

// BITZER SEMI-HERMETIC EXPANDER/GENERATOR

POWER MODULE75

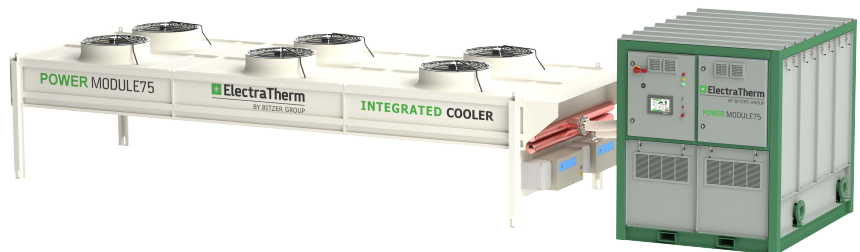
ElectraTherm's POWER MODULE75 produces fuel-free, emission-free power from various low-grade waste heat sources using the Organic Rankine Cycle (ORC) and the company's patented BITZER semi-hermetic twin screw expander/generator combination. ElectraTherm's patented ORC design represents a dramatic change from radial or axial turbine technologies, providing a more cost efficient, robust design with no shaft seal between the expander/generator combination, greatly enhancing reliability. The POWER MODULE75 is an evolution of ElectraTherm's POWER+ GENERATOR series and the BITZER expander offers enhanced performance across the operating range with a maximum output of 75kW.

POWER MODULE75 CONFIGURATIONS - Up to 75kWe



POWER MODULE75 Stand Alone

- // Dimensions**:
Width: 72" [1829mm], Depth: 95" [2413mm], Height: 85" [2159mm]
- // Weight: 5,700lbs. [2591kg]
- // Customizable balance of plant
- // Indoor or outdoor installation



POWER MODULE75 with Cooling Package

- // Cooling package includes dry cooler and associated piping/pumps**

* Renderings may not be exact representations of final product.
** Shown with optional skins package.

HEAT TO POWER APPLICATIONS

ElectraTherm generates electricity from various heat sources, including:



Stationary Engines



Biomass/Biogas



Boilers & Process Heat



Oil & Gas, Geothermal

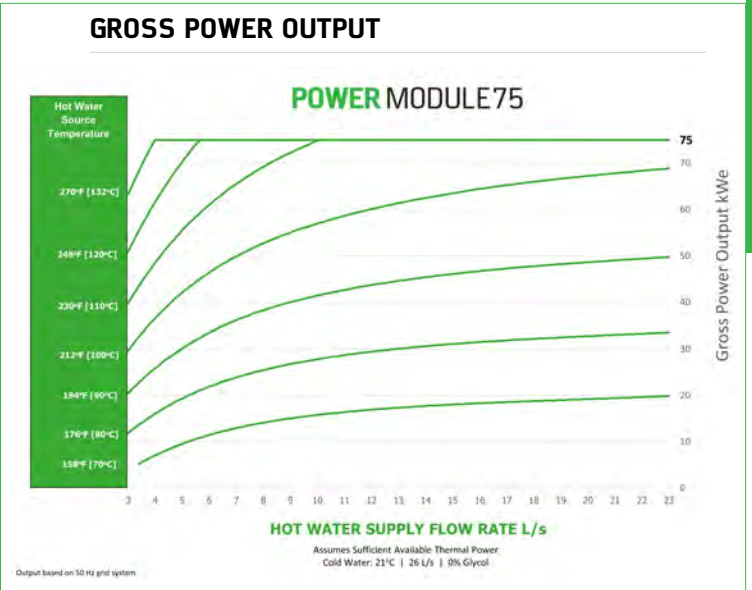


Flare Elimination

POWER MODULE75 PERFORMANCE PARAMETERS - Up to 75kWe

ElectraTherm's Water Cooled Condensing System Performance

HOT WATER INPUT PARAMETERS	Hot water input temp range*	°F	150 - 270
		[°C]	65 - 132
	Thermal input range	MMBTU/hr	1.024 - 4.268
[kWth]		300 - 1,250	
Flow rate range	gpm	47 - 365	
	[l/s]	3 - 23	
WATER COOLED CONDENSING PARAMETERS	Cooling water input temp range	°F	50 - 150
		[°C]	[10 - 65]
	Heat rejected to cooling water range	MMBTU/hr	1.024 - 4.095
[kWth]		[300 - 1,200]	
Cooling water flow rate	gpm	95 - 412	
	[l/s]	[6 - 26]	
DRY COOLER	Dry Cooler approach to ambient air temp	°F	20
		[°C]	[11]
	Heat rejected to Dry Cooler	MMBTU/hr	2.730
[kWth]		[800]	



* Currently tested up to 120°C

PERFORMANCE CHARACTERISTICS

Nominal Rating	Up to 75kWe* @ 380 - 500V / 3 phase / 50 & 60 Hz
Ambient Operation	32°F - 113°F (0°C - 45°C)
Power Factor Correction	Load and Site Dependent - from 0.9 to 1
Total Harmonic Distortion	<3%
Emissions	Zero (Closed Binary Cycle)
Net Minimum Operating kW Output	5kWe Net

DESIGN ATTRIBUTES

Refrigerant Plumbing	Built to ASME and CE Standards
Power Block	BITZER Semi-Hermetic Twin Screw Expander Generator Combination
Generator	Grid-Tied Induction (Brushless Construction, Asynchronous)
Heat Exchangers	Compact, Brazed Plate Construction
Design Life	20 Years
Lubrication	Patented Process Lubrication
Grid Protective Relay (GPR)	External Additional GPR Interface Included

SYSTEM DESCRIPTION

Working Fluid	R245fa (Pentafluoropropane)**
Heat Source	Hot Water 150°F - 270°F (65°C - 132°C)
Cooling Requirement	Water 50°F - 150°F (10°C - 65°C)
Minimum Temp Differential	Between Hot Water Input and Cooling Water Input = 80°F / 27°C
Controls	Programmable Logic Controller Based Custom Controls
Remote Monitoring	Machine accessible with optional VPN router
Operation	Designed for Unattended Operation
Cabinet	NEMA 3R Outdoor Rated / IP 54 Compliant
Shipping	Ships from Flowery Branch, GA, USA
Dimensions & Weight	Various Configurations Available (see first page)
Sound Pressure	80db at 1 meter. Sound Attenuated Option: <72db at 1 meter

*Output depends on hot and cold resources

**Extreme environments require optional equipment

***R245fa is a non-flammable and non-ozone depleting working fluid

FEATURES INCLUDE:

- // EASE OF INSTALLATION
- // LOW MAINTENANCE
- // ROBUST, TWIN SCREW EXPANDER POWER BLOCK
- // CE CERTIFIED
- // AUTOMATED CONTROL SYSTEM
- // MODULAR AND SCALABLE
- // ZERO EMISSIONS
- // ZERO TOXIC BY-PRODUCTS
- // ZERO FOSSIL FUEL REQUIREMENTS

OPTIONS & UPGRADES:

- // HMI TOUCHSCREEN
- // POWER FACTOR CAPACITOR
- // VPN UPGRADE
- // RUGGEDIZED SLED

 **ElectraTherm**
BY BITZER GROUP