

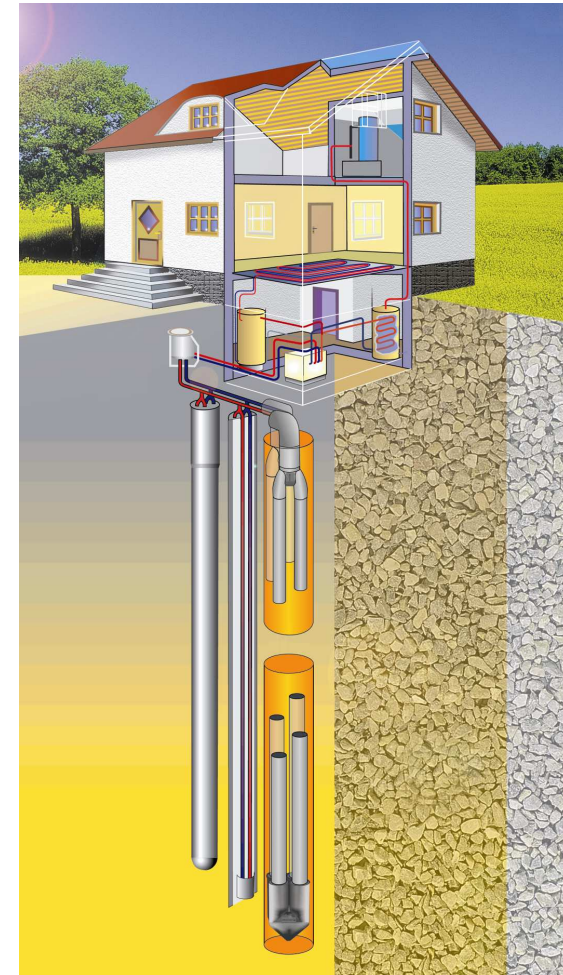
AHK–business trip on renewable energies, Madrid, 15. - 18.06.2010

**geothermal heating and cooling
source system for heating pumps,
made of plastic**

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Frank GmbH

Germany



FRANK GET-System_AHK 03/2010 S. 1



History

- ▶ 1965 Foundation as an engineer's and sales office by Philipp Frank
- ▶ 1986 Foundation of Frank Deponietechnik
(plastic welding workshop)
- ▶ 1991 Foundation of Agru-Frank GmbH
(polyethylene extrusion pipe production)
- ▶ 1997 Foundation of PF-Schweißtechnologie GmbH
(production of plastic welding machines and tools)
- ▶ 1998 Foundation of Frank & Krah Wickelrohr GmbH
(production of PE/PP spiral pipes) in Schutzbach
- ▶ 2005 Integration of EXNER flow control valves production
- ▶ 2007 Production of crosslinked polyethylene (PE-Xa)
pipes in Wölfersheim
- ▶ 2010 Approx. 315 employees in the group of companies,
owned by Dipl.-Ing. Thomas Frank and Dr. Christian Habedank



Delivery program



Industrial applications :

pipes, flanges, tanks – mainly PP



Gas and water supply :

pipes, fittings – only PE / PE-Xa



Sewage and environmental technology :

PE-/PP-Spiral pipe up to 3,5 m diameter, geosynthetics



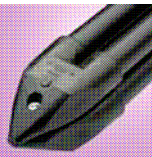
Welding technology :

Butt-, electrofusion-, socket- and extrusion welding for plastics



Valves, measuring and control technology :

Plastic valves, globe control valves, flow meters



Renewable energies :

Geothermal and biogas systems made of plastics

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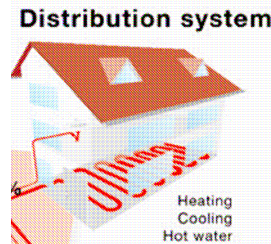
FRANK geothermal system in Spain

- Frank distribution partner and stock for probes :
AgruQuero, Pinto/Madrid (www.agruquero.com)
already involved in Geoplat association,
Agru-partner for pipes and fittings
- Sales of collectors/chambers often through distributors in
heating/plumbing business
- Contacts to distributors and installation companies needed to maintain
stock for standard products and project work
- Trainings / Workshops for geothermal systems ?

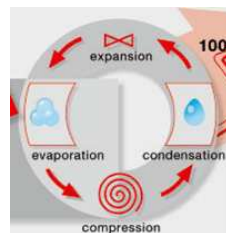


parts of a good geothermal heating/cooling system

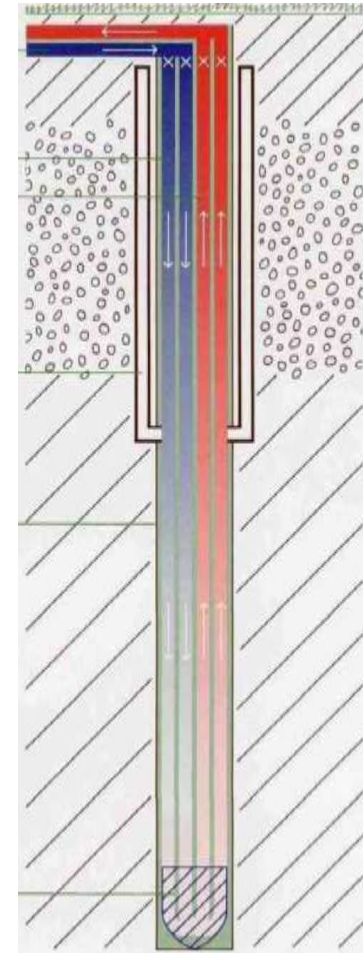
- 1) a modern, well insulated building with underfloor or wall heating system working at low temperatures (<35°C in the flow circuit)



- 2) a heating pump which fits to the source of temperature difference (groundwater or brine)



- 3) high quality open (for direct groundwater usage) or closed loops (horizontal loops, baskets or probes), providing a reliable temperature source over a long period, connected to a collector for easy balancing



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factory-made complete probes

geothermal probes made of PE 100

- factory-welded double-U-probes OD 32 and 40 mm in standard lengths from 50 to 250 m
- external supervision of the production after DIN 8074/75, DVGW, VDI 4640, SKZ HR 3.26
- pipe class SDR 11 proven by long-term pressure tests (up to 20 bar at 20°C)
- decades of operation with polyethylene pipes for gas and water installation
- factory pressure test for every probe
- probe foot with small flow resistance, easily separable and prepared for connection of weights



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FRANK GET-system

modular plastic brine collector Type 2061

- collector with integrated flow meter (7-32 l/min) and regulating valves on every circuit
- special plastic collector for brine distribution in geothermal probes, collector pipes or basket collectors
- easy installation and economic storage by modular system and assembling without tools
- maximum flow rate up to 7,7 m³/h (approx. 6-8 probe circuits, depending on flow loss calculation)



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standard collector manholes

- Type 1 :
4 to 20 circuits,
1 or 1,4 m diameter,
1,25-1,75 m height
- Type 2 :
4 to 6 circuits,
1 x 0,5 x 0,5 m (l x w x h)
- Type 3 :
2 or 3 circuits,
0,4 x 0,4 m (d x h)



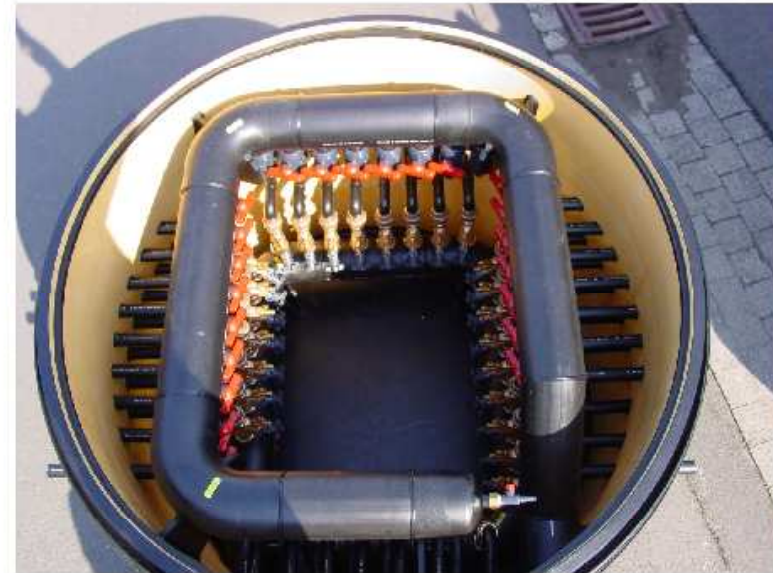
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custommade collector manholes

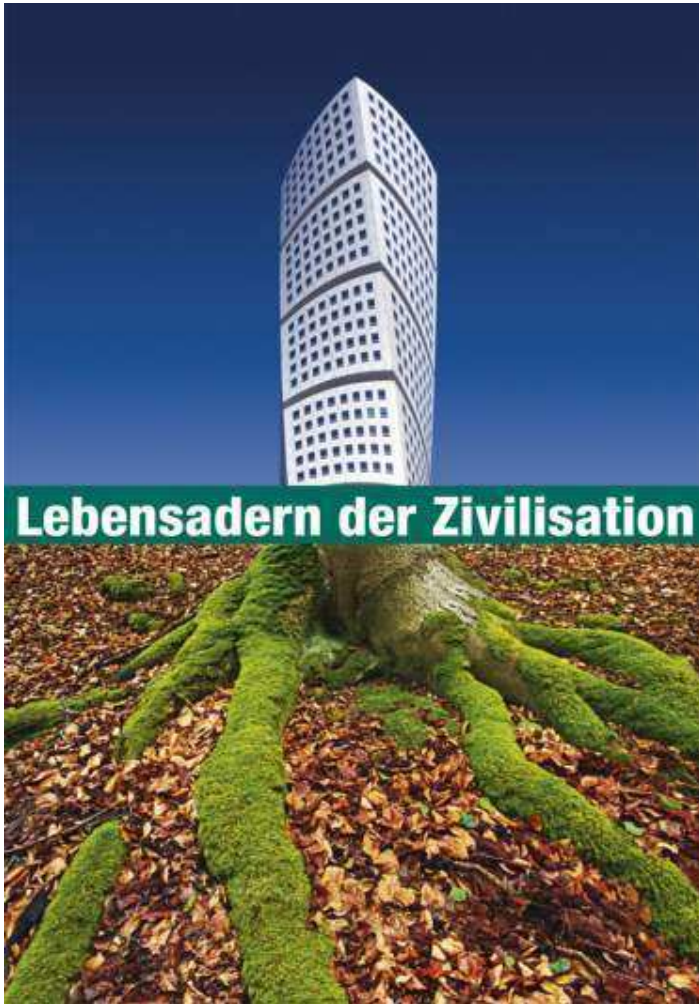
- collector manholes with more than 20 circuits, big systems for up to 200 double probes already in realization
- for traffic loads, against water pressure or for very high flow rates / operation pressures
- any kind of valve or flow meter can be integrated
- special collectors can also be designed for installation in a concrete manhole
- „anything is possible !“



FRANK GET-System_AHK 03/2010 S. 9



Thank you for your attention !



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