

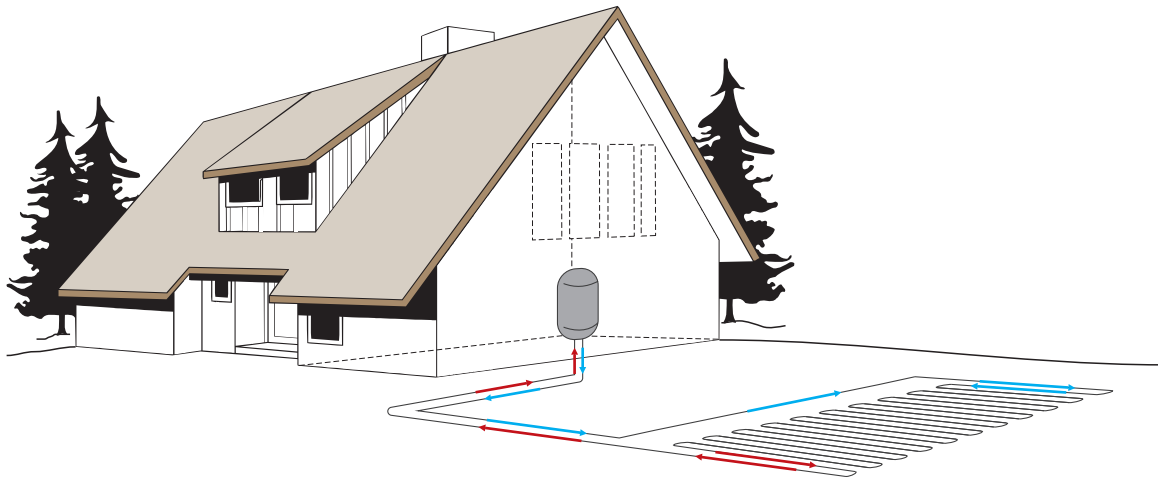
# TOTRAGEOTERM

The **Geoterm programme** includes the systems which collect the geothermal energy that we have under our feet - accumulated energy from heat which is provided by the sun and Earth's hot core.

## PE pipes for the assembly of a ground collector

Horizontal ground collectors are a cheaper alternative to vertical Geoterm probes. Polyethylene pipes (PE HD) that are 25mm or more in diameter are appropriate for its assembly.

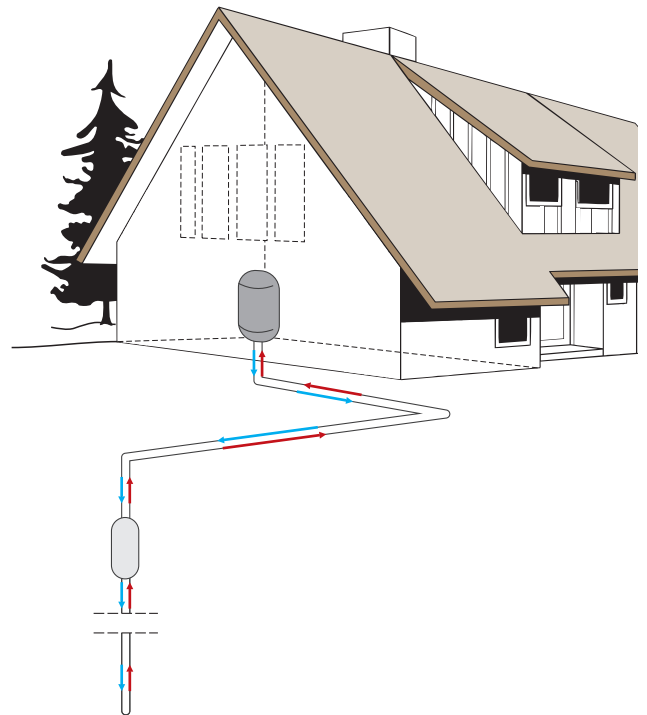
The collector is made of one or more 100m-long loops which are buried horizontally into the ground at the depth of approximately 1.2 to 1.8m. The heat from the ground is transferred to the heat pump via the collector containing the media in a closed loop.



## PE Geoterm probe

Technically, the geoterm probe is a bore hole of various depths in which a closed loop system is inserted, through which a medium flows and, due to its lower temperature, collects the heat from its surroundings (geothermal energy), is heated up and brings it to the heat pump. The probes are usually placed up to the depth of 140 meters.

Probes are assembled from pipes, made from the PE 100 type material. A probe is made of four pipes, welded at the ends in a double U pipe. When inserting the probe into the bore hole the spacers are installed at regular intervals, which ensure the pipes are evenly spread along the width of the borehole. There is also a middle pipe which is intended for the final filling of the hole with liquid concrete; at the end after the probe has been inserted and has withstood a pressure test. Concrete filling improves the thermal conductivity and thus the effectiveness of the operation of the probe as a heat exchanger.



**THE USE OF GEOTHERMAL ENERGY  
DECREASES GREENHOUSE GAS  
EMISSIONS!**

## Short instructions for correct installation of the probe

Transport and storage of the probe avoid causing mechanical damage to the PE 100 pipes that comprise the probe and which are welded into a loop at the ends.

Before installation into the bore hole check the length of the probe with its declared marking, e.g. GT 120. The coils have running meters with a starting mark of =000=, which continues to the end of the length; which is 5 meters longer than the declared size. In the case of the GT 120 probe the marking on its final meter is =125=.

The installation of the probe into an already prepared borehole is carried out with specialised equipment, which ensures uniform uncoiling of the coils in the vertical direction without causing additional mechanical strain; which could result in subsequent leakages in the probe and its destruction.

In the event of mechanical damage to the pipe surface, deeper than 10% of the wall thickness, the probe is not appropriate for installation; unless the site of the damage is repaired by using a procedure of electro-fusion resistance welding with special fittings, which ensures the tightness of the joint.

Removing the probe from the hole is not recommended, since the probe is useless even if the removal is successful because of tensile overloads, additional damage and scratch marks along the length of the pipe.

If the probe is worked on, for example welded, the instructions for implementation should be strictly followed, in order to ensure the tightness of the joints as defined by the prescribed welding procedures.

A pressure test and subsequent connections of the probes are carried out in accordance with valid requirements or regulations. The manufacturer of probes is obligated to produce an appropriate test report in accordance with valid standards or regulations.

In the event of a complaint by the installer or investor, the documentation – or installer's implementation instructions – is examined on site and, in the event of established deviations from the requirements, appropriate corrective measures are carried out.

The activities, connected to the assembly and installation of probes and subsequent connections, can be performed only by attested welders and specialists with appropriate training.

