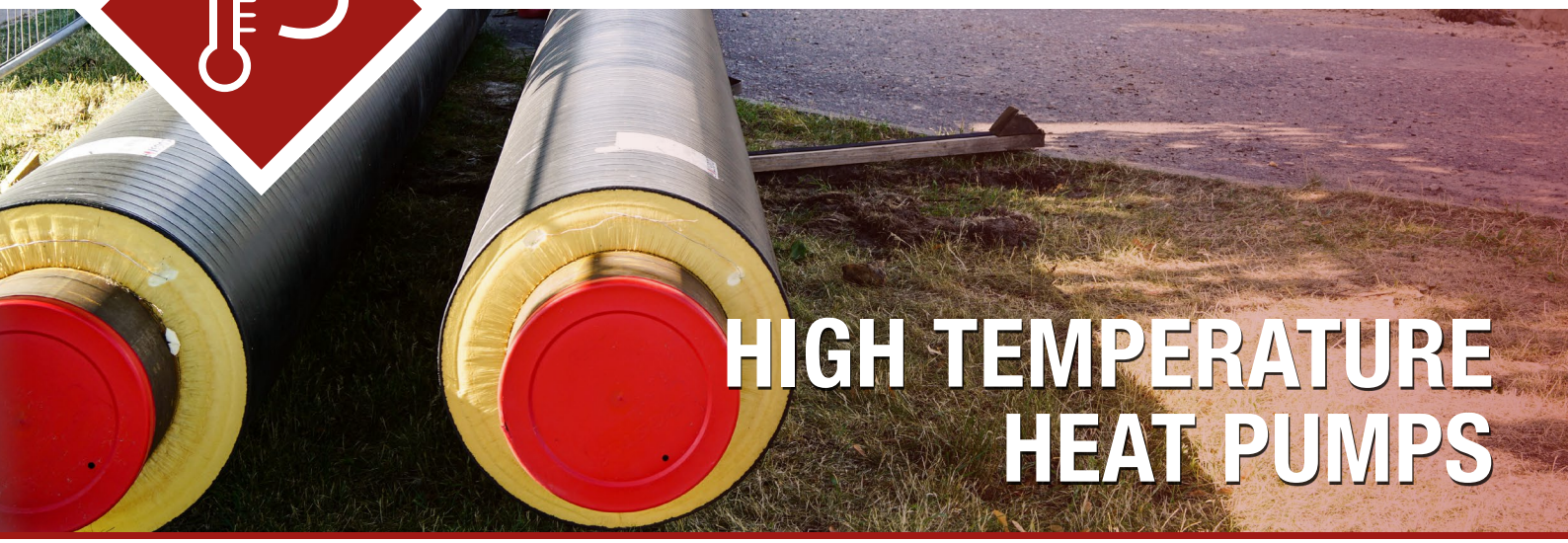


HIGH TEMPERATURE HEAT PUMPS

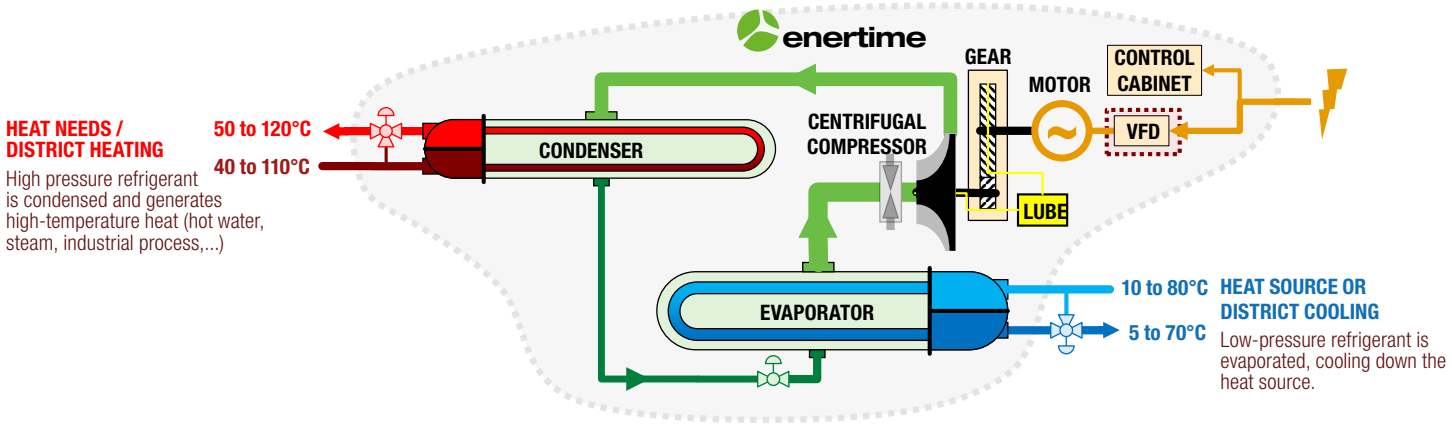
Our industrial Heat Pumps are suitable for large-scale applications (>3 MWth) and at high temperature.

Modular in design, they are tailored to customers` requirements and the constraints:

- high temperature water or steam production
- significant differences between source and sink temperatures
- corrosive geothermal resources
- low pressure steam recovery (steam turbine)
- significant load variations
- site constraints and accessibility

Enertime's Heat Pumps can produce a high temperature useful heat for industrial processes and district heating networks by using the low or medium temperature resources including:

- Low temperature geothermal ressources (<40 ° C)
- Optimization of geothermal district heating networks
- Industrial waste heat recovery (cooling water, low-pressure steam, etc...)
- Wastewater, fresh water, sea water, ...
- Heat and cold simultaneous production for district cooling and industrial processes.



3700 kW Heat Pump, waste incineration plant of Le Mans, France

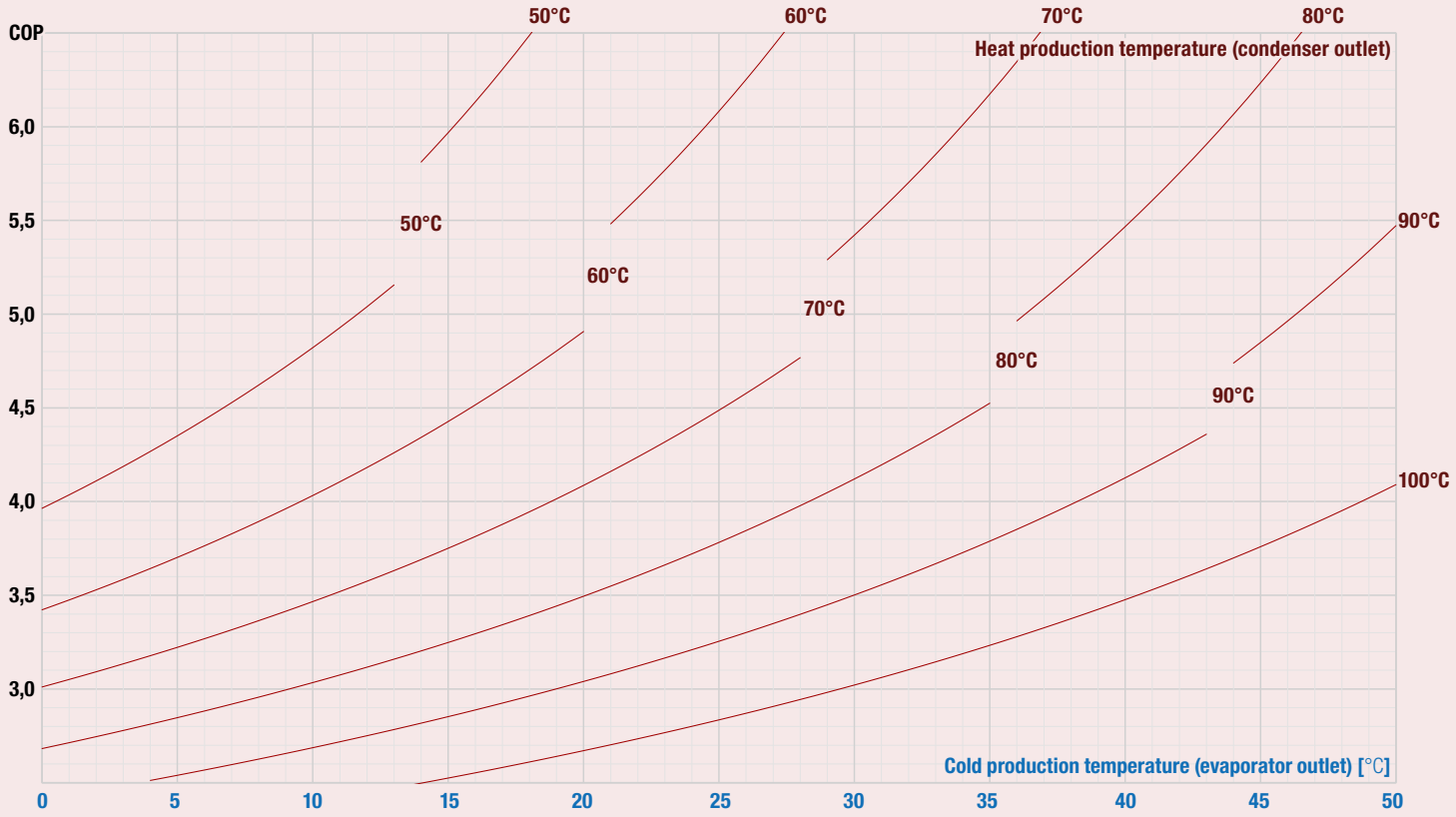
Our heat pumps are equipped with centrifugal compressors designed by Enertime with following characteristics:

- High efficiency, High Coefficient of Performance (COP)
- Variable power to adjust continuously heat production to customer needs
- Tailor-made adjustment to customer's source and sink temperatures

Enertime uses new generation HFO refrigerants with low greenhouse effect (GWP <5), no effect on the ozone layer (ODP = 0).

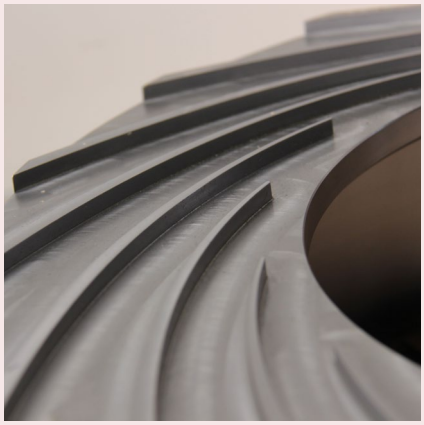
Proposed fluids are non-flammable and non-toxic which guarantee easy integration of our machines in urban and industrial installations.

ESTIMATIVE HEAT PUMP PERFORMANCES

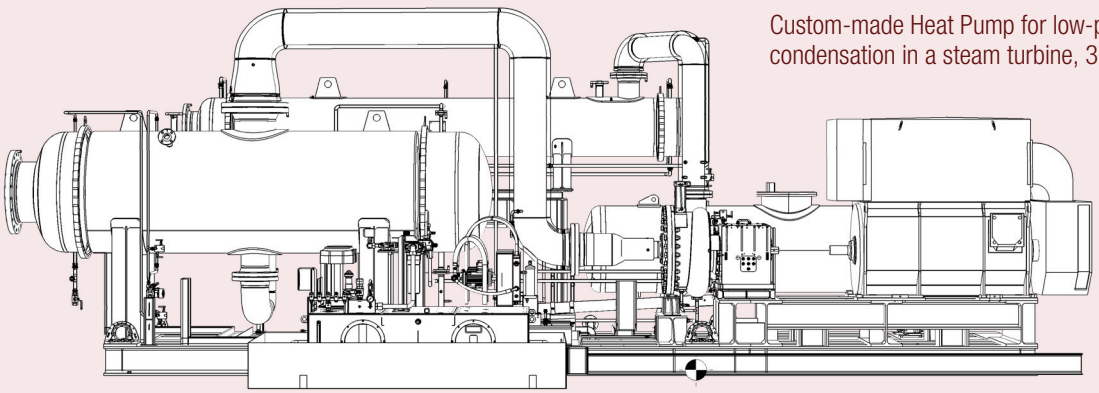


Enertime's Heat Pumps reduce operation and maintenance constraints and allow fast start and stop and remote supervision, with high availability factor. Enertime offers a full range of customized services for maintenance and 24/7 remote monitoring.

RANGE	HERMETIC		SEPARATE GROUPS	
	MT	HT	MT	HT
THERMAL POWER	2 to 5 MWth		4 to 10 MWth	
REFRIGERANT	R1234zeE	R1233zdE	R1234zeE	R1233zdE
COLD SOURCE	10 to 50°C	35 to 80°C	8 to 50°C	35 to 80°C
HEAT PRODUCTION	50 to 95°C	70 to 130°C	50 to 95°C	70 to 130°C
INSTALLED CAPACITY	500 to 1000 kWe		1000 to 3000 kWe	
COP (SEE CHART ABOVE)	2,5 to 6,0		2,5 to 6,0	
COMPRESSOR	Mono or two-stage centrifugal compressor (ENERTIME)		Mono or two-stage centrifugal compressor (ENERTIME)	
GEARBOX	-		YES	
CHARACTERISTICS AND ARRANGEMENT	High-speed hermetic compressor on magnetic bearings, installed above heat exchangers		4-pole motor. Separate compressor placed on the floor next to the heat exchangers	



Our scope is adjusted to the industrial capabilities of our customers and industrial partners, ranging from compressor supply and cycle engineering to complete Heat Pumps or turnkey projects.



Custom-made Heat Pump for low-pressure vapor condensation in a steam turbine, 3.7 MWth

August 2019

www.enertime.com

1, Rue du Moulin des Bruyères
92400 Courbevoie - FRANCE

Tél +33 01 75 43 15 40
contact@enertime.com