



ENERGY EFFICIENCY FOR DIESEL POWER PLANTS



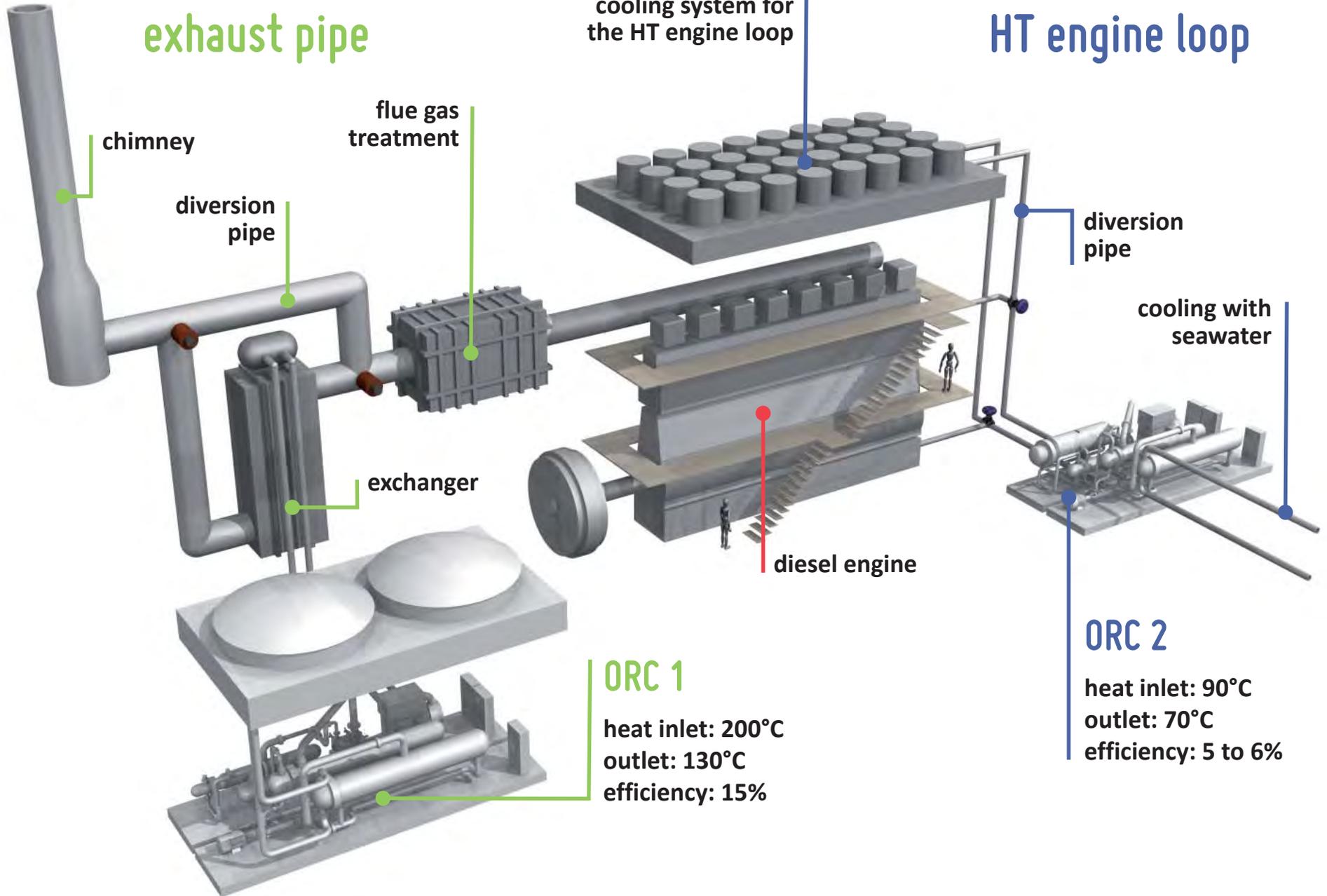
enertime

www.enertime.com

www.cycle-organique-rankine.com

1. Connection on the exhaust pipe

2. Connection on the HT engine loop



ORC 1

heat inlet: 200°C
 outlet: 130°C
 efficiency: 15%

ORC 2

heat inlet: 90°C
 outlet: 70°C
 efficiency: 5 to 6%

POWER FROM WASTE HEAT

Organic Rankine Cycle (ORC) modules designed by Enertime improve energy efficiency of diesel engines by transforming low to medium temperature waste heat into power.

Applications are both for the exhaust gases (typically at 300°C to 400°C) and the HT cooling loop (90°C) with dedicated machines.

Enertime solutions are cost effective for diesel plants with total engine power above 15 MWe.

OPERATING PRINCIPLES

Organic Rankine Cycle (ORC) modules work on the same principle as steam turbines but use an organic fluid instead of water. Thanks to different physical properties, the use of an organic fluid leads to more reliable and higher efficiency plants for low to medium temperature heat sources and small-to-medium-size modules. Organic fluids used by Enertime remove condensing risks at turbine outlet which is a major drawback of conventional steam turbines.

COST-EFFECTIVE EFFICIENT TECHNOLOGY

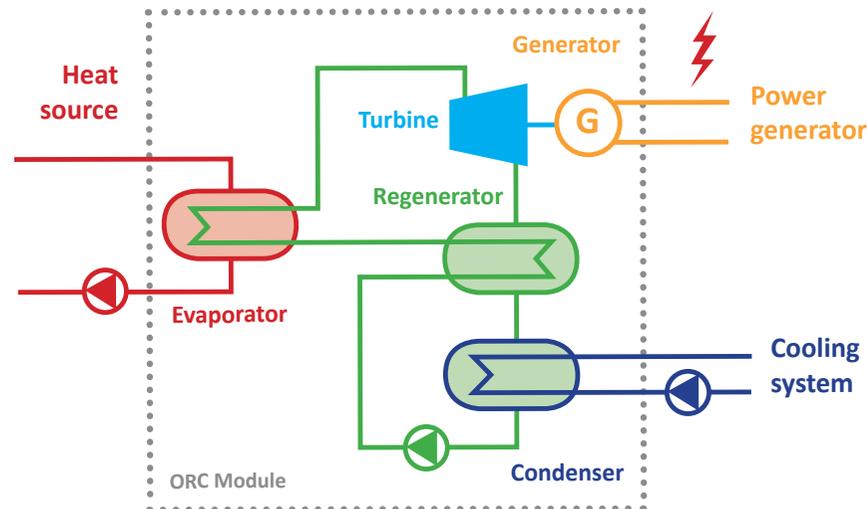
The ORC technology requires very little maintenance and is particularly relevant for the recovery of low and medium temperature heat in small and medium-sized modular units. The use of organic fluids with a high density allows much higher partial load efficiencies than those of conventional steam cycles and a minimum load as low as 10% of the nominal. This simple and robust technology enables fully automated solutions without requiring human presence on site nor any specific skill for maintenance. Enertime also offers a full range of services for the maintenance and monitoring of operations.

TAILOR-MADE SOLUTIONS

Enertime has upgraded the ORC technology to offer products perfectly matching client needs and which can be adapted to particular cases. This flexible approach to ORC comes from Enertime's ability to design and manufacture its own ORC turbines and customized modules. ORCs manufactured by Enertime use 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 optimize investment costs.

Enertime offers with its experienced partners full turn-key solutions including the ORC unit, waste heat recovery exchanger, balance of plant, grid connection and after sale services.





Enertime's ORC module

ENERTIME

Enertime offers solutions for power production using heat sources at low or medium temperature. Enertime offers MW-size turn-key solutions in various applications including:

- Energy efficiency with waste heat recovery on industrial processes.
- Geothermal energy.
- Renewable and distributed energy.

The ORCHID© range brings innovative Organic Rankine Cycle (ORC) technology to industrial customers and utilities. ORCHID© is entirely designed by Enertime teams. We customize our solutions according to each client's needs.



*ORCHID©
module turbine*

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1st page pictures:

diesel power plant   *Enertime's ORC module*
diesel engine  