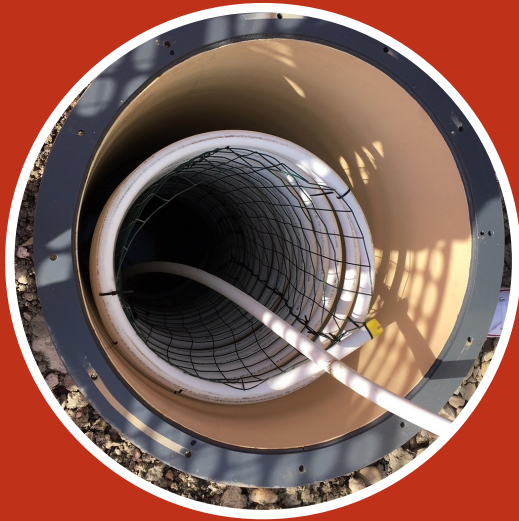


PROTECTION SYSTEM FOR VERTICAL BOREHOLE HEATEXCHANGERS

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The invention refers to an innovative way to install probes in the ground. New perspectives arise for designers, probes installers and final users. The patented technology increases Vertical Geothermal Probes' reliability compared to the currently existing technologies and allows to easily inspect, maintain and eventually replace the probe in case of malfunction over time.

Patent: granted IT, DE, NL

Inventors: Fancesco Tinti, Sara Focaccia

Technology Readiness Level: 4

INVENTION

The patented technology provides for the insertion of the probes first in an **innovative protection system** and then in the ground. The heat carrier fluid to be injected into the annulus between the probes and the protection system makes it possible to **improve the heat transfer** between the probe and the ground, **enhancing the ability to extract energy** from the subsoil, thanks to the triggering of natural induced convection phenomena.

ADVANTAGES

- higher reliability and verticality control of the probe
- better control of the overall thermal resistance of the borehole
- improved heat transfer and energy efficiency
- lower risk of thermal vector fluids' leakage into the ground water.

APPLICATIONS

- geothermal heat pumps for air conditioning of buildings
- thermal energy recovery applications

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