Capstone Clean Cycle 125kW
Waste Heat to Electricity Generator

The Capstone Clean Cycle waste heat-to-electricity generator uses an Organic Rankine Cycle (ORC) to capture normally wasted heat from a wide range of sources, turning excess heat into clean-and-green electricity while raising the net efficiency of your system. Advanced power electronics and a sophisticated integrated power module join oil-free, low-maintenance magnetic bearings and non-ozone depleting refrigerant to achieve highly-efficient thermal energy-to-power output while still respecting the environment.

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The compact, skid system's fundamental components include:

- Power Electronics: Next-generation design turns high-frequency output into utility-friendly power without the need of expensive capacitors
- Self-Centering Magnetic Bearings: No oil and low maintenance translates to minimal downtime
- Integrated Power Module: High speed turbine expander with highly-efficient alternator is sealed in one small unit with only one moving part
- Environmentally Responsible: Safe, ozone-friendly refrigerant

The Capstone Clean Cycle 125kW waste-heat to electricity generator is one of the components in the Capstone C500 Clean Cycle HE System.

Features and Benefits

- ORC Technology with zero emissions
- Flexible heat-temperature input from as low as 250°F (121°C)
- Ease of synchronization with local utility
- Ready-to-integrate and efficiently designed with minimal footprint
- Highly reliable with only nominal maintanence and ownership costs
- Only one moving part and no gearbox in the integrated power module avoids expensive upkeep
- Magnetic bearings need no oil or lubricants
- The ORC utilizes a PLC-based control system, offering easier integration with customer monitoring and plant management systems
- Remote Monitoring and diagnostic capabilities with web-based gateway
- Flexibly designed for both local and remote control
- Ability to capture heat from many systems including engines, boilers, solar thermal installations, industrial heat stacks, and microturbines
- Packaged options available

Reliable power when and where you need it. Clean and simple.

Pressurized Hot Water to Power[1]

Waste Heat Conditions

Inlet Temperature	290°F (143.3°C)
Outlet Temperature	260°F (126.7°C)
Input Energy	3,340,000 BTU/hr (980kW)
Flow Rate	119,555 lbm/hr (54,343 kg/hr)

Condensing @ ISO Ambient: 59°F (15°C) 60% RH

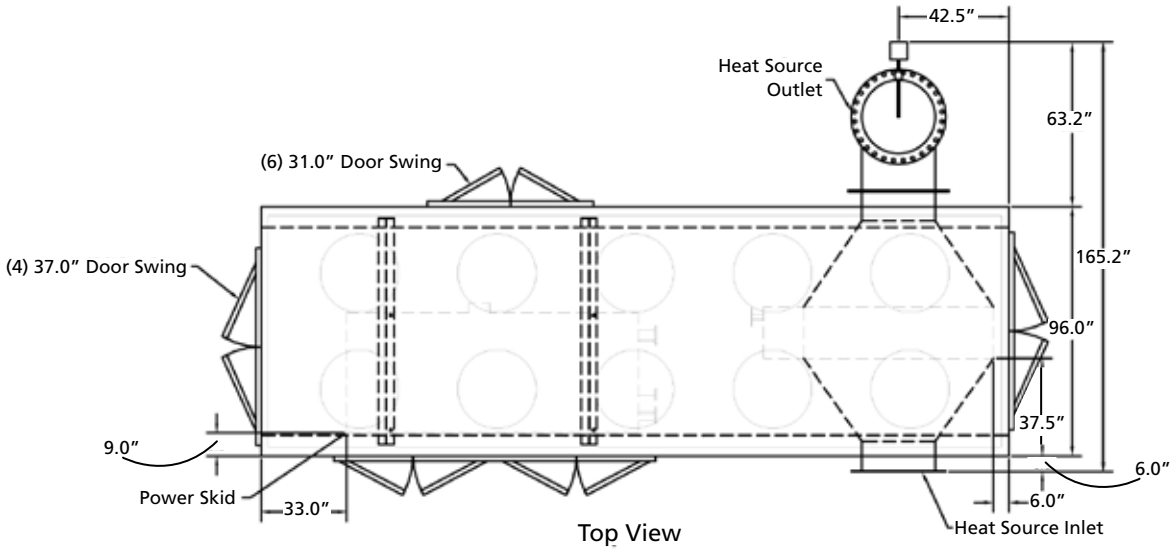
Condensing Temperature	70°F (21°C)
Condensing Load	2,800,000 BTU/hr (821kW)

Saturated Steam to Power[1] [2]

Temperature	255°F (124°C)
Pressure	32 psia (220.6 kPa)
Flow	3,692 lbm/hr (1,678 kg/hr)

Hot Gases to Power[1] [3] [4] [5]	Hot Gas Inlet Temperature	Hot Gas Flow Rate
Gas temperature needed for power output of 125kWe	400°F (204°C)	150,000 lbm/hr (68,182 kg/hr)
	500°F (260°C)	75,000 lbm/hr (34,091 kg/hr)
	600°F (315.6°C)	49,500 lbm/hr (22,500 kg/hr)
	700°F (371.1°C)	36,900 lbm/hr (16,773 kg/hr)
	800°F (426.7°C)	29,250 lbm/hr (13,295 kg/hr)
	900°F (482.2°C)	24,250 lbm/hr (11,023 kg/hr)

Capstone Clean Cycle 125kW Weather Protective Housing



Top View

(1) Electrical output gross is 125kWe
(2) Waste heat operating conditions: no superheat in steam included. Condensing temperature of 70˚F (21˚C) and heat exchanger 95% efficient
(3) Waste heat conditions: exhaust gas temperature reduced to 300˚F (149˚C) with condensing temperature of 70˚F (21.1˚C)
(4) Assumed exhaust gas Cp=0.25 BTU/lbm–˚F (1.05kJ/kg–˚C)
(5) Heat exchanger 95% efficient

Specifications are not warranted and are subject to change without notice.

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