



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.

6500 Power+ CONFIGURATIONS - Up to 110kW_e

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

6500 Stand Alone Specifications



- Dimensions*: 3 x 2.4 x 2.6 m
- Weight: 4,853 kg /10,699 lbs
- Customizable balance of plant
- Indoor or outdoor installation
- Manufacturer's Suggested Retail Price**: \$312,060

6500-FL Specifications



- Dimensions*: 12 x 2.4 x 2.9 m
- Weight: 8,553 kg / 19,518 lbs
- Turnkey inc. liquid loop radiator, all piping/pumps, no concrete foundation required, minimal engineering
- Manufacturer's Suggested Retail Price**: \$424,019

* Renderings may not be exact representations of final Power+ product.

** Certification fees for certain countries may apply.

HEAT TO POWER APPLICATIONS

ElectraTherm generates electricity from various heat sources, including:



Stationary Engines



Biomass/Biogas



Boilers & Process Heat



Oil & Gas, Geothermal



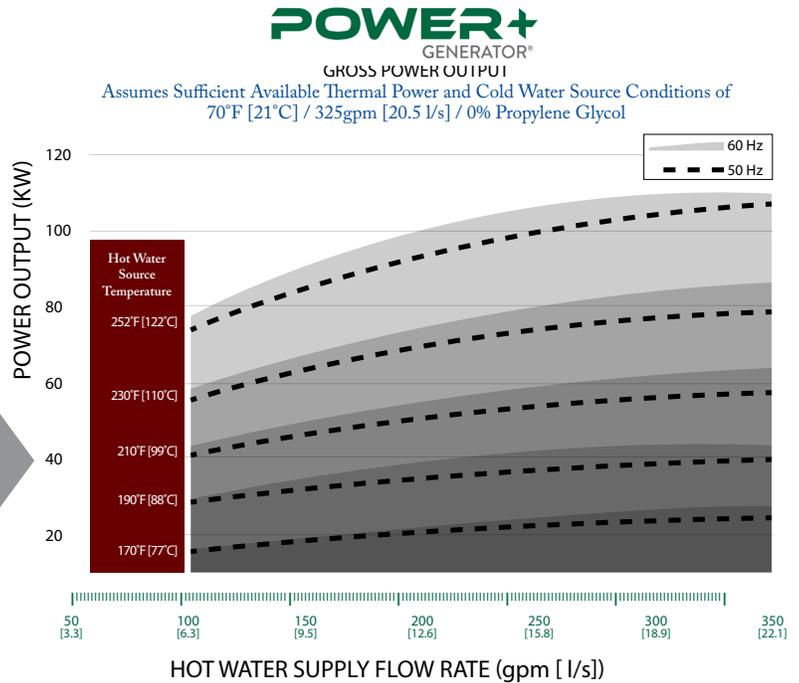
Solar Thermal

6500 PERFORMANCE PARAMETERS - Up to 110kWe

ElectraTherm's Water Cooled Condensing System Performance

6500

| | | | |
|------------------------------------|--------------------------------------|----------|----------------|
| Hot Water Input Parameters | Hot water input temp range | °F | 170 - 252 |
| | | [°C] | [77 - 122] |
| | Thermal input range | MMBTU/hr | 1.2 - 5.4 |
| | | [kWth] | [330 - 1600] |
| Flow rate range | | gpm | 100 - 350 |
| | | [l/s] | [6.4 - 22.1] |
| Water Cooled Condensing Parameters | Cooling water input temp range | °F | 40 - 150 |
| | | [°C] | [4 - 65] |
| | Heat rejected to cooling water range | MMBTU/hr | 1.1 - 5.1 |
| | | [kWth] | [320 - 1500] |
| Cooling water flow rate | | gpm | 325 |
| | | [l/s] | [<22.1] |
| Liquid Loop Radiator (LLR)* | LLR approach to ambient air temp | °F | 25 |
| | | [°C] | [14] |
| *6500-FL Only | Heat rejected to LLR | MMBTU/hr | 1.1 - 5.1 |
| | | [kWth] | [320 - 1500] |



PERFORMANCE CHARACTERISTICS

| | |
|---------------------------|---|
| Nominal Rating | Up to 110kWe* @ 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 - 122°C (170°F - 252°F) |
| Cooling Requirement | Water 4°C - 65°C (40°F - 150°F) |
| Controls | Custom Controls Software using Standard Programmable Logic Controller |
| Remote Monitoring | Fully Controllable via Customer Internet Connection |
| Data Logging | Major System Parameters Logged, KEPServer/OPC Available for Site SCADA |
| Operation | Designed for Unattended Operation |
| Electrical Panels / Components | NEMA 3R Outdoor Compliant / IP 54 Compliant |
| Shipping | Ships from Flowery Branch, GA, USA |
| Dimensions | Various Configurations Available (see next page) |
| Weight | Various Configurations Available (see next page) |

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

*Output depends on hot and cold resources

**Extreme environments require optional equipment

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



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