

KRONOTERM

Smart heating solutions

**THE HEART
OF YOUR
COMFORT**



Carefree
Heating
**OF RESIDENTIAL
BUILDINGS**

**PREMIUM
BRAND**

SLO/EU
MADE

25
YEARS

COMPREHENSIVE
SOLUTIONS

60.000
CUSTOMERS



More than **60.000** satisfied customers!

For over 25 years, our firm Kronoterm has intensively been working on the development and production of heatpumps for DHW and space heating, heat pumps for the heating of pools, cooling systems for the cooling of machinery and refrigeration devices for the clarification of young wine and the cooling of wine. A team of flexible and qualified employees represents the basis of our firm, built on knowledge, experience, constant research and development of the leading-edge technology.

Quality assurance is a basis for a reliable and long-term functioning of a product. The main focus of our firm is reliability and quality of the products, therefore we have our own laboratory, where developing and testing of new products takes place. At the end of the production line all products are 100 per cent tested and controlled. The testing is carried out for the entire lifespan of a heating system.

In the production of heat pumps we only use high-quality components by recognized manufacturers, such as: Danfoss, Luve, Copeland, Swep, Alfa Laval, Austria Email, Honeywell, Ziehl Abegg, Ebm Papst, Alco, Tecumseh, Grundfoss, Willo, etc.

Our heat pumps are sold not only in Slovenia, but also in other European countries.

Together with the domestic market sales, we have assured the possibility to use natural energy resources to over 50.000 users. Furthermore, over 100 wine producers use Kronoterm refrigeration systems to cool their cellars and wine.

Additionally, our heating and cooling systems are installed, not only in private residential houses, but also in numerous other buildings, such as schools, kindergartens, office buildings, factories, public buildings, production facilities, airports, schools, swimming pools, hotels, etc.

In future development and business, Kronoterm strives to further expand the production and marketing of the systems for tap water heating, the systems for heating and cooling of buildings, ventilation systems and systems for the exploitation of waste water.

The grounds for all development are the production and marketing of the cooling and heating systems, adjusted to every customer's needs. The basic idea is to exploit renewable energy sources for the lowest costs possible, and hence to reduce the pollution of the environment and the consumption of fossil fuels.

Air/Water Heat Pumps

Cold air is full of energy

Air is an inexhaustible source of energy and is available everywhere. The newest models of air/water heat pumps enable heating also at outside temperatures as low as -25 °C. Temperatures as low as this still mean energy savings of 50%. This is the most low-cost type of heat pumps with easy and affordable installation and maintenance.

Recommended types of constructing the heating system

Air/water heat pumps are usually designed to independently cover all the heat losses of a building in temperatures as low as -5 °C. Under this threshold, the heat pump operates in combination with a second heat source. This covers more than 98% of the building's heating needs with the

use of the heat pump. In new buildings, the second heat source is usually an electric heater, in existing buildings with a good conventional heating source, the latter can also be used.

The electronic control system enables simple set-up of a switching point from the 1st to the 2nd heating source.



Air/Water Heat Pumps

HEAT PUMP	LV - AIR/WATER inverter, L - AIR/WATER on/off	RATED HEATING POWER (kW)	S - SPLIT, SEPARATE, C - COMPACT	GENERATION	NT - LOW TEMPERATURE, HT - HIGH TEMPERATURE*	HEATING CAPACITY A7/W35	HEATING CAPACITY AT A2/W35	COP [COEFFICIENT OF PERFORMANCE] A7/W35	ELECTRICAL CONSUMPTION A2/W35	COOLING CONSUMPTION (A35/W12-7)	DIMENSIONS (WxHxD - mm)	MASS (kg)	Energy class
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WPLV-09-S1 NT	WP	LV	9	S	1	NT	5.4	5.3	4.4	1.4	6.1	990x834x400	77	A+
WPLV-14-S1 NT	WP	LV	14	S	1	NT	10.6	9.6	5.1	2.5	12.1	990x1380x400	126	A+
WPL-08-K2 NT	WP	L	8	K	2	NT	9.1	7.6	4.7	1.9	6.2	873x1666x552	196	A+
WPL-11-S1 NT	WP	L	11	S	1	NT	12.3	10.3	4.3	2.8	9.8	873x1666x552	190	A+
WPL-11-K1 NT	WP	L	11	K	1	NT	12.3	10.3	4.3	2.8	9.8	873x1666x552	213	A+
WPL-16-K1 NT	WP	L	16	K	1	NT	18.2	15.3	4.5	3.9	13.8	1454x1902x654	347	A+
WPL-13-S1 HT	WP	L	13	S	1	HT	13.8	12.0	4.5	3.0	9.1	873x1666x552	200	A+
WPL-13-K1 HT	WP	L	13	K	1	HT	13.8	12.0	4.5	3.0	9.1	873x1666x552	223	A+
WPL-18-K1 HT	WP	L	18	K	1	HT	19.6	17.2	4.4	4.4	13.8	1454x1902x654	345	A+
WPL-23-K1 HT	WP	L	23	K	1	HT	25.7	22.4	4.8	5.3	16.8	1454x1902x654	432	A+
WPL-31-K1 HT	WP	L	31	K	1	HT	29.8	29.8	4.5	7.5	23.8	1454x1902x654	444	A+

Higher power

WPL-45-K1 HT	WP	L	45	K	1	HT	44.0	37.6	4.5	9.3	33.6	1773x2017x1361	802	A+
WPL-70-K1 HTT*	WP	L	70	K	1	HT	70.3	60.5	4.5	15.1	52.8	2953x2017x1361	1315	A+
WPL-90-K1 HTT*	WP	L	90	K	1	HT	86.8	74.1	4.4	19.0	66.0	2953x2017x1361	1361	A+

Internal unit*2

Internal unit model	Width (mm)	Height (mm)	Depth (mm)	Connection type	Voltage
HM-141 S1, HM-131 S1	607	774	499	gas	~ 230 V 3N - 400 V
HM-142 S1 ³	607	2045	725	gas	~ 230 V 3N - 400V
HM-131 K1	607	774	499	water	~ 230 V

It is possible to combine external and internal units

External unit model	Internal unit models	HM-141 S1	HM-142 S1	HM-131 S1	HM-131 K1	TT3000 regulation
WPLV-09-S1 NT		x	x			
WPLV-14-S1 NT		x	x			
WPL-08-K2 NT					x	x
WPL-11-S1 NT				x		
WPL-11-K1 NT					x	x
WPL-13-S1 HT				x		
WPL-13-K1 HT					x	x

* HT heat pump is capable of producing water for heating for systems up to 63 °C; NT heat pump is capable of producing water for heating for systems up to 58 °C; HTT HIGH PRESSURE - 2 compressors instead of one additionally in construction - tandem connection; *2 internal + external unit = AIR/WATER heat pump; *3 unit with integrated DHW boiler.



Water/water and brine/water heat pumps

Water/water heat pumps

The heat from the underground water is a very good source for the heat pump. Its advantage is a relatively constant temperature level approximately between +7 °C and +12 °C. To use underground water, two boreholes must be drilled for pumping and returning underground water. The first borehole is fitted with a hose with a submersible pump. During operation, the pump drives the water through the heat pump

and uses its heat energy; it releases the water which is cooler by some degrees Celsius (from 2 to 4 °C) into the other borehole which is some metres (15 - 20m) away from the first and into the underground water. The amount of water in the suction hole must be sufficient for uninterrupted operation when the heat needs are the highest. To use underground water, you need a permit, the water must undergo chemical analysis before the start of the

works. The underground water is an ideal heat source because of its relatively high temperature, it can achieve a high COP. This means water is the most energy efficient (seen from an annual average). Water/water heat pumps enable high heating capacity with very small external dimensions. The robust and innovative model is additionally enhanced by a special plate heat exchanger made of stainless steel.

Brine/water heat pumps

Brine/water heat pumps use heat energy stored in stone or earth. Here we can find a great amount of the sun's energy which can be used to heat the house and/or DHW. The amount of energy which can be taken from the earth depends on the soil's composition, the power of the HP and type of using the source. Heat acquisition is performed with the use of a fluid which circulates in a closed pipe system laid at the depth between 120 - 130 cm (horizontal collector) or the pipe probes are inserted into the boreholes between 60 - 140 cm (vertical probe). The circulating water gives heat to the heat pump which uses electricity to bring it to a higher temperature level (up to 63 °C), it then returns cooler for approx. 3 °C.

A+++*	WPG-07-(K)2 HT	WPG-10-(K)2 HT	WPG-15-(K)2 HT	WPG-18-2 HT	WPG-21-2 HT
BRINE / WATER					
Rated power**	5,6 kW	7,9 kW	11,8 kW	13,7 kW	15,5 kW
SCOP (baseline condition B0W35)***	4,52	4,79	4,79	4,78	4,75
WATER / WATER					
Rated power**	7,7 kW	10,5 kW	15,5 kW	18,6 kW	22,5 kW
SCOP (baseline condition W10W35)***	5,78	5,92	5,91	5,90	5,95

* For combined space heaters.

** Rated output heat at design temperature in average climate and low temperature heating regime according to the Delegated Regulation (EU) 811/2013.

*** Seasonal heating number (SCOP) in average climate and low temperature heating mode according to EN14825: 2016.

HEAT PUMP	HEAT SOURCE	RATED HEATING POWER (kW)	GENERATION	HT - HIGH TEMPERATURE HTT - HIGH TEMPERATURE TANDEM**	HEATING CAPACITY B0/W35 (kW)	HEATING CAPACITY W10/W35 (kW)	COP (COEFFICIENT OF PERFORMANCE) B0/W10 at W35	ELECTRICAL CONSUMPTION B0/W35 (kW)	ELECTRICAL CONSUMPTION W10/W35 (kW)	COOLING CONSUMPTION W20/W12-7 (kW)	DIMENSIONS (WxHxD) [mm]	MASS (kg)	Energy class
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Higher power

WPG-30-1 HT	WP	G	30	1	HT	24.2	32.8	4.5 / 6.1	5.3	5.4	1142x1726x792	319	A	
WPG-30-1 HT	WP	G	30	1	HT	24.2	32.8	4.5 / 6.1	5.3	5.4	26.7	1142x1726x792	324	A
WPG-40-1 HT	WP	G	40	1	HT	31.3	42.3	4.4 / 6.0	6.8	6.8	1142x1726x792	340	A	
WPG-40-1 HT	WP	G	40	1	HT	31.3	42.3	4.4 / 6.0	6.8	6.8	34.9	1142x1726x792	346	A
WPG-55-1 HT	WP	G	55	1	HT	42.5	57.2	4.5 / 5.8	9.3	9.6	1142x1726x792	362	A	
WPG-55-1 HT	WP	G	55	1	HT	42.5	57.2	4.5 / 5.8	9.3	9.6	46.4	1142x1726x792	386	A
WPG-80-1 HTT	WP	G	80	1	HTT	63.3	85.3	4.5 / 6.1	13.8	14.1	1142x1726x792	522	A	
WPG-80-1 HTT	WP	G	80	1	HTT	63.3	85.3	4.5 / 6.1	13.8	14.1	67.7	1142x1726x792	523	A
WPG-110-1 HTT	WP	G	110	1	HTT	84.7	112.9	4.4 / 5.8	18.7	19.5	1142x1726x792	546	A	
WPG-110-1 HTT	WP	G	110	1	HTT	84.7	112.9	4.4 / 5.8	18.7	19.5	90	1142x1726x792	549	A

** HT heat pump is capable of producing water for heating for systems up to 63°C; HTT HIGH PRESSURE TANDEM - 2 compressors instead of one additionally in construction - tandem connection;



Water, earth or air? Which heat source to choose?

The one which is available and has the highest average yearly temperature at the same time.

From an energy standpoint, it is of course the ground water in the first place if it is available in sufficient quality and quantity, because its average yearly temperature is approximately +10 °C. These systems offer a COP of above 5 - the biggest savings.

If ground water is not available and there is a sufficient free ground space, it can be chosen as a source by laying a horizontal earth collector or vertical drill. Here we can achieve a COP of about 4. If nothing of the above mentioned is available, there is also air as heat source which is available in unlimited quantities. This kind of system can achieve a yearly seasonal performance factor of above 3.5 (central Europe), even 4 at the coastal regions (southern Europe).

There are many advantages in choosing a heat pump for heating and DHW. But it is definitely most important to lower the heating costs which are lower with the use of a heat pump than with conventional heat sources. The comparison of savings is shown in the diagram "reference building".

The classic radiator heating heats the air in the room whereas floor or wall heating heats the building's element. If floor heating is combined with a heat pump, a feeling of warmth and comfort can be achieved at a temperature which is lower by 2 °C. The difference in temperature of course means lowering the heating requirements by 5 to 8 % which additionally increases your savings. Because the operation of heat pumps is almost soundless, you can entirely immerse yourself in the new feeling of comfort.



remote control - serially integrated

Home.KRONOTERM

The advantage of Kronoterm heat pumps

The savings are in the 1st place

Heat as source of comfort

Without additional cleaning and searching for space

Cooling in hot days

Ecologically friendly operation

Guaranteed future

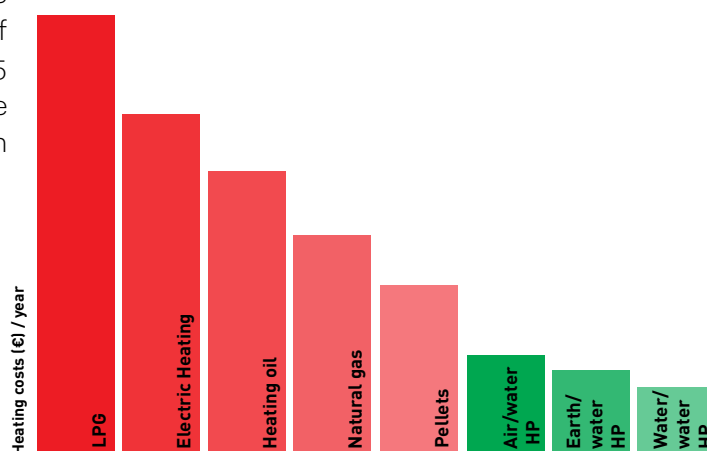
Own manufacturing with more than 25 years of experience.

One of the best heat pumps in Europe.

More than 50,000 satisfied customers

Own development and testing laboratory

Reference building



Heating surface 200 m²

Annual energy consumption: 22,600 kWh

Number of residents: 4

Prices on 1st March 2017

Heating costs for the reference building with different heating systems (EUR/year).

Home.KRONOTERM for Kronoterm Heat Pumps

Access to data and managing the heat pump from your home armchair, workplace or holiday vacation. It also provides remote help and technical support.



Controlling the heat pump from anywhere and at any time



Weather forecast



Schedules



Overview of electricity use and heating costs



Timeline of system operation



Remote help and technical support



Certificates, acknowledgements, memberships



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