Cogenera

ORGANIC RANKINE CYCLE

The main component of the ORC system is a high speed turbine which converts low-potential heat into electrical energy based on organic Rankine cycle.

Advantages of ORC:

- High annual uptime
- High efficiency relative to the inlet temperature
- Fully automatic operation
- Easy integration into existing equipment
- Suitable for modular installation

Use of technologies:

- Engines running on natural gas, biogas, etc.
- Biodiesel generators
- Spark-ignition engines
- Diesel engines
- Gas turbines
- Heat released during manufacturing processes
- Heat from furnaces or boilers
- Any heat sources with temperatures > 350 °C

Modern and Reliable Power Generation Technology.

ORC WB-1



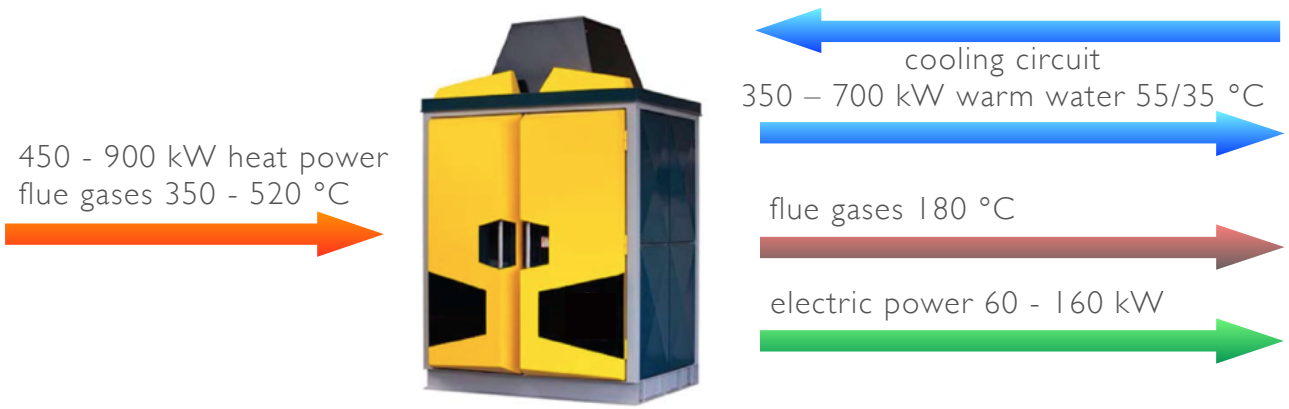
ORC WB-1 operates with flue gases within the range 350 - 520 °C. Thermal power at the input to the ORC WB-1 is 450 - 900 kW while the electrical output power is 60 - 160 kW, depending on the input heat fed into the ORC system.

An example of installation is a combination of the ORC system with a CHP unit. A great advantage is the ORC can be connected directly to the chimney flue gas pipe of the process. This eliminates the need to use a flue gas heat exchanger.

Flue gases are passed directly to the ORC heat exchanger. The internal medium is not water, but an organic substance. It is heated to about 320 °C and when entering the turbine blades of the ORC it moves the turbine to speeds up to 28,000 rpm.

The connected asynchronous generator begins to generate electric power. Through the use of high temperatures directly from the flue gas, ORC WB-1 achieves an efficiency of around 20%! This value puts ORC WB-1 among the leaders in this technology.

In the cooling circuit, the heat power is equal to 80% of the input heat power with the temperature gradient of about 55 °C - 35 °C. These are not random parameters as they provide the client with the possibility of using this potential to heat the digesters, swimming pools, sludge pits, etc. The recovered flue gas coming out of the ORC flue gas pipe has a temperature of about 180 °C.



ORC WB-1 VARIO



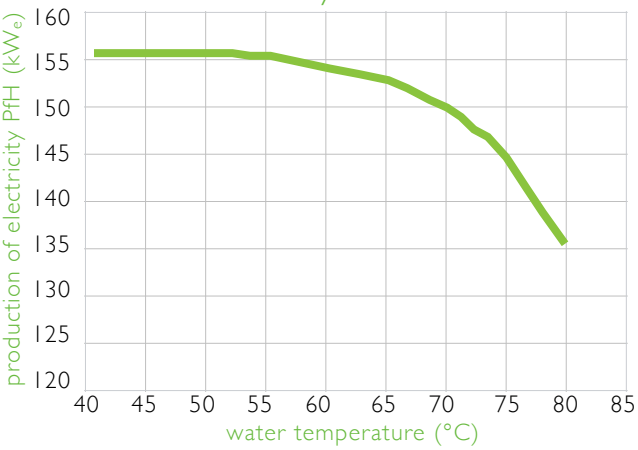
The main reason why the ORC WB-1 VARIO system was launched onto the market was a high demand amongst potential clients for the use of heat to generate not only electrical energy, but also to use hot water for heating.

Variability of the ORC WB-1 VARIO operation enables the user to evaluate when the supply of heat into the heating system is a priority, or when it is more practical to maximise the production of electricity.

ORC WB-1 VARIO is technically identical to the WB-1 type, but it offers an additional feature of controlling the temperature of ORC cooling water so as to achieve different temperature levels. The settings can be changed on-line, depending on the operating conditions.

The ORC WB-1 VARIO system can be used with biogas plants (apart from other applications) which already have a supply of heat in place or which are planning it. By deploying the ORC WB-1VARIO system, it is possible to streamline the entire operation and in the winter months to control the supply of heat versus electricity production from ORC.

Variability in traffic



900 kW heat power
flue gases 350 - 520 °C

cooling circuit
700 kW warm water 80/60 °C

flue gases 180 °C

electric power 130 kW

Cogenera

Supplier of advanced technology
for power generation

ORC WB-1 characteristics and specifications:

- Thermal power input 450-900 kWth, > 350 °C
- Electric power output from the ORC 60-160 kWe
- High utilization efficiency of converting thermal energy into electricity, up to 20%
- Cooling - water, 350-700 kWth
- Zero fuel requirements (waste heat recovery)
- Direct heating of medium by ORC flue gas
- No emissions, CO2 neutral
- Low maintenance requirements
- High reliability and availability of service and spare parts in the Czech Republic (> 8500 hours/year)
- Remote monitoring, unattended operation
- Suitable for obtaining subsidies for green energy

Cogenera

Cogenera Power
www.cogenera.si
+386 40 427 173

e-mail: info@cogenera.si
www.cogenera.si