

GEOHERMAL PROBES TURBO PE100 /PERC/ HIGH EFFICIENT SYSTEM

GLOBAL PATENT



APPLICATION

Geothermal probes for extraction energy from the ground.



WHAT IS THE GEOHERMAL PROBE?

Ground source heat exchangers (GSHEX's) are integral elements of ground heat pump installation. We recommend Turbo Collector GSHEX's which is a patented development of the traditional GSHEX (with helical fins as opposed to the traditional smooth pipe) its proven to be better with its heat transfer and lower energy input from circulation pumps.



TURBOCOLLECTOR® PROPERTIES

- ✓ high efficient installation
- ✓ lower running cost of the system
- ✓ available as different models and types
- ✓ 100% made by specialistics
- ✓ flow and pressure qualified

PROPERTIES	UNIT	VALUE	TEST METHOD
Density	[kg/m ³]	959	ISO 1872-2 / ISO 1183
Melt index	[g/10min]	0.25	ISO 1133 190°C / 5.0kg
Tensile modulus	[MPa]	1100	ISO 527-2
Long-term crawl modulus	[MPa]	1200	DIN 19537-2 A
Short-term crawl modulus	[MPa]	210	DIN 19537-2 A
Coefficient of linear expansion	[mm/m/°C]	0.20	ASTM D 696 (20-90°C)
Thermal conductivity	[W/m/°C]	0.4	-
MRS value	[MPa]	10	ISO 12162 / ISO 9080
Thermal stability	OIT, 210°C [MIN]	>20	EN 728
Carbon Black content	[%]	≥2	ATM D 1603

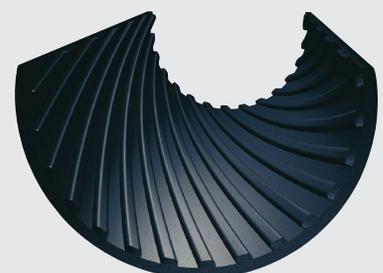
TYPE OF TURBOCOLLECTOR®

2x40mm TURBO COLLECTOR®	PE	40x2.4	PN10 PE100 SDR17
2x40mm TURBO COLLECTOR®	PE	40x3.0	PN12.5 PE100 SDR13.6
2x40mm TURBO COLLECTOR®	PE	40x3.7	PN16 PE100 SDR11
2x32mm TURBO COLLECTOR®	PE	32x2.0	PN10 PE100 SDR17
2x32mm TURBO COLLECTOR®	PE	32x3.0	PN16 PE100 SDR11
4x40mm TURBO COLLECTOR®	PE	40x2.4	PN10 PE100 SDR17
4x40mm TURBO COLLECTOR®	PE	40x3.0	PN12.5 PE100 SDR13.6
4x40mm TURBO COLLECTOR®	PE	40x3.7	PN16 PE100 SDR11
4x32mm TURBO COLLECTOR®	PE	32x2.0	PN10 PE100 SDR17
4x32mm TURBO COLLECTOR®	PE	32x3.0	PN16 PE100 SDR11



BENEFITS FOR USERS

Better heat conductivity, high COP coefficient, same installation method, low operating costs, same investment value, faster payback of entire system.



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ENERGETIC PARAMETERS

Heat transfer inside of ground source installations is measured by borehole resistance R_b and it has an influence for COP coefficient. Both parameters can be improved only by TurboCollector exchangers.

	SMOOTH COLLECTOR		TURBOCOLLECTOR®	Turbulent flow characteristic inside of MuoviTech TurboCollector systems is achieved by the same running parameters of circulation pump.
	Low flow rate	High flow rate		
THERMAL RESISTANCE	HIGH -	LOW +	LOW +	
PRESSURE DROP	LOW +	HIGH -	LOW +	

Ground Source t temperature increase of 1°C improves COP coefficient.

$$\eta_{\text{CARNOT}} = \frac{T \text{ [K]}}{T - t \text{ [}^\circ\text{C]}}$$

$$\text{COP} = \eta \cdot 0,5$$

BENEFITS FOR END USERS

- TurboCollector® gives faster pay back time and a greater value on sale.
- TurboCollector® allows the heat pump to use less energy because it runs with a lower flow rate.
- Heat pump service life is longer and require less maintenance.
- The characteristics of TurboCollector® make the heat pump works longer time before turning over to direct electricity at peak loads.



WHAT IS THE MAGIC?

TurboCollector® is a patented development with fins inside the pipe. The fins gives more turbulent flow and extract more energy than a traditional smooth pipe.