



ENERGY EFFICIENCY FOR INDUSTRIAL PROCESSES

POWER FROM WASTE HEAT

Organic Rankine Cycle (ORC) modules designed by Enertime improve and enhance the energy efficiency of industrial processes. Waste heat of medium temperatures (above 130 °C) can be recovered to generate electricity.

A plant or a factory can improve its energy efficiency and economic balance by using self-generated electricity or through export of the electricity to the grid without extra emission of greenhouse gases.



APPLICATIONS

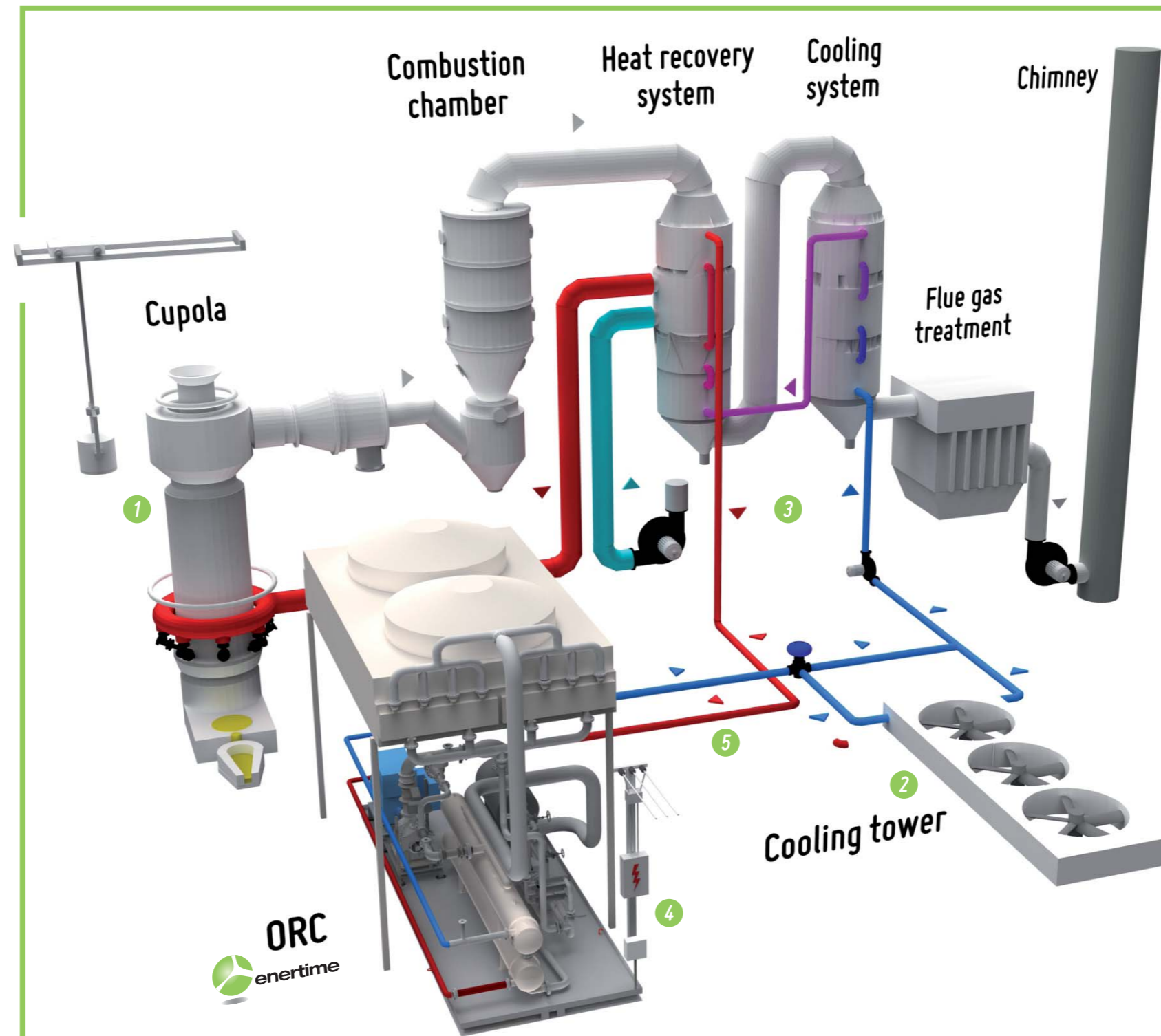
Enertime solutions are specifically designed for industries processing raw materials and generating large amounts of waste heat (several MWth), such as:

- FOUNDRIES
- GLASS MAKERS
- CEMENT INDUSTRY
- STEEL PLANTS
- ROLLING MILLS

AN EXAMPLE : THE FMGC FOUNDRY IN WESTERN FRANCE



By recycling the waste heat from cupola furnaces, the FMGC foundry reduces its electricity bill by a third.



The FMGC uses a hot blast cupola furnace (1) rising at a very high temperature to produce cast iron. This heat is partly recovered to preheat the furnace. The residual heat is cooled down (2) before evacuation. Enertime has installed an ORC module on the existing exchanger (3) to convert this waste heat into electricity (4).

With a thermal power of 5.9 MWth available at 200°C (5), the 1 MWe ORC generates 30% of the foundry's power consumption.

TAILOR-MADE SOLUTIONS FOR THE INDUSTRY

The right technology

The ORC technology requires very little maintenance and is particularly relevant for the recovery of heat of low and medium temperatures (from 130°C upwards for liquids and from 230°C for gases) in small and medium-sized modular units. The use of organic fluids with a high density allows for much higher partial load efficiencies than those of steam cycles and a minimum load of 20% of the nominal.

This simple and robust technology enables fully automated solutions without requiring human presence on site or any specific skill for maintenance. Enertime also offers a full range of services for the maintenance and monitoring of operations.

Tailor-made Solutions

Enertime brings new ORC technology to the market and offers a range of versatile solutions specifically dedicated to industrial applications, which can be adapted to particular cases. Enertime designs and manufactures its own ORC turbines and creates customized units.

Enertime has developed its own ORC technology with non-toxic and non-flammable working fluids, safe for both the industry and the environment. Enertime offers complete solutions which are easy-to-implement with minimum civil works and connections and no impact on production processes.

These modular solutions are adjustable to the thermal power available on site in order to maximize performance and minimize investment costs.

MAIN TECHNICAL SPECIFICATIONS

RANGE

Electric power
ORC inlet temperature
Turbine

ORCHID©

5 MWe to 500 kWe
90°C to 200°C
subsonic multistage
2 bearings

RAINBOW©

300 to 100 kWe
200°C
supersonic single stage
with over hang

Please consult us for tailor-made systems.

ABOUT ENERTIME

An innovative start-up company in energy efficiency technologies and renewable energy production based on thermodynamics, Enertime designs and manufactures its own ORC machines in France for the world market. Enertime offers a range of solutions to improve energy efficiency in process industries and also:

- improve the energy efficiency of waste treatment units (incineration).
- produce electricity from low and medium enthalpy geothermal water.
- produce decentralized energy from biomass or solar energy.

Enertime offers ORC modules or turnkey systems, alone or in consortium with manufacturers of industrial heat exchangers, biomass boilers or solar collectors.

The ORCHID module FMGC project was completed in 2012 and has won support from the sixth AMI ADEME-Total call for projects in energy efficiency for industries. This 1MWe unit is installed in a foundry in the Loire Region.



ORC turbine

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Enertime's ORC module cement works
 FMGC foundry