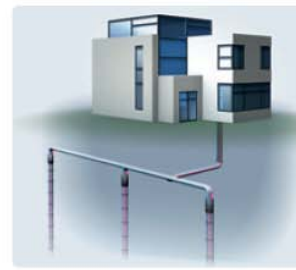
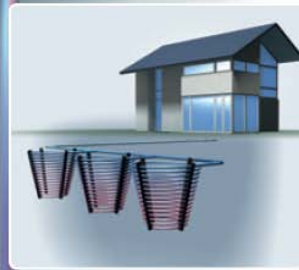
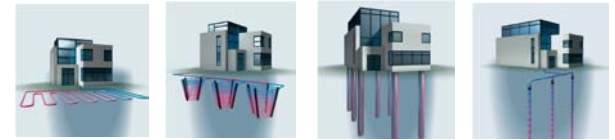


Ground Energy Components and Systems



Energy Portfolio
New Components
Launch Q1 2012

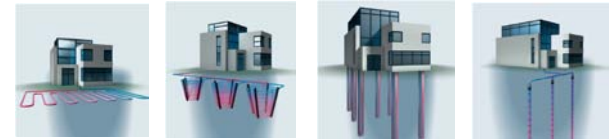
System Components



- Ground Energy Pipe – PE-Xa
 - Dim 20 – 50mm, SDR 11
 - Coil size: 50, 100, (150), 200 m
 - Option: customer made
 - Natural colored Inliner with black outer jacket
 - UV resistance regarding DVGW GW 335 (2 years)
 - Connection technology Q&E and electrofusion fitting
 - Branding: „Uponor Ground Energy“



System Components



- Uponor Ground Energy Manifold

- Modular System
- Ground Energy supply and return flow segment 1 ½"
 - Material: Polyamid
 - Distance outgoing: 100 mm
 - Max. operating temp.: 60 °C
 - Max. operating pressure: 6 bar

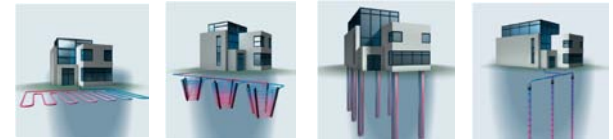


- Bajonet Joint 32 und 40 mm

- Material: Brass



System Components



- in combination with
 - Industrial Manifold Basic Kit
 - Industrial Manifold Bracket Kit
 - Industrial Manifold Flowmeter



Number of needed brackets

loops	2-5	6-9	10-14	15-19	20
bracket	2	3	4	5	6

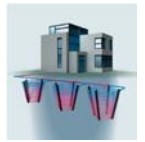
System Components



- Uponor Industrial Manifold
 - Modular System
 - Ground Energy supply and return flow segment 1 ½"
 - Polyamid
 - Distance outgoing: 100 mm
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System Components

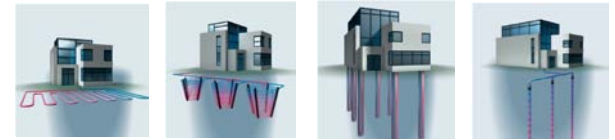


- Energy Cage

- Size
 - Uponor Energy Cage
 - Uponor Energy Cage XL
- Konical shape
- Uponor Ground Energy PE-Xa, dim 32x2,9mm,
- Coil length 150 or 200 m
incl. 20 resp. 25 m connection line
- PU framework, color grey with Uponor branding
 - Fixed pipe distance
 - Easy handling
- Traceability via Quality tag



System Components

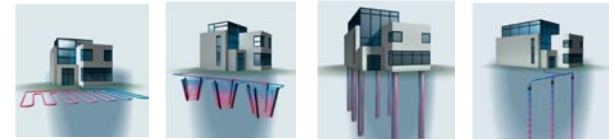


- Uponor Electrofusion Fitting

- Permanent connection
- Material: Polyethylen PE100
 - Max. operating temp.: 40 °C
 - Max. operating pressure: 16 bar
- Pure plastic connection
- No additional sealing elements
- No cross-section reduction
- Welding license and special welding tool necessary
- Available Fittings:
 - U-bend 25
 - Y-piece
 - 25-25-32, 32-32-40 and 40-40-50
 - Coupler
 - 32, 40 and 50



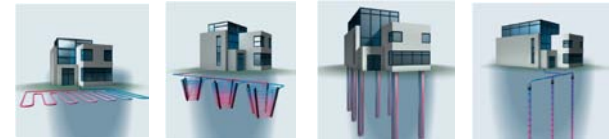
System Components



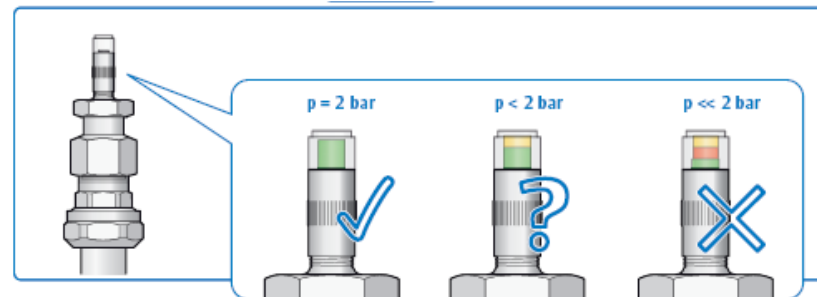
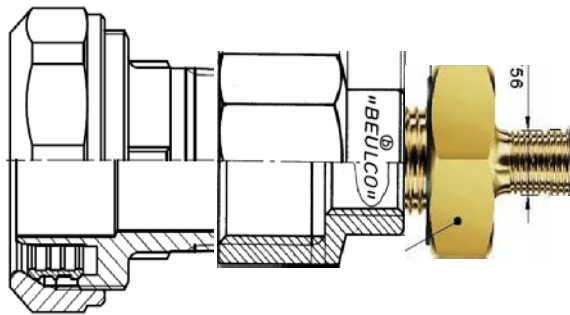
- Uponor Quick & Easy
 - Permanent PE-Xa Connection
 - Material: Polyphenylsulfon PPSU
 - Max. operating temp.: 95 °C
 - Max. operating pressure: 6 bar
 - Pure plastic connection
 - No additional sealing elements
 - No cross-section reduction
 - All necessary parts from 20 – 63 mm
 - No additional permission necessary
 - Uponor Tools
 - Milwaukee M18
 - Hydraulic tool



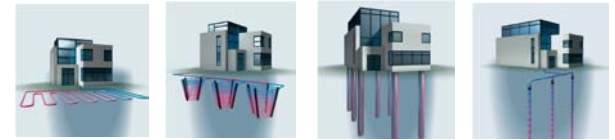
System Components



- Accessory
 - Uponor Pressure Monitoring Fitting
 - PE-Xa Dimension 20 and 25 mm
 - Clamp Screw Connection
 - (Tire)vent
 - Pressure Indicator: color scale



System Components

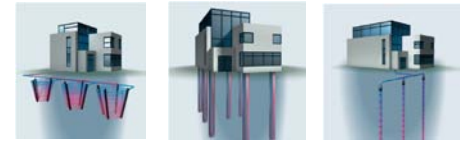


- Accessory

- Hooks
 - PE-Xa Dimension 25, 32 and 40 mm
- Drill-Tool
- Nylon Ties
 - length 200 mm
 - length 300 mm
- Pipe support bend (Flipflex)
 - 16 – 20 mm
 - 21 – 25 mm
- Spacers
 - for 25 mm and 40 mm PE-Xa pipes
- Warning Tape



System Components

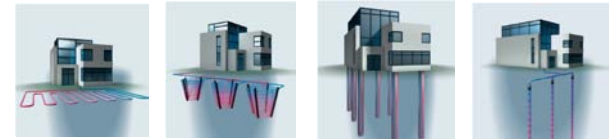


- Connection Pipes

- Ecoflex Thermo Mini
 - 25/68
 - 32/68
- Ecoflex Thermo Twin
 - 2 x 25/175
 - 2 x 32/175
 - 2 x 40/175
 - 2 x 50/200
- Ecoflex Wall Seal
 - 68, 175 and 200 mm
- Ecoflex Fibre Cement Pipe
 - 68, 175 and 200 mm
- Ecoflex Rubber End Cap
 - 25-40/68
 - 25-40/175
 - 40-63/200



System Components



- EPG 6
 - C46 Controller included
 - Full temperature and humidity control
 - Integration to DEM
 - Heating / Cooling change over
 - Compatible to all Ground Energy Sources
 - Work as a stand alone System
 - Combination with all traditional Heat Source (HP-solution are not able to handle this)
 - max. 6 kW

Main Application single family house



Energy Portfolio - PE80 Components

Ground Energy – PE 80

- Uponor Horizontal Collector
 - PE 80, 40 x 2,4 mm, PN 8
 - Length 100 – 500 m

- Uponor Vertical Collector – U-Collector
 - PE 80, 40 x 2,4 mm, PN 8
 - Length 50 – 250 m



Ground Energy – PE 80

- Bottom parts and submerged weights



Separate return bend for bedrock or lake energy heat with attachment eye for sink weight or drag line.
Pipe connection 40 mm



Cast iron weight 8.5 kg



Round sink weight PE 10.5 kg



Return bend protection. For aligning the bottom of the bedrock heat collector and preventing it from scraping against the borehole wall.



Distance weight 12 kg to be fitted usually with c/c 3 m for 40 mm pipe.



Assembly tie nylon

Ground Energy – PE 80

- Top parts and submerged weights



Rubber cover with steel plate 138-168 mm



Expander cover for steel pipe 138 mm / 168 mm



T-pipe 40 mm with venting nipple for electrofusion welding



PEM 40 x 3.7 PN 10 6 m straight length
PEM 40 x 2.4 PN 6.3 6 m straight length



Wall elbow 40 mm L=1 m



Snap-on cover 315 mm for inspection well



Culvert 315/273 L=2 m for snap-on cover



Duplex 315/277 L=3 m for ductile iron cover



Round ductile iron cover for garage approach with paving



Square ductile iron cover for garage approach with paving

Ground Energy – PE 80

- Chambers



Distribution pipe inside with
- ball valve on inlet/outlet
- Flow guard control valve (inlet)
and ball valve (outlet)

Connection for 2 – 10 collectors



Distribution pipe inside with
- ball valve on inlet/outlet
- Flow guard control valve (inlet)
and ball valve (outlet)

Connection for 2 – 18 collectors
Extending Cover for trafficload of 40 tons
63mm / 110mm connection to heat pump

Existing Ground Energy system

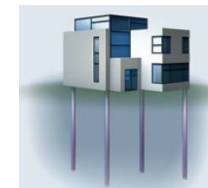
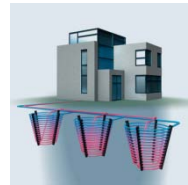
- Ground Energy Manifold
2 – 10 collectors, additional outlets possible
with ball valve and/or flow guard control
- Anti freeze
 - Bioethanol 25 l
 - Propylene glycol 25 l
 - Ethylene glycol 25 l
- Electro fusion pipe parts, dim 40 / 63
(sleeve, bend 90°, bend 45°, ...)



Energy Portfolio CE System Overview

System Overview

System



New building

x

x

x

x

Renovation

partly

x

x

-

Heating:

< 30 kW

x

x

x

x

> 30 kW

-

partly

x

x

Cooling:

- free

partly

x

x

x

- active

-

-

x

partly

Additional System combination:

EPG – Cooling Package

x

x

x

-

Thank ´s for your attention!