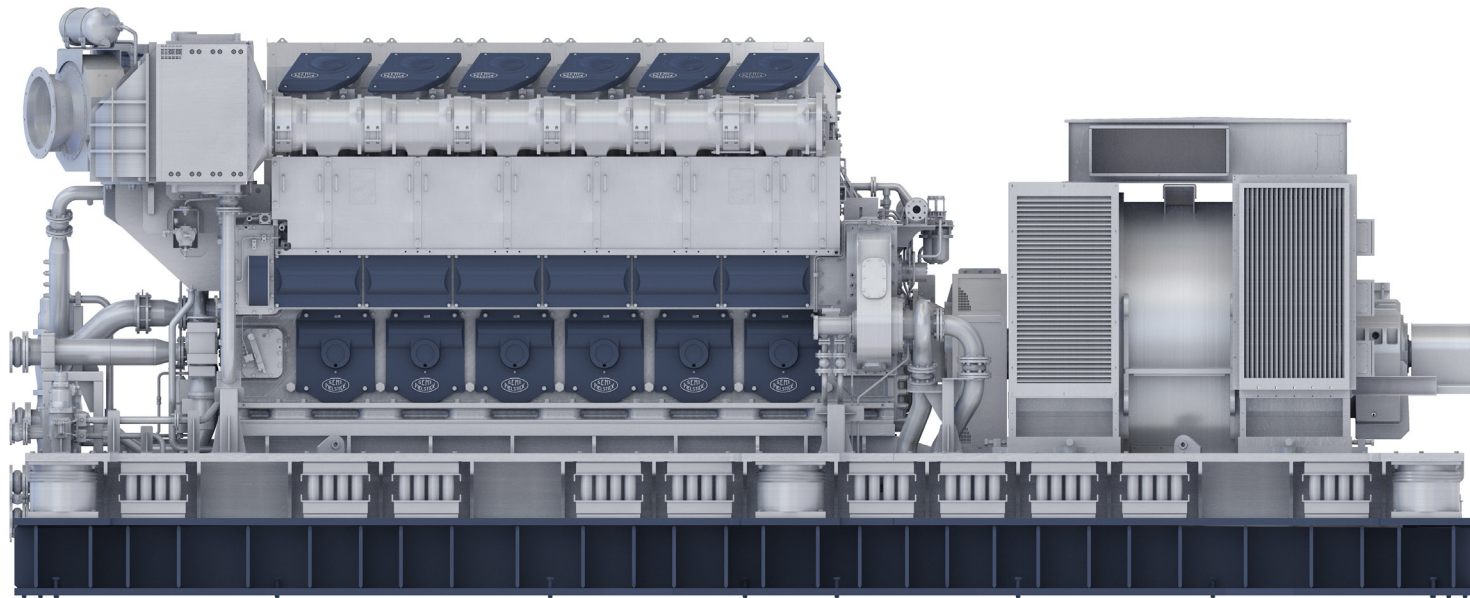


ORC TECHNOLOGY HEAT RECOVERY SYSTEM

ENGINES



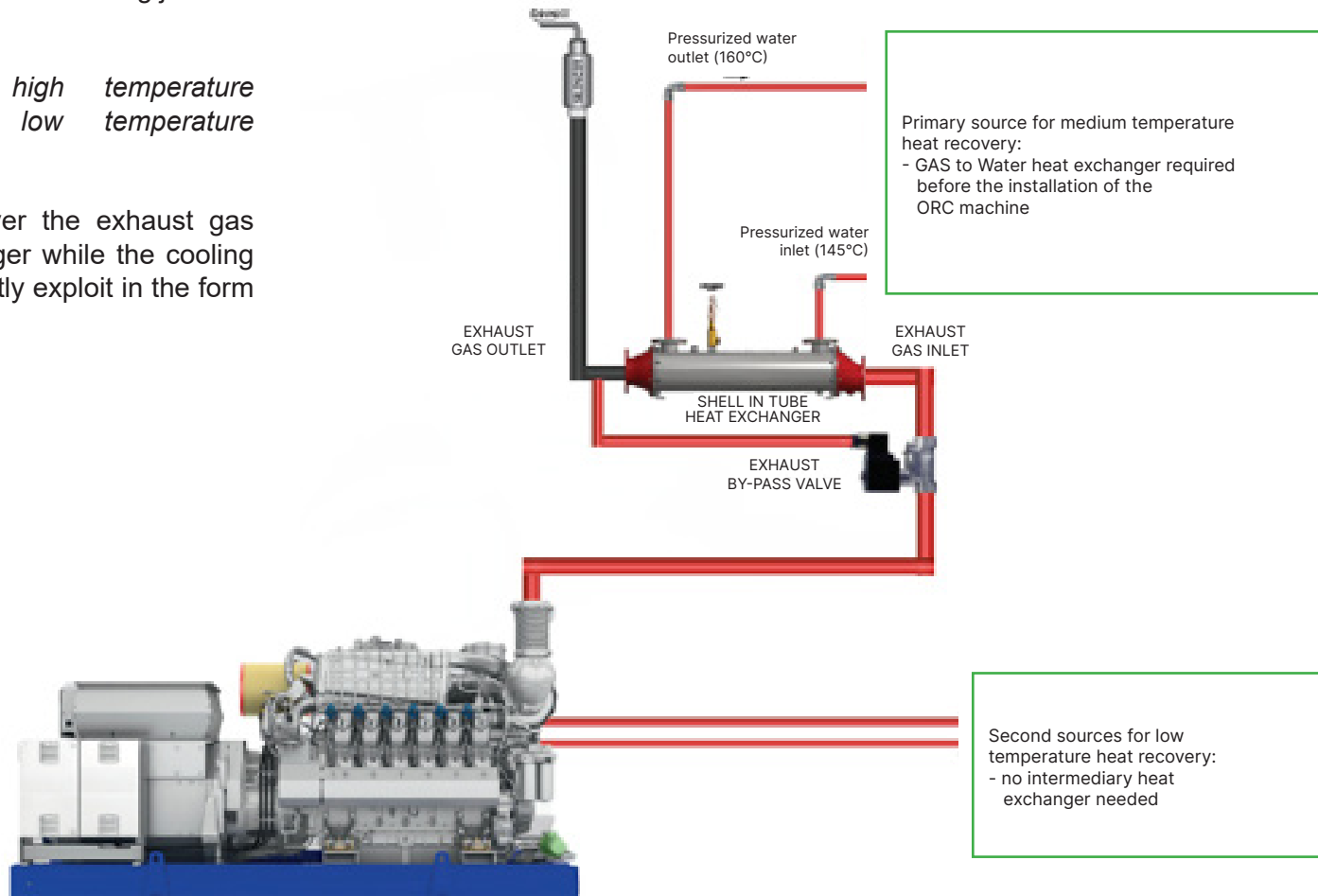
Zuccato Energia Srl - Via della Consortia 2 - Verona - Italia
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PRINCIPLE OF OPERATION

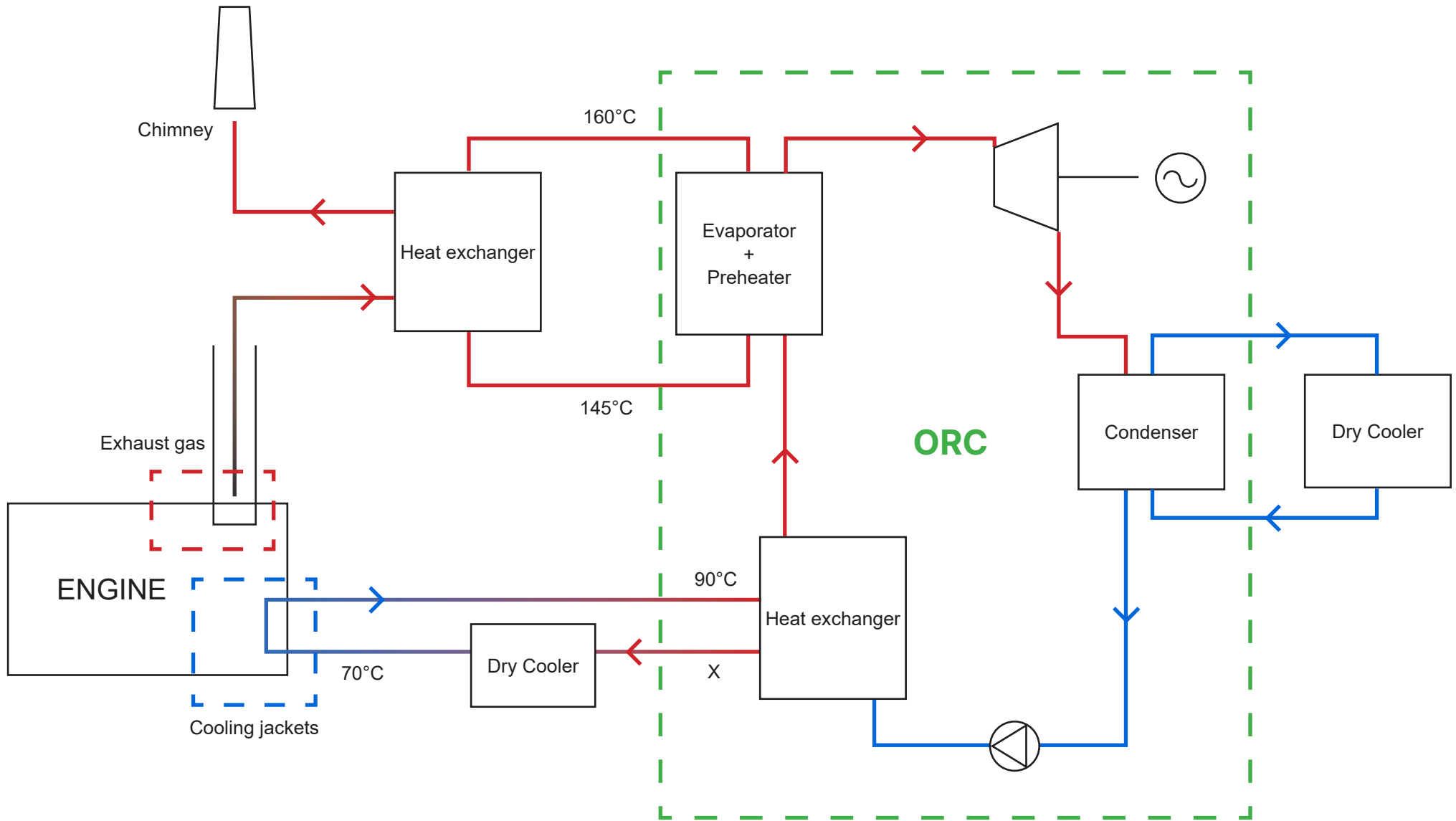
The heat sources available in engines are two: exhaust gas and cooling jackets.

Exhaust gases: high temperature
Cooling jackets: low temperature

It is possible to recover the exhaust gas with a heat exchanger while the cooling jackets can be directly exploited in the form of water.



FUNCTIONAL SCHEME



ADVANTAGES



Exploit both the thermal sources

Thanks to the arrangement of the machine components, it is possible to recover heat from both sources.

In this way we have greater efficiency with a greater result in terms of electricity.

ADVANTAGES



It lowers the consumption of the engine's Dry Cooler

By placing an exchanger downstream of the engine dry cooler, the water that must return to the cooling jackets is first cooled by our heat exchanger.

In this way, the dry cooler of the motor requires less power of action.

ADVANTAGES



**Better payback by installing
only one machine**

By installing just one machine, you have a better return on investment than buying two units. There are also advantages in terms of maintenance and component purchase costs.

ORC MODULE

General Specifications	ZE-75-LT	ZE-100-LT	ZE-150-LT	ZE-175-LT	ZE-200-LT	ZE-250-LT	ZE-500-LT
Thermal power input	550 kWt	740 kWt	1100 kWt	1280 kWt	1400 kWt	1560 kWt	2909 kWt
Electric power output	75 kWe	100 kWe	150 kWe	175 kWe	200 kWe	250 kWe	495 kWe
System efficiency	13.60 %	13.50 %	13.60 %	13.60 %	14.30 %	16.00 %	17.00 %
Skid dimensions (L x W x H)	4.1 x 2.0 x 2.7 m	5.6 x 2.3 x 2.7 m					10.3 x 4.5 x 2.9 m
Weight (incl. working fluid)	4000 Kg	6500 Kg	6200 Kg			21500 Kg	
Vector fluid							
Vector fluid	Presurized water						Diathermic Oil
Vector fluid input temperature	≥160°C					175°C	225°C
Vector fluid output temperature	145°C		140°C		145°C		103°C
Vector fluid nominal flowrate	8.49 kg/s	11.91 kg/s	13.14 kg/s	14.88 kg/s	21.65 kg/s	12.00 kg/s	11.28 kg/s
Condensation Stage							
Thermal power dissipation	471 kWt	640 kWt	940 kWt	1075 kWt	1180 kWt	1300 kWt	2391kWt
Cooling water input temperature	32°C	26°C				28°C	32°C
Cooling water output temperature	40°C	36°C				40°C	48°C
Cooling water nominal flowrate	14.07 kg/s	15.60 kg/s	22.46 kg/s	25.69 kg/s	28.25 kg/s	25.91 kg/s	35.38 kg/s
Turbine							
Type	Single stage, radial inflow turbine with fixed nozzles, directly coupled to generator						
Working fluid temperature	145°C input / ~ 100°C output PS16 (tested up to 24 bar)						180°C input / ~ 100°C output
Stage pressure	PS16 (tested up to 24 bar)						PS40
Materials	CNC Machined steel body / Aluminium alloy impeller						
Working Fluid							
Type	Environmentally friendly, non-flammable HFC mixture						
Operating temperature range	60°C ≤ T ≤ 165°C						60°C ≤ T ≤ 185°C
Operating pressure	≤ 20 bar						≤ 30 bar
Toxicity / Biodegradability / Ozone layer impact	Non-toxic / Full eco-compatibility / Ozone-friendly						

LT SERIES





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