



Geothermal heating with CO<sub>2</sub> – in the interests of the environment



**ORANGE  
COUNTY**

**UK Distributor**  
t: +44 (0)1388 813433  
f: +44 (0)1388 813307  
sales@orangecounty.co.uk  
www.orangecounty.co.uk

**BRUGG** PIPESYSTEMS  
Flexible solutions



Taking the heat out of the earth

### CO<sub>2</sub> neutral

The geothermal heat sensor GECO<sub>2</sub>® from BRUGG Rohrsysteme GmbH makes it possible to draw heat from the ground using CO<sub>2</sub> as transport medium and to feed it into your heating system.

GECO<sub>2</sub>® consists of a helically corrugated pipe and a pressure vessel with an integrated heat exchanger.

### No pump needed

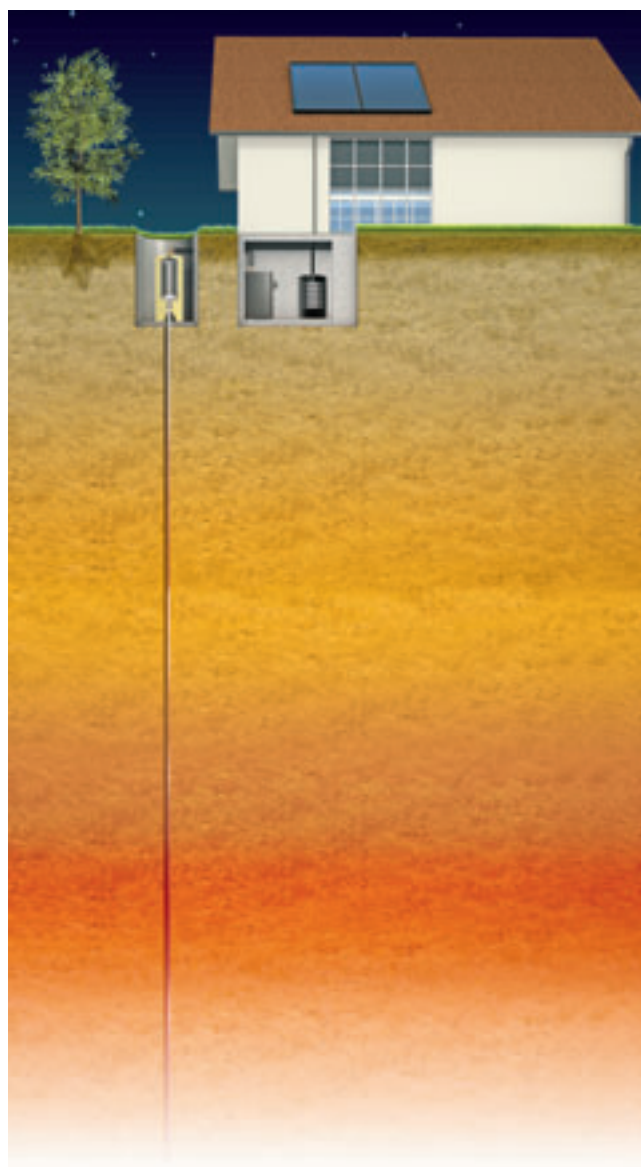
The decisive advantage compared with conventional systems such as brine pipes is that using CO<sub>2</sub> eliminates the need for a pump and thus enables heat to be drawn from the ground without using electricity.

### Whatever the weather

And that pays dividends – because there is a constant temperature of 13 °C 100 m below ground level, and this is what we want to tap in a world of ever-diminishing resources. In contrast to other forms of regenerative energy, it can be done all year round, completely independent of the weather and seasonal influences.

### Suitable for water protection areas

The use of CO<sub>2</sub> is completely free of environmental risks in water protection areas too.



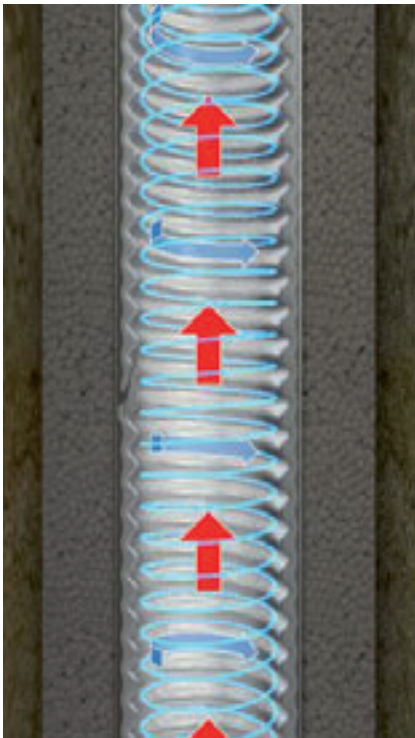
... CO<sub>2</sub> is self-actuating

### The saucepan principle

The CO<sub>2</sub> in our geothermal pipe rises out of the depths as a gas by itself like steam in a saucepan. At the top it enters the heat exchanger and condenses there, transferring its heat to the coolant.

### Helical corrugation

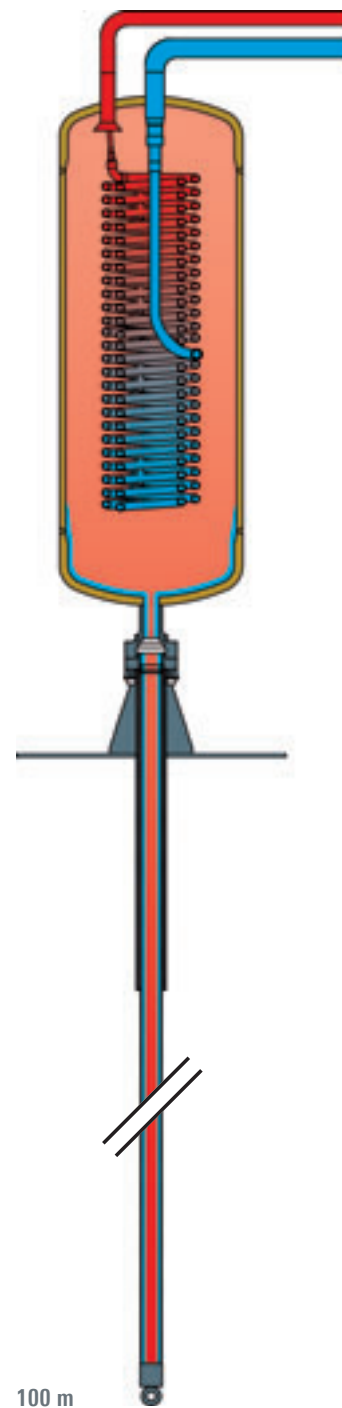
Thanks to the helical corrugation of the BRUGG pipe, the CO<sub>2</sub> condensate can run back unobstructed into the geothermic probe without colliding with the constant upward flow of gaseous CO<sub>2</sub>. There is thus no danger of the flow of the film being interrupted as in smooth-walled or parallel corrugated pipes.



### Heat which costs nothing

Once this heat – which costs nothing – has arrived at the surface, it is fed by the heat exchanger into the heat pump already installed in the house and compressed there till it reaches the required temperature for use.

Then your geothermal heat is ready to use.



100 m

#### The geothermal pipe

EWR 39/44 DN 32

Inner Diameter	39 mm
Outer Diameter	44 mm
Length	80/100/130 m

#### Pressure vessel

acc. to DGRL 97/23/EG

Vessel made of steel, corrosion-resistant and heat-insulated

Heat transport medium	CO <sub>2</sub>
Max. permissible pressure	50 bar
Max. permissible temperature	-10 °C/+12 °C
Volume	30 l

#### Thermal evaporator

Medium R407C or R410A or R134a

Max. permissible pressure	20 bar
Max. permissible temperature	32 °C

Type	Height container	Evaporator volume	Total weight pressure vessel	Volume pressure vessel	Pit size diameter/height
WT 25	860 mm	ca. 2.1 l	ca. 40 kg	19.0 l	1300/1890 mm
WT 35	1000 mm	ca. 3.0 l	ca. 50 kg	25.5 l	1300/2140 mm
WT 45	1154 mm	ca. 3.7 l	ca. 55 kg	29.0 l	1300/2140 mm
WT 55	1230 mm	ca. 5.0 l	ca. 68 kg	36.7 l	1300/2390 mm

#### Design

We work out the best system solution for you depending on your heating needs and the type of soil.

#### Drilling

Drilling the hole for the sensor probe must be done by a specialist contractor certified according to DVGW W120 G1 or G2.

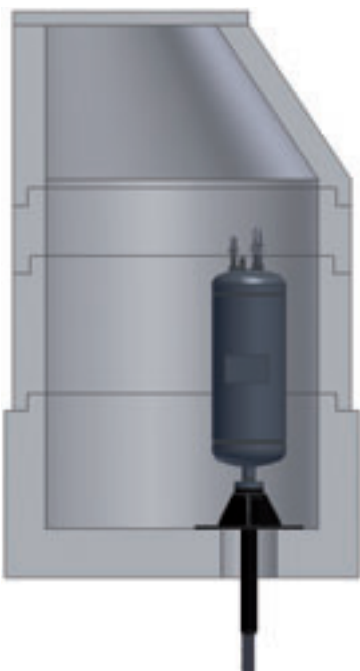
#### Sinking the sensor probe

The sensor probe is sunk into the ground with the help of additional weights; after this it is filled in with ThermoCem<sup>®</sup>.

#### Installing the vessel

The geothermal pipe is joined to the vessel by means of a connector fitting.

The connection of the thermal evaporator to a heat pump installation is then carried out by a specialized company for air-conditioning and refrigeration systems.



... the advantages

### Environmentally friendly

The danger of contaminating the ground water is eliminated due to the use of CO<sub>2</sub> as a coolant; this is the reason why GECO<sub>2</sub><sup>®</sup> can also be used in water protection areas.

### Energy-efficient

A helically corrugated stainless steel pipe with optimal heat transfer properties.

Since no circulation pump is needed, no power is required to drive a brine pump, which means a higher coefficient of performance for the heat pump.

### Economical

Sustainable (CO<sub>2</sub> neutral) energy consumption at zero cost.

GECO<sub>2</sub><sup>®</sup> has up to 35 % better performance compared with a brine probe system.

Thanks to the stainless steel pipe (no corrosion) GECO<sub>2</sub><sup>®</sup> has a longer service life than copper probes.

### Independent of weather conditions

Geothermal resources are completely unaffected by temperature fluctuations due to weather conditions or seasonal changes and thus available at all times.

### CE checked by the TÜV

### Included in delivery package

- Probe pipe EWR 39/44 with additional weights
- Pressure vessel with integrated heat exchanger
- Pedestal for container
- Project design and engineering
- Support when installing the geothermal heating system and putting it into operation

### To be done by the contractor

- Drilling the hole
- Sinking the pit



# Pipe systems for the future

District heating – Industry – Petrol stations – System packages



## Your partner for pipe systems

We are the people you should talk to when you need to find efficient solutions for transporting liquid materials. With our project engineers, development department, in-house production unit and our professional team of fitters, we have the know-how and the resources to look after your projects competently and reliably. For all types of heating systems, petrol station construction, industrial plant construction and system packages.

## Customer-specific solutions

Brugg is the full service provider in the field of single-wall, double-wall and insulated pipe systems. This know-how allows us to manufacture project-specific customised items.

## Give us a call!

Our engineers would be pleased to advise you and find a made-to-measure solution.

## International network

Our global partnership network can be reached on site at any time. More than 34 partners in 20 different countries will look after you wherever you are.

### Brugg Rohrsystem AG

Industriestrasse 39  
CH-5314 Kleindöttingen  
phone +41 (0)56 268 78 78  
fax +41 (0)56 268 78 79  
pipesystems@brugg.com  
www.pipesystems.com

### BRUGG Rohrsysteme GmbH

Adolf-Oesterheld-Straße 31  
D-31515 Wunstorf  
phone +49 (0)50 31 170-0  
fax +49 (0)50 31 170-170  
info@brugg.de  
www.brugg.de

A company of the BRUGG Group



### UK Distributor

t: +44 (0)1388 813433  
f: +44 (0)1388 813307  
sales@orangecounty.co.uk  
www.orangecounty.co.uk

**BRUGG**

**PIPESYSTEMS**  
Flexible solutions