Case Studies / References

POLABSKÉ MLÉKÁRNY a.s., Branch Varnsdorf, ČR

- Installation date: December 2013
- Refrigerant: R507
- Chilled water preparation 1 °C
- Temperature drop of the heating circuits: 50/40 °C (H1), 90/70 °C (H2)
- Year-round operation

Evaporator output – cooling (C)	90,2 kW
Condenser output – heat (H1)	133 kW
Engine and exhaust gas output – heat (H2)	63,3 kW
Fuel input	117 kW

t_e = -5 °C, t_c = 52 °C

Gas heat pump utilizes the waste heat from the cooling of dairy technology and introduces the heat back into the production process and central heating.

Aquapark ESPACE AQUATIQUE, Perpignan, Francie

- Installation date: Sept 2014
- Refrigerant: R407C
- Dehumidification and air-conditioning of the swimming pool area and service background
- Temperature drop 8/12 °C – evaporator (C)
  52/42 °C – condenser (H1)
  90/70 °C – engine and exhaust gases (H2)
- Year-round operation

Evaporator output – cooling (C)	109 kW
Condenser output – heat (H1)	153 kW
Engine and exhaust gas output – heat (H2)	65,9 kW
Fuel input	120,2 kW

t_e = 2 °C, t_c = 54 °C

The energy obtained from the air treatment unit is re-used to heat the swimming pool water.

Due to the utilization of natural gas to operate the heat pump, the machine room reconstruction allowed reduced demand of the building's electric energy.

EKOSTAR ... technology in harmony with nature

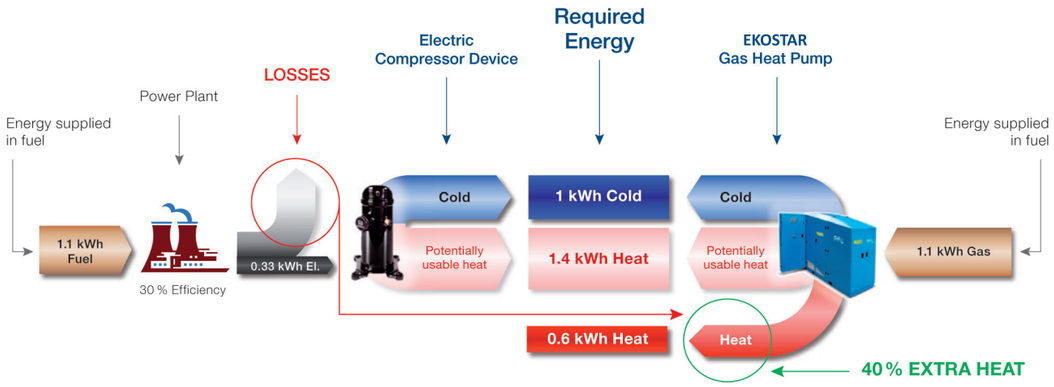
Gas Heat Pump
EKOSTAR

What is the gas heat pump?

The gas heat pump is a device allowing combined production of heat and cold. Technically, it is a combination of gas engine, compressor, heat exchangers, and a control system that function as one unit. The gas heat pump operates on the same principle as common heat pumps. The difference consists in replacing the electric engine that drives a compressor with a gas engine from which extra heat can be utilized like in the CHP unit.

Comparing the production of cold and heat from electrical power or gas

The gas heat pump can utilize the heat which would be otherwise lost in the production of electric power.



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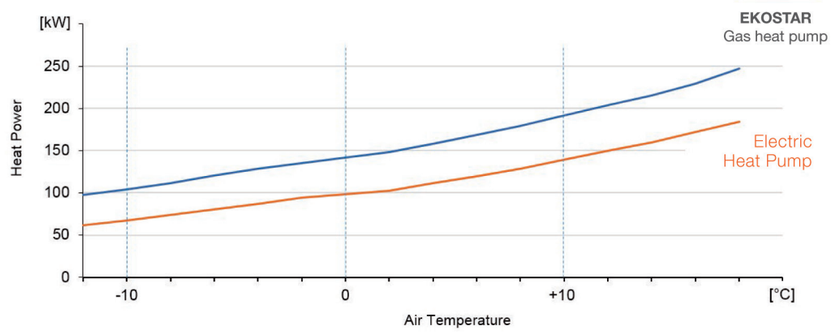
Comparing the output between electric and gas heat pump

The diagram depicts the EKOSTAR gas heat pump's output in the air-water connection depending on the external air temperature. When compared with a common electric heat pump, the gas heat pump has a higher heat output at any temp. level. This is possible by utilizing the heat output of the combustion engine.



For whom is the gas heat pump designed?

- facilities that consume heat and cold at the same time
- facilities with higher cold consumption in summer months and heat in winter
- facilities with a permanent need for cold
- facilities with a high demand for heat

Recommended applications include: food industry plants and industrial establishments, aquaparks, winter stadiums, office buildings, schools, hospitals, hotels, and similar facilities.

The main parts of the gas heat pump

Engine part

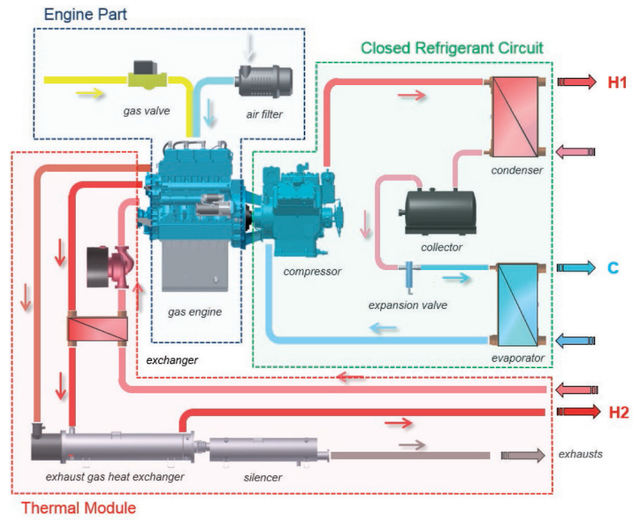
- consists of fuel preparation and a gas engine that drives the compressor and generates heat

Closed refrigerant circuit

- circuit where coolant circulates through the specified application
- heat can be drawn from the condenser and cold from evaporator

Thermal module

- consists of the system of heat exchangers that draw heat from engine block and exhaust gases
- extraction of heat from this assures cooling of combustion engine



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Gas heat pump – output parameters capabilities

EKOSTAR Gas heat pump	Air-water heat pump refrigerant R507*	Waste heat recuperation refrigerant R134a**
Evaporator output (C)	94,9 kW	95,8 kW
Condenser output (H1)	137 kW	132 kW
Engine and exhaust gas output (H2)	62,3 kW	53,7 kW
Fuel input	115 kW	99,4 kW

* t_e = -5 °C, t_c = 50 °C; ** t_e = 12 °C, t_c = 65 °C