GulfCoast GREEN ENERGY

ELECTRATHERM® THIS IS SMART POWER®

4200 Specification Sheet

POWER+ GENERATOR™

ElectraTherm's Power+ Generator™ produces fuel-free, emission-free power from low grade waste heat using the Organic Rankine Cycle (ORC) and proprietary technology. The company's proven, patented twin screw expander enables its heat-to-power generating system to make electricity from waste heat instead of fossil fuel. ElectraTherm's Power+ Generator™ represents a dramatic change from radial or axial turbine technologies, providing a more cost efficient, robust machine to generate fuel-free and emission-free electricity from a variety of heat sources.

ElectraTherm's twin screw expander offers distinct advantages for small-scale ORCs. These advantages include a simple and compact design, low speed operation with the ability to handle heat input variations and dual phase flow of the working fluid, significant part load capability, no gear box or oil pump, attractive payback and proven technology.

4200 Power+ CONFIGURATIONS - Up to 35kWe

ElectraTherm's Power+ Generator™ is available in two configurations:

4200 Stand Alone Specifications

- Dimensions: 2.4 x 2.0 x 2.3 m
- Weight: 3,600 kg / 7,920 lbs
- Customizable balance of plant
- Indoor or outdoor installation

4200-FL Specifications

- Dimensions: 12 x 2.4 x 2.9 m
- Weight: 14,515 kg / 32,000 lbs
- Turnkey inc. liquid loop radiator, working fluid, start up and commissioning, hot water bypass (if required)

HEAT TO POWER APPLICATIONS

ElectraTherm generates electricity from various heat sources, including:

Stationary Engines

Biomass/Biogas

Boilers & Process Heat

Oil & Gas, Geothermal

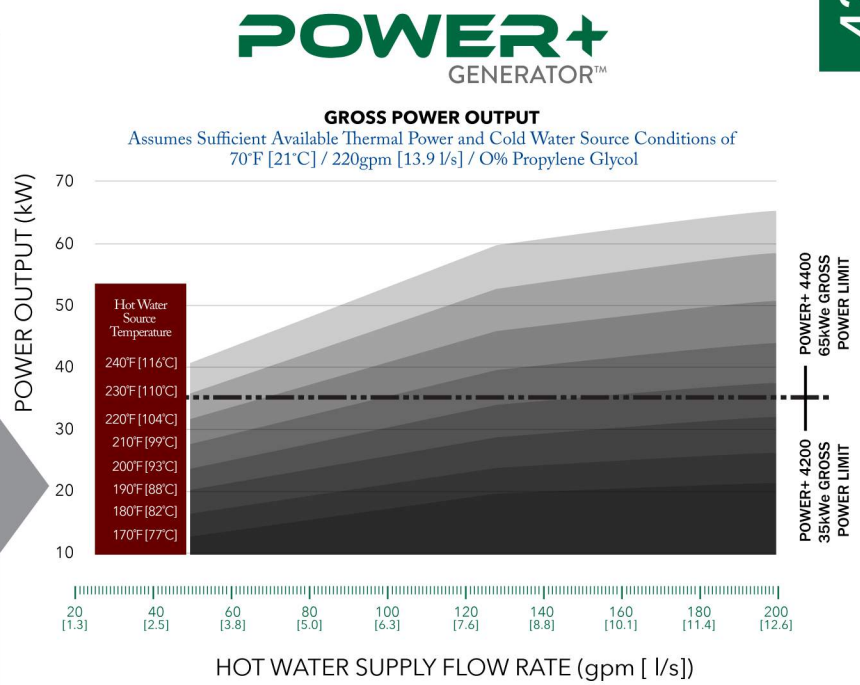
Solar Thermal

4200 PERFORMANCE PARAMETERS - Up to 35kWe

ElectraTherm's Water Cooled Condensing System Performance

4200

Hot Water Input Parameters	Hot water input temp range	°F	170 - 240
		[°C]	[77 - 116]
	Thermal input range	MMBTU/hr	1.02 - 2.22
		[kWth]	[300 - 650]
	Flow rate range	gpm	50 - 200
		[l/s]	[3.2 - 12.6]
Water Cooled Condensing Parameters	Cooling water input temp range	°F	40 - 150
		[°C]	[4 - 65]
	Heat rejected to cooling water range	MMBTU/hr	1.3 - 2.0
		[kWth]	[380 - 600]
	Cooling water flow rate	gpm	220
		[l/s]	[13.9]
Liquid Loop Radiator (LLR)*	LLR approach to ambient air temp	°F	20
		[°C]	11
*4200-FL Only	Heat rejected to LLR	MMBTU/hr	1.3 - 2.0
		[kWth]	380 - 600



PERFORMANCE CHARACTERISTICS

Nominal Rating	Up to 35kWe* @ 380 - 500V / 3 phase / 50 & 60 Hz
Ambient Operation	0°C - 38°C (32°F - 100°F)**
Power Factor Correction	Load and Site Dependent - from 0.9 to 1
Total Harmonic Distortion	2% for Voltage; 10% for Current
Emissions	Zero (Closed Binary Cycle)

DESIGN ATTRIBUTES

Refrigerant Plumbing	Built to ASME and CE Standards
Energy Block	Twin Screw Expander
Generator	Grid-Tied Induction (Brushless Construction, Asynchronous)
Heat Exchangers	Compact, Brazed Plate Construction
Design Life	20 Years
Lubrication	Process Lubrication
Transient Voltage/Surge Suppression	Basic Protections are Standard
Grid Protective Relay (GPR)	External Additional GPR Interface Included

SYSTEM DESCRIPTION

Working Fluid	R245fa (Pentafluoropropane)***
Heat Source	Hot Water 77°C - 116°C (170°F - 240°F)
Cooling Requirement	Water 4°C - 65°C (40°F - 150°F)
Controls	Custom Controls Software using Standard Programmable Logic Controller
Remote Monitoring	Will Support Internet Protocol, 3G Cellular, Satellite Communications, Wireless
Operation	Designed for Unattended Operation
Cabinet	NEMA 3R Outdoor Rated /IP 54 Compliant
Shipping	Ships from Reno, NV, USA
Dimensions	Various Configurations Available (see first page)
Weight	Various Configurations Available (see first page)
Sound Pressure	80db at 1 meter. Sound Attenuated Option: <72db at 1 meter

FEATURES INCLUDE:

- Automated Control System
- Remote Monitoring
- Low Maintenance
- Modular and Scalable
- Robust, Twin Screw Expander Power Block
- CE Certified
- Zero Emissions, Zero Toxic By-products and Zero Fossil Fuel Requirements
- Dual-Heat Stream Input + Radiator Option Available

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