GSHP association

REHAU
Unlimited Polymer Solutions

INNOVATIONS IN HEAT EXTRACTION

GSHPA ANNUAL CONFERENCE, LONDON, 10.7.14 – STEVE RICHMOND

REHAU WORLDWIDE

THINK GLOBALLY – ACT LOCALLY

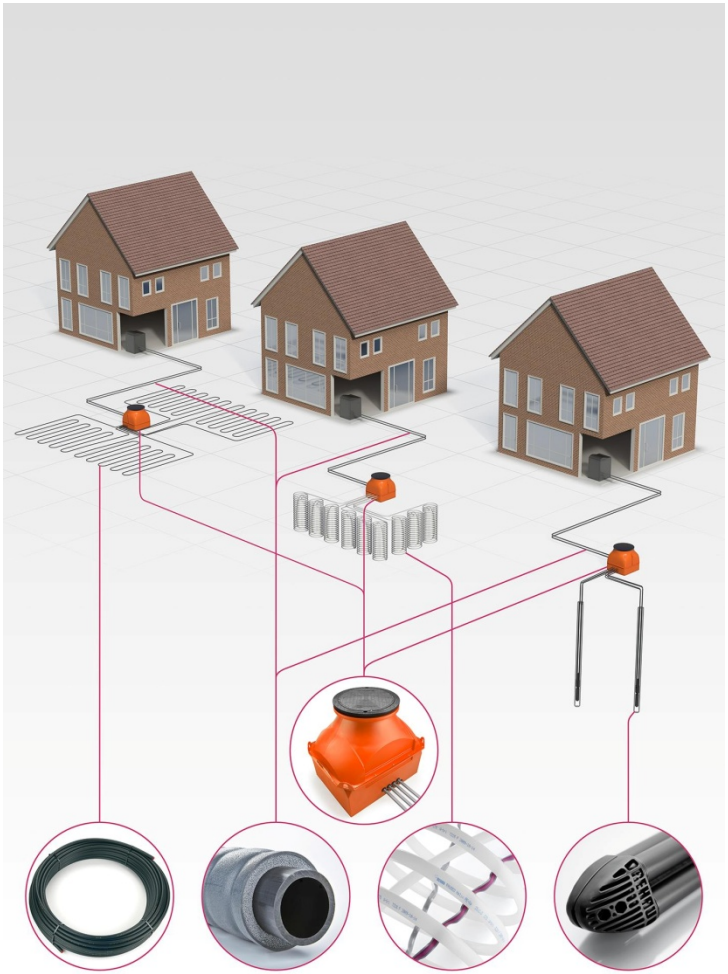
6 CONTINENTS

174 LOCATIONS

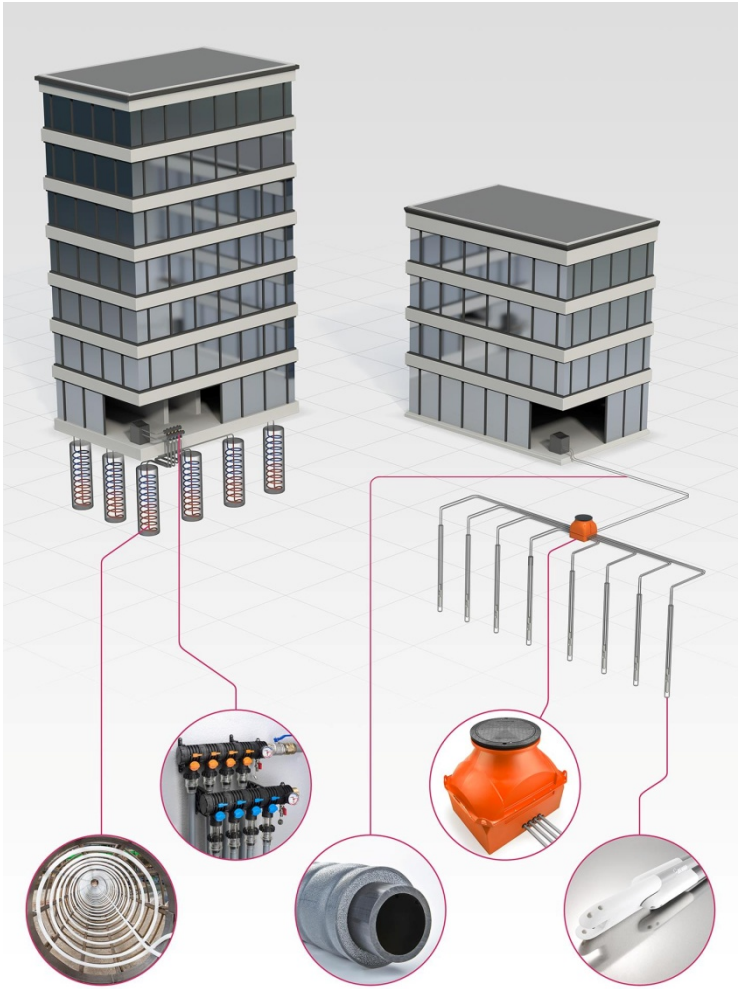
OVER 17,000 EMPLOYEES

REHAU SOLUTIONS FOR GROUND SOURCE HEATING SYSTEMS

PRODUCT PORTFOLIO



- PE-Xa pipe
- PE 100-RC pipe
- PE 100 pipe
- Manifolds
- Manifold chambers
- Insulated header pipe



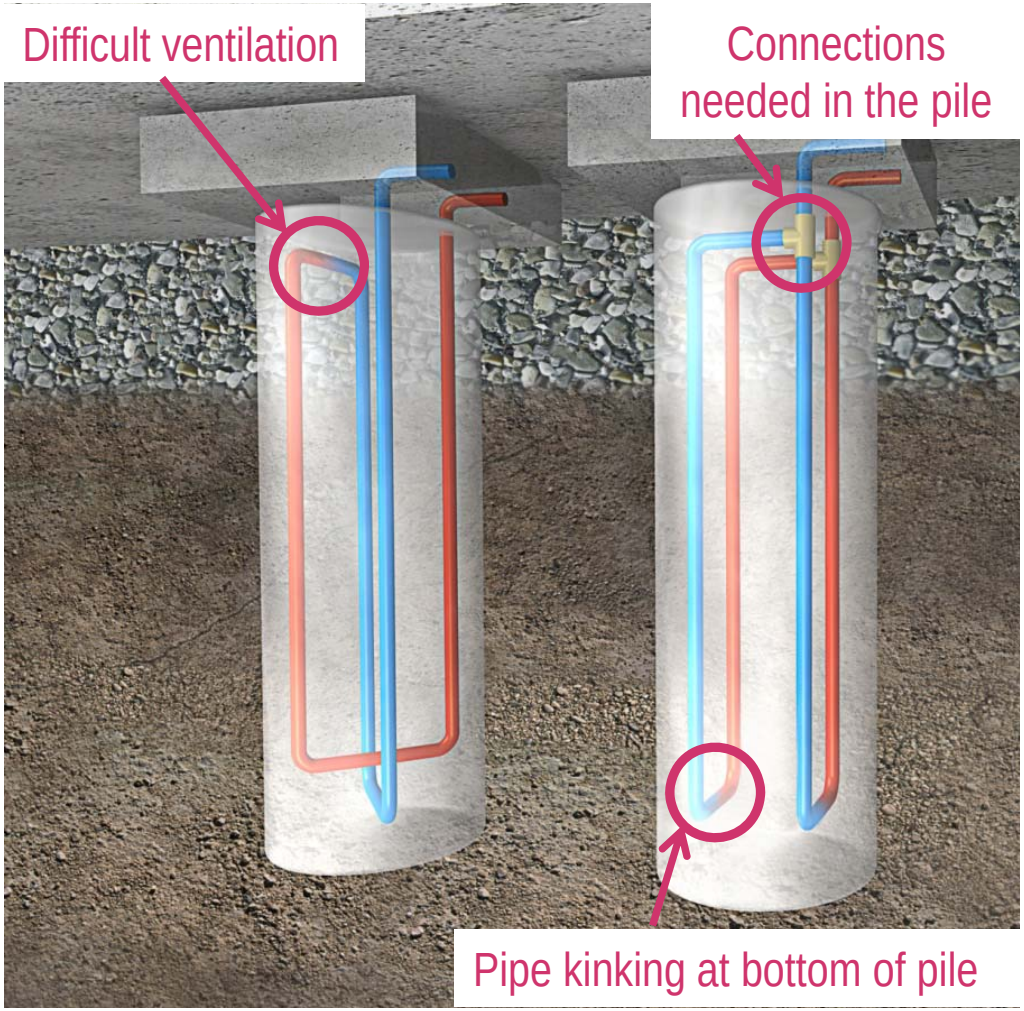
CURRENT THERMAL PILE POTENTIAL ISSUES

UK THERMAL PILE EXPERIENCES

Potential problems include:

PE 100 pipe failures

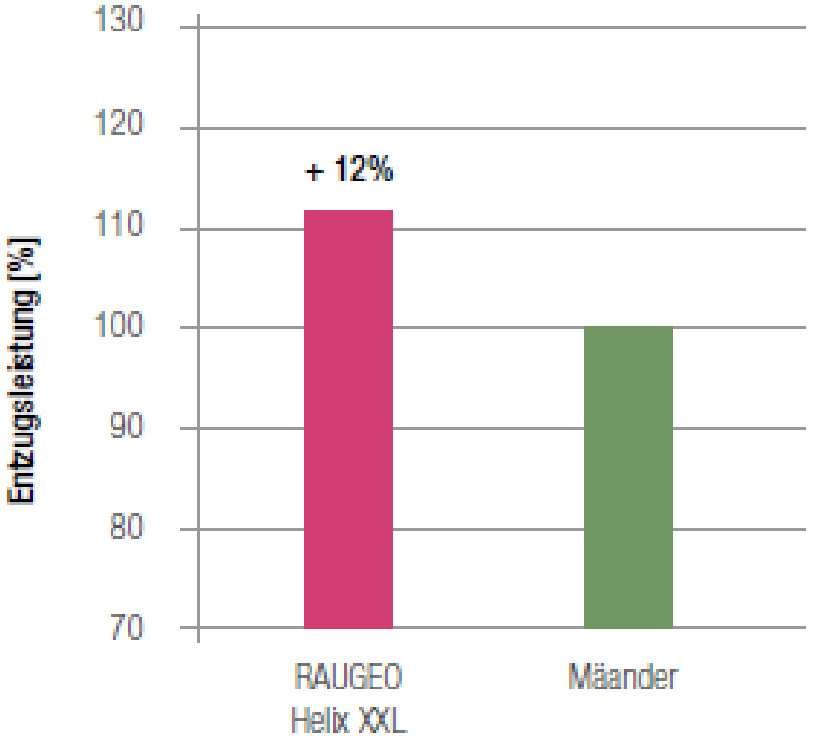
Time intensive installation



HELIX XXL – DESIGNED FOR THERMAL PILES

BETTER ENERGY EXTRACTION

Improved extraction value (up to 12% higher) due to higher surface area of flow pipe & no thermal short circuit on return pipe.



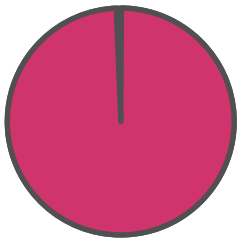
Results from testing helix geometry on pilot project in Italy supported by University of Padua (Thermal Response Test and Simulation).

HELIX XXL – DESIGNED FOR THERMAL PILES

INSTALLATION TIME HALVED

Conventional meander

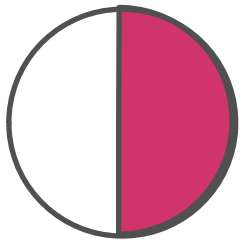
100% time



- Unwind the pipe coil
- Multiple insertion, bending, fixing
- Create connections where necessary

Helix XXL

50% time



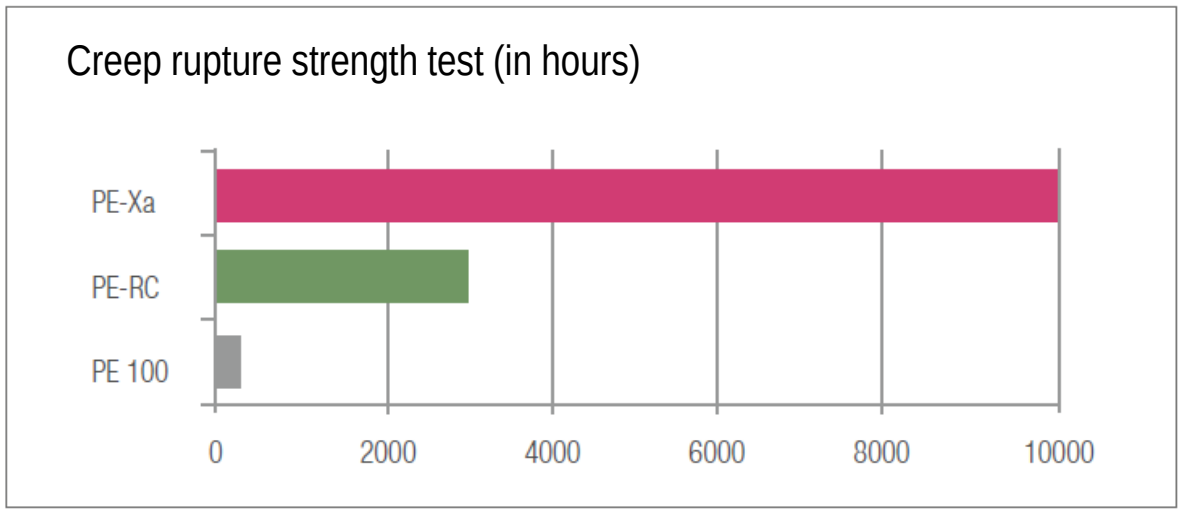
- Pull out to the installation length
- Insert into the reinforcing cage
- Fix

HELIX XXL – DESIGNED FOR THERMAL PILES

HIGHER MECHANICAL RESISTANCE

PE-Xa is extremely robust and resistant to damage due to scoring, grooves or point loads, and is therefore ideally suited for handling on the construction site, installation and backfilling of the pile.

Current Helix XXL failure rate = 0%



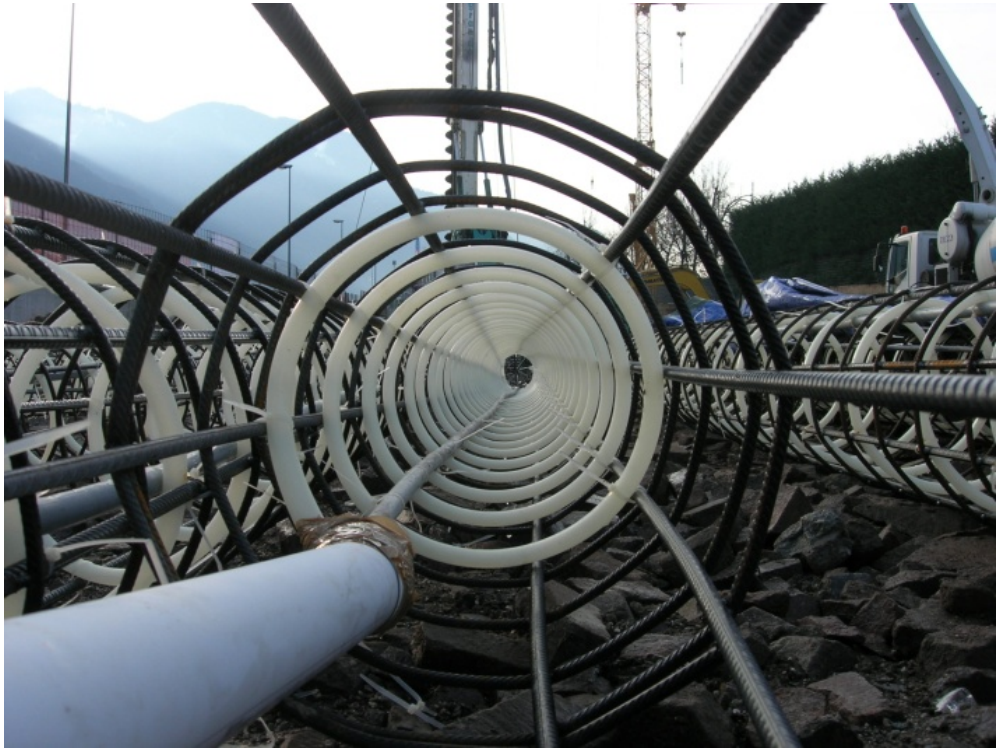
HELIX XXL – CASE STUDIES

PROVEN IN PRACTICE

Office building in Italy

65 Helix XXL

15m piles, diameter 400mm



Office building in Karlsruhe, Germany

32 Helix XXL

12-15m piles, diameter 880mm

HELIX XXL – CASE STUDIES

PROVEN IN PRACTICE

Health Institute in Mannheim, Germany

82 Helix XXL

12m piles, diameter 750mm

Office building in Ravensburg, Germany

49 Helix XXL

18m piles, diameter 880mm

HIGH PRESSURE REINFORCED (HPR) PROBES

TRUE GEOTHERMAL ENERGY

Standard ground source probes can typically be installed at maximum depths of 200-300m.

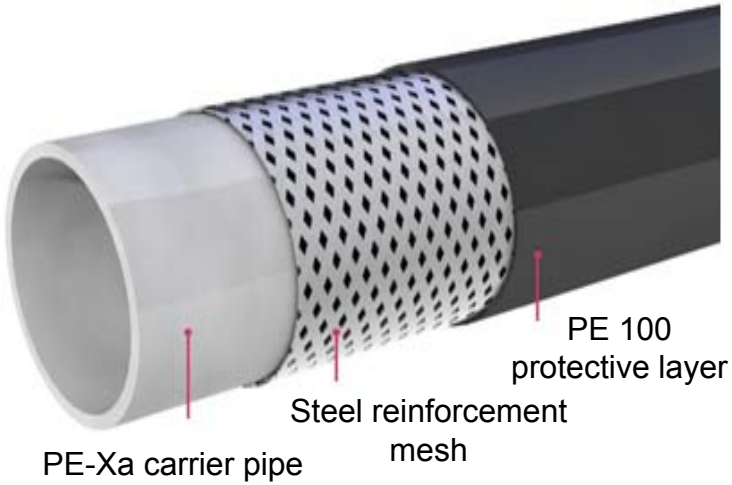
There are advantages of going deeper:

- Increased SPF of the heat pump due to higher ground temperatures (up to 35°C)
- Less space required
- In thermal anomalies, might not need even a heat pump

HIGH PRESSURE REINFORCED (HPR) PROBES

PROBE OPTIONS

- Pressure-resistant up to 100 bar (800m depth)
- Temperature-resistant up to 80 °C
- Coaxial or double-U variants
- Coaxial probes have heat extraction advantages



HIGH PRESSURE REINFORCED (HPR) PROBES

CASE STUDIES

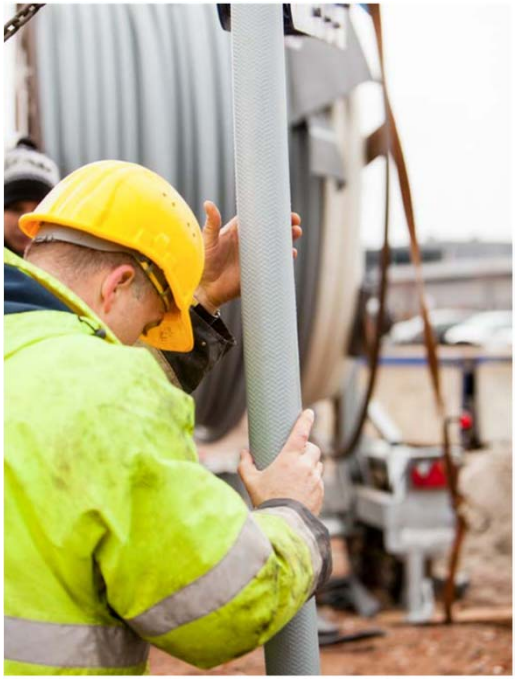
Car dealership in Germany

80kW evaporator load

800m depth

Est. 40°C return temp. from probe

75mm coaxial HPR probe



Large house in Switzerland

54kW evaporator load

450m depth

Est. 60W/m extraction

90mm coaxial HPR probe

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THANK YOU FOR YOUR ATTENTION

ANY QUESTIONS?