

# Rank® HTC1

## Product description

Rank® HTC1 machine is specially designed for cogeneration applications with high-temperature thermal needs, and they can produce useful heat as hot water at 80°C.

In addition, by using heat at temperatures between 180 °C and 210 °C, this high efficiency machine is able to produce 45 kWe.



## A Rank® machine for every need

Whatever your need is, we have a Rank® machine that can be adapted to it, through a variety of products that cover a wide range of thermal and power applications.

LT1	MT1	HT1	<b>HTC1</b>	
LT2	MT2	HT2	HTC2	
LT3	MT3	HT3	HTC3	
90°C	120°C	150°C	180°C	210°C

## What is Rank®?

The Rank® equipment allows the production of electrical energy and useful heat using a low-temperature heat source, with the associated economic and environmental benefits.



# Rank® HTC1

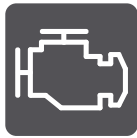
## Applications

Among the main applications of the Rank® ORC machines, we highlight the waste heat recovery and the utilisation of renewable heat sources, with a special interest in cogeneration and trigeneration systems.

### Heat sources



Industrial Waste Heat



Engines



Biomass



Solar CHP



Waste



Geothermal

### Heat sinks



Cold Production



Heating

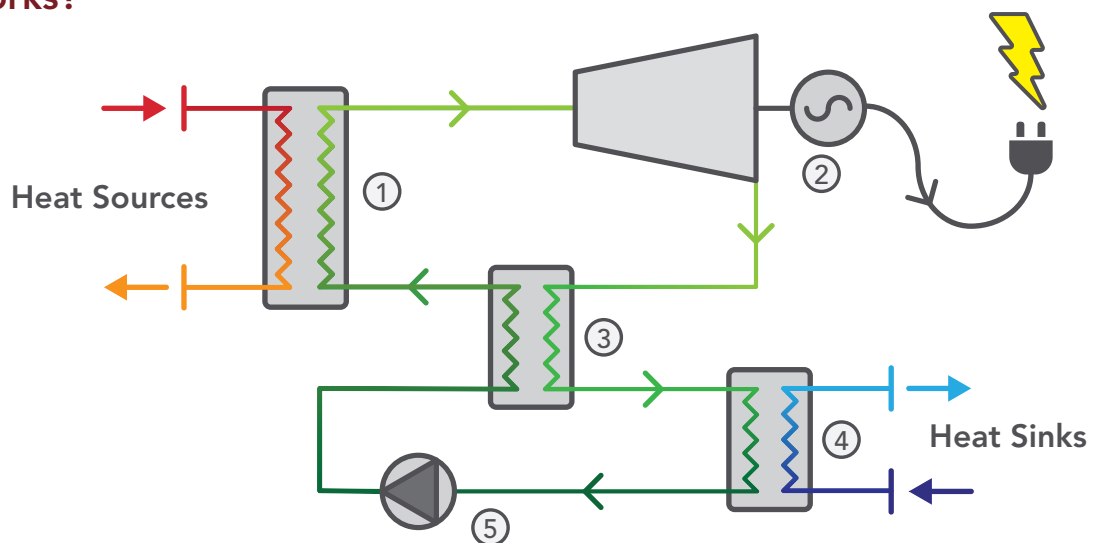


Industrial Processes



Drying

## How it works?



- ① Evaporator** A heat exchanger that provides heat to the high-pressure working fluid and passes from subcooled liquid to superheated vapor (in the form of water or thermal oil).
- ② Turbine** The expansion of the superheated vapor is used to generate clean electricity.
- ③ Regenerator** To increase the efficiency of the system, the expanded working fluid is used to preheat the high-pressure liquid at the inlet of the evaporator.
- ④ Condenser** It produces useful heat (in the form of water) from the condensation of the working fluid at low pressure.
- ⑤ Pump** The pressure of the working fluid is increased, and the ORC cycle is completed.

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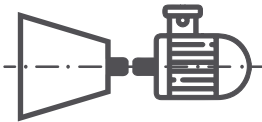
## Rank® Technology

The Rank® equipment is composed of high quality, robust and efficient components, which offer the following advantages and benefits to our customers.



### Rank® low rpm turbine

Operation at low revolutions reduces the noise level, lengthens the service life and improves the reliability.



### Rank® direct drive

Direct drive avoids the use of gears or pulleys, minimising the maintenance and increasing electrical efficiency.



### Zero leaks

Our hermetic components eliminate the leakage of the working fluid, reducing maintenance costs and downtime and being more environmentally friendly.



### Magnetic transmission

Magnetic transmission to ensure the tightness and to reduce the possibility of leakage.



### Rank® easy-connect

Electronics-free connection to the electricity grid at the required electrical quality conditions.



### Flexible operation

Modular machines that can operate under a wide range of temperature and flow inlet and outlet conditions.



### Digitalisation through the Rank® control system

Our machines operate without the need for the human interface through an automatic, efficient managing system.



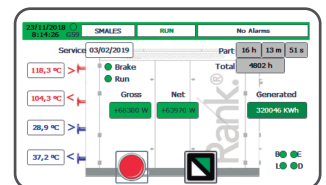
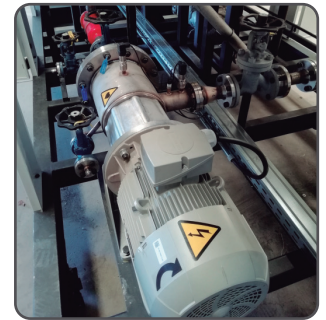
### Security

It complies with all safety regulations and minimises the risk of accidents.



### Rank® service

Real-time remote monitoring and predictive control of the machines, and automatically generated reports.







## Safety Regulations and Standards

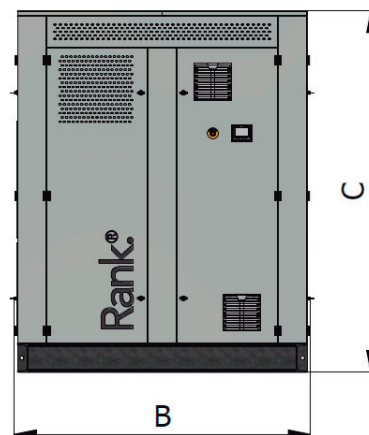
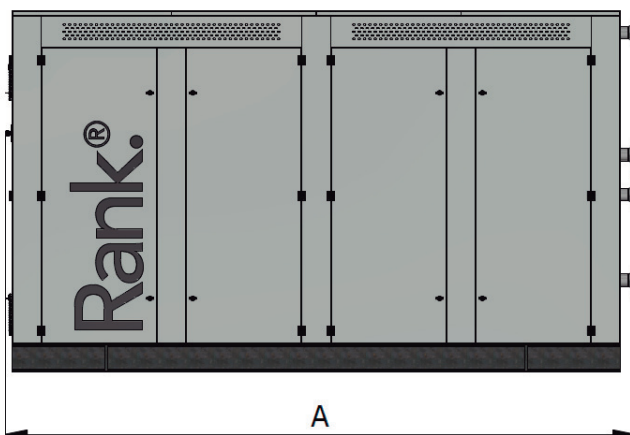
- Low voltage Directive
- Machinery Directive
- Electromagnetic Compatibility Directive
- Pressurized Equipment Directive
- ENA ER G59/3
- ASME B31.1 – Power Piping Code, Mechanical
- ASME B31.3 – Process Piping Code
- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring
- EN/ISO 3744:2010

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## Technical Data

		Heat source	Heat transfer fluid	Thermal Oil	-			
			Inlet temperature	180-210	°C			
			Outlet temperature	120-150	°C			
			Volumetric flow rate	13				
			Thermal power	300-500	kWt			
			Connections diameter	DN80 PN16	-			
			Pressure drop	50	kPa			
			Heat transfer fluid inner volume	45	L			
						Heat transfer fluid	Water	-
						Inlet temperature	45-65	°C
			Outlet temperature	60-80	°C			
			Volumetric flow rate	19				
			Thermal power	200-350	kWt			
			Connections diameter	DN80 PN16	-			
			Pressure drop	100	kPa			
			Heat transfer fluid inner volume	60	L			
		Electricity	Gross power	25-45	kWe			
			Net power	20-35	kWe			
			Voltage	3 x 400	V			
			Frequency	50	Hz			
			Intensity	82	A			
			Data Connection	RJ45	-			

## Dimensions



A = 4.400 mm  
 B = 2.050 mm  
 C = 2.500 mm  
 Weight 5.500 Kg

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Although our staff has made every effort possible to ensure the most accurate data and close to the final solution, these should be considered as indicative and not binding.