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.

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.
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.

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® 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
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

Useful heat

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

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.