

## EcoHeat 406-412 ground-to-water heat pumps

EcoHeat 400 is based on a proved compact design, bringing plenty of innovation and new technologies which ranks this model among the world's best in its class.

The heat output line involves 6, 8, 10 and 12kW models. **A high COP excels among other technical parameters, reaching as much as 5.5 in low-temperature systems! These values are reached due to the use of the most advanced technologies, namely of a new electronic expansion valve. Flow temperature can be as high as 65°C!** Domestic hot water is heated instantaneously in a copper heat exchanger inside the thermal store which guarantees always fresh water without any risk of Legionella bacteria formation that is detrimental to human health.

EcoHeat is a compact unit containing a ground source heat pump and a multi-energy thermal store incl. a smart controller with a colour touch screen and intuitive control.

EcoHeat heat pumps draw heat either from deep bores or from sub-surface ground collectors. The unit is placed inside a house and connected with the ground loops with 2 pipes. Its main advantage is a stable output and COP even under fierce frost. The multi-energy thermal store represents an entire boiler room. After easy connection to el. power supply, heating system and water mains it covers complete thermal needs of a house - heating, heat storing, DHW heating by a heat pump and integrated 9kW el. heating element. It is self-understood that also solar thermal collectors, hydronic fireplace insert or other heat sources can be connected. Its compact build excels in a low heat loss and a very small footprint.

The unit contains an electronic controller that manages to control 2 independent weather compensated heating circuits, DHW heating, heat pump operation and to switch its electric heating element. The heating system is controlled with respect to both outdoor temperature (OTC) and indoor room sensor. Temperature sensors for heating circuits and an outdoor temperature sensor are all contained in the package. Heating water is being mixed according to momentary needs in a special inbuilt 4-way valve. A possible second heating circuit shall be equipped with a 3-way mixing valve and if needed also with a second room temperature sensor (Regulus accessories).



EcoHeat is divided into two sections for the most efficient operation of the heat pump - the lower cooler zone for pre-heating of sanitary and heating water, and upper warmer zone for DHW backup heating. The heat pump supplies the lower section for most of time, working more efficiently, just in periods of DHW demand the 3-way valve switches and the heat pump starts supplying the upper zone where pre-heated DHW is heated to the desired temperature. The el. heating element in the upper section of the thermal store gets switched only in case of a high energy demand, e.g. when plenty of DHW is needed. In order to keep the backup heating efficient and precise, the controller switches the el. heating element in small steps (300 W).

The controller in EcoHeat continuously measures current in all phases of the main circuit breaker in order to prevent tripping. Whenever the total power drawn approaches the nominal circuit breaker value, the controller will reduce the power input to the heat pump (first decreasing the power input for the el. heating element in 300W steps if on, and then turning off the heat pump itself). As soon as the power drawn sinks (the other loads turned off), the controller will restore operation of the heat pump. The current sensors (included in the package) shall be installed on the main power supply (e.g. to the mains circuit breaker) and wired to the controller. This enables using EcoHeat for heating houses with a low-sized main fuse that otherwise could not be heated with an electric boiler and a heat pump, saving also high monthly charges for an unnecessarily high value of the main circuit breaker.

Technical Data			EcoHeat 406	EcoHeat 408	EcoHeat 410	EcoHeat 412
Primary circuit/HP flow temp. at B0/W25	Heat output	[kW]	6.1	8.5	10.4	12.3
	Power input	[kW]	1.20	1.72	1.87	2.23
	COP	[-]	5.10	4.93	5.55	5.51
Primary circuit/HP flow temp. at B0/W35	Heat output	[kW]	5.9	8.2	10	11.8
	Power input	[kW]	1.29	1.79	2.17	2.57
	COP	[-]	4.57	4.58	4.60	4.60
Primary circuit/HP flow temp. at B0/W55	Heat output	[kW]	5.2	7.6	9.3	11.0
	Power input	[kW]	1.88	2.54	3.12	3.72
	COP	[-]	2.76	2.99	2.98	2.96
Dimensions and weight	Width	[mm]	595	595	595	595
	Height	[mm]	1904	1904	1904	1904
	Depth	[mm]	672	672	672	672
	Weight	[kg]	267	270	272	279
Electric backup heating in 300W steps		[kW]	0 - 9	0 - 9	0 - 9	0 - 9
Thermal store	Volume	[l]	223	223	223	223
Volume of 40°C warm DHW available at the temperatures in the thermal store of 60/40°C (upper/lower)	if 8 l/min. DHW is drawn	[l]	174	233	283	348
	if 12 l/min. DHW is drawn	[l]	107	134	157	187
Code		[-]	13441	13442	13443	13444

COP given according to EN 14511 incl. power input for both the circulation pumps.

### Max. flow temperature of the heat pump is 65°C.

Each CTC Heat Pump is fitted with a max. current limiter for compressor startup.

A solar module can be connected to EcoHeat to utilize solar energy from solar thermal collectors. Solar energy can be used together with a heat pump which means combining the most ecologic energy sources (more on Page 8). Solar energy is used to heat DHW in the summer and to support space heating in the winter. At the same time, this prolongs the service life of the heat pump. For a heat pump with a deep bore, summer solar energy surplus can be stored in the bore which helps increase the operation efficiency of the heat pump.