

# Rank.<sup>®</sup> MT1

## Product description

The Rank.<sup>®</sup> MT1 machine generates clean electricity up to 20 kWe, taking advantage of heat sources at temperatures below 150 °C. In addition to its excellent electrical performance, the possibility of using the heat produced in the condenser at temperatures up to 50 °C. This heat is available for several applications with thermal needs below 150 kWt.



## A Rank.<sup>®</sup> machine for every need

Whatever your need is, we have a Rank.<sup>®</sup> 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	HTC1	
LT2	MT2	HT2	HTC2	
LT3	MT3	HT3	HTC3	
90°C	120°C	150°C	180°C	210°C

## What is Rank.<sup>®</sup>?

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



# Rank<sup>®</sup> MT1

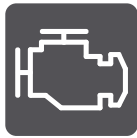
## Applications

Among the main applications of the Rank<sup>®</sup> 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

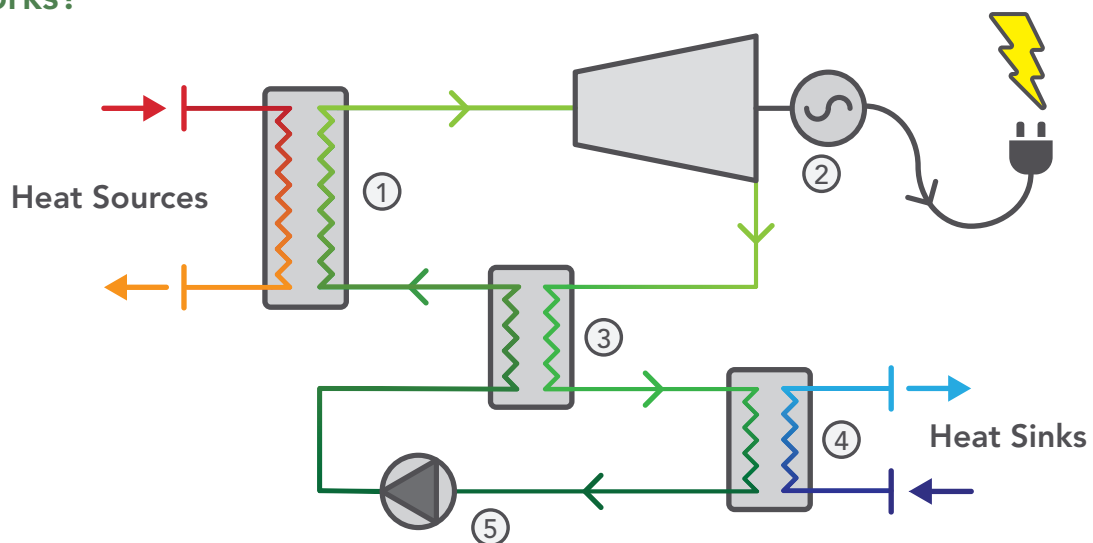


Industrial Processes



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.

# Rank® MT1

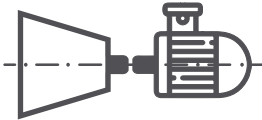
## Rank® Technology

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.



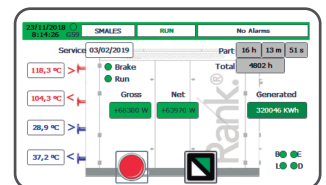
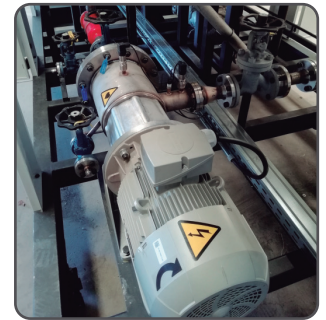
### Security

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

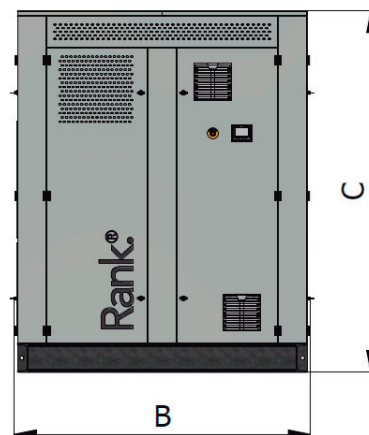
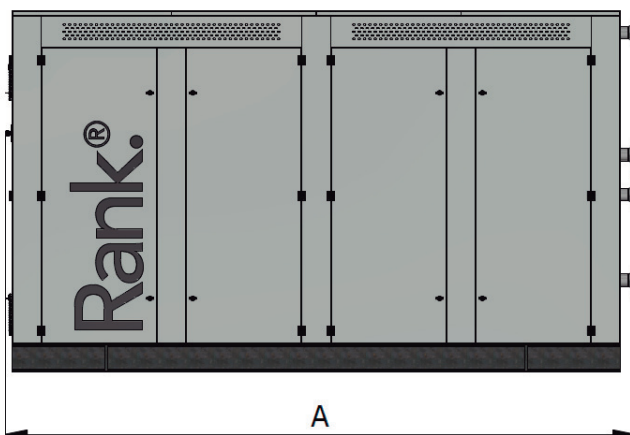
- Low voltage Directive
- Machinery Directive
- Electromagnetic Compatibility Directive
- Pressurized Equipment Directive
- ENA ER G59/3
- ASME B31.1 – Power Piping Code, Mechanical
- ASME B31.3 – Process Piping Code
- ASME Boiler and Pressure Vessel Code Section VIII
- UL 508A- Control Panel Wiring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

# Rank<sup>®</sup> MT1

## Technical Data

 <p>Heat source</p>	Heat transfer fluid	Water	-
	Inlet temperature	120-150	°C
	Outlet temperature	110-140	°C
	Volumetric flow rate	17	
	Thermal power	150-200	kWt
	Connections diameter	DN80 PN16	-
	Pressure drop	125	kPa
	Heat transfer fluid inner volume	20	L
	 <p>Useful heat</p>	Heat transfer fluid	Water
Inlet temperature		20-40	°C
Outlet temperature		30-50	°C
Volumetric flow rate		14	
Thermal power		100-150	kWt
Connections diameter		DN65 PN16	-
Pressure drop		125	kPa
Heat transfer fluid inner volume		15	L
 <p>Electricity</p>		Gross power	15-22
	Net power	13-20	kWe
	Voltage	3 x 400	V
	Frequency	50	Hz
	Intensity	31,5	A
	Data Connection	RJ45	-

## Dimensions



A = 3.350 mm  
 B = 1.550 mm  
 C = 2.200 mm  
 Weight 5.500 Kg

Rank<sup>®</sup> Pol. Ind. La Mezquita,  
 Parcela 412 - nave B, 12600 La Vall d'Uixó,  
 (Castelló) Spain  
 Apartado de Correos 115,  
 t. +34 964 696 859  
 info@rankweb.es  
 www.rankweb.es

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.