TURN HEAT INTO POWER

POWER FROM BIO-MASS AND WASTE COMBUSTION

APPLICATIONS

Warm water combustion systems

Whenever the heat from the combustion is used to produce warm water, often times more heat is prodcued than can be used for heating purposes. In this case our low temperature ORC-systems can simply be connected to the warm water interface and produce 6-10% of extra electricity out of the warm water when condensing against the ambient air.

Existing combustion systems

Many combustion systems were built with the aim to supply district heat. In order to prevent the forming of sulfucric acid pressuriezd water systems were built. However the pressurized water systems supply much higher temperatures than needed in the disctric heat grid. For such installations it is very easy to re-fit ORC-systems. On the heat input side they use the high temperature from the cooling cycle and on the low temperature side the heat is passed to the disctrict heating cycle. The advantage of such a setup is that no change has to be made in regards to the supply of district heat but at the same time electricity can be used for the own demand and even for supply to the grid.

Thermal oil system

Thermal oil as heat carrier medium offers the ideal solution when a simple and reliable system for the production of heat and electricity is needed. Thermal oil offers a solution to produce electricity with an efficiency as high as 20% and maintaining high hot water temperatures on the ORC-condenser side.

Pressurized water combustion systems

Pressurized water offers the ideal solution as heat carrier medium when a cost effective solution for the combined production of heat and power is needed. By controlling the pressurized water return temperature forming of sulfuric acid in the exhuast gas flow can be prohibited. The water circuit can be designed in order to cover all electrical own consumption of the plant. At the same time hot water with temperatures exceeding 100°C on the cooling side of the ORC can be supplied.

APPLICATIONS

Pressurized water case study

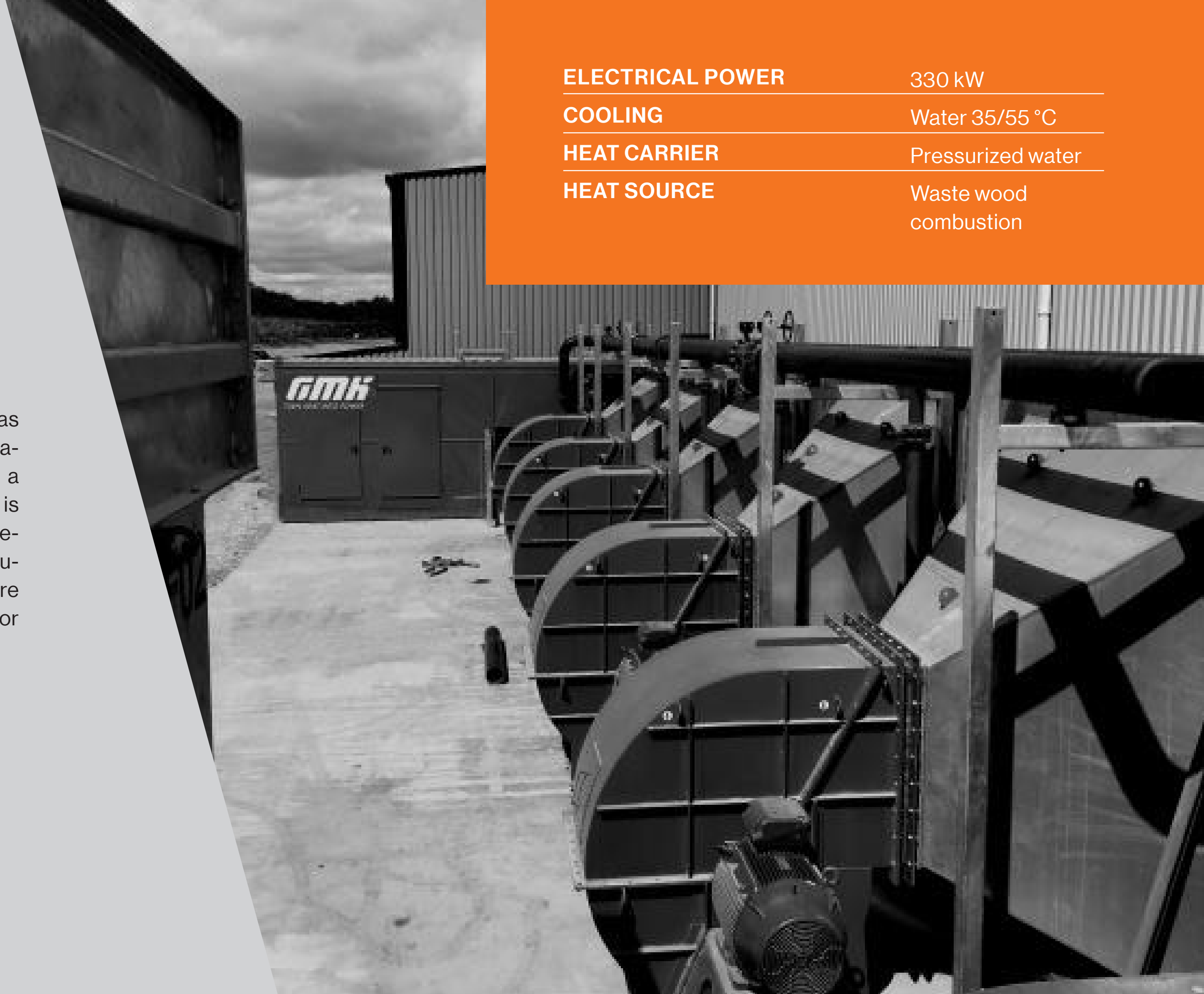
ELECTRICAL POWER	330 kW
COOLING	Water 35/55 °C
HEAT CARRIER	Pressurized water
HEAT SOURCE	Waste wood combustion

The Demand:

A recycling company for various materials also sells high performance gravel. For the applications where this gravel is used it needs to be dried beforehand. Thus a cost effective power generation system was needed that produces electricity from hot water and at the same delivers heat on a temperature level high enough in order to dry the sand.

Our solution:

An ECOCAL 350NT ORC was installed. Water on a temperature level of 155 to 135 with a thermal power of 3.500 kW is supplied to the ORC. On the secondary side the ORC produces hot water on a temperature level of 55°C that is used for gravel drying.



HOW IT WORKS

Thermal oil case study

The Demand:

A district heating company wanted to install a small combustion system to utilize waste wood for the generation of heat and power. Due to a strong variation in heat demand a power generation system was needed.

Our solution:

An ECOCAL 1000 ORC-system was installed that used thermal oil as heat carrier. Due to the flexible process layout the customer can rund the system between 10% and 100% of rated power while varying the cooling water temperatures at the same time.

Cooling
HOT WATER HEATING CYCLE

Heat source
WASTE WOOD COMBUSTION

Electrical Power
1.000kW

Heat carrier
THERMAL OIL

POWER FROM BIO– MASS AND WASTE COMBUSTION

TURN HEAT INTO POWER

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