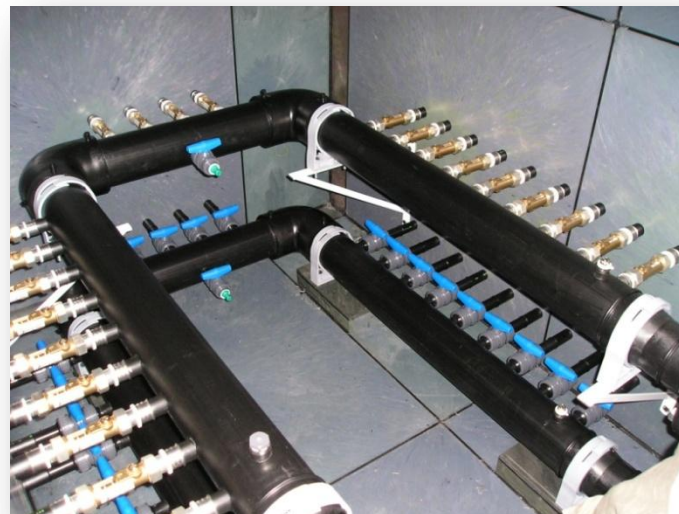


Cold side

- Connections, Pipes
 - ✓ 70 000 m plastic pipes for whole cold side
 - ✓ Dividers are in five shafts
 - ✓ Anti-freeze - 18 000 l of ethanol

- Filling and de-aerating
 - ✓ Most complicated operation
 - ✓ 21 days

- Cooling
 - ✓ Passive cooling - approximately 500 kW
 - ✓ Small cooling machine on the roof





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Design of Boreholes

- Design of boreholes
 - ✓ Thermal response test
 - ✓ Cooperation with Mr. Helström from the Lund University

- Boreholes
 - ✓ 108 active boreholes 140 m depth
 - ✓ 2 control boreholes (without pipes)
 - ✓ Total length of the boreholes 15 400 m

- Drilling
 - ✓ At the most, 3 drilling machines
 - ✓ Drilling 90 days



ZOO Ústí nad Labem



ZOO Usti nad Labem

- Heating of 30 buildings heat loss

1 200 kW

- Heating power of heat pumps

950 kW

- Source of energy

geothermal water 32°C



Realization

- Realization 2004 – 2005
- Finish of first period 260 kW – 8/2004
- Finish of second period 690 kW – 9/2005
- Total volume of order 1 200 000 EUR



Technology

- One borehole - depth 515 m
- Flow of Groundwater 12 l/s
- Temperature 32° C
- 5 independent boiler rooms with:
 - 16 pcs IVT Greenline G 22
 - 8 pcs IVT Greenline G 26
- Maximum reached COP
6,1 (30/45)
- Annual planned COP
4,5 (30/55)



Typical boiler room



Diagram of the primary circuit

