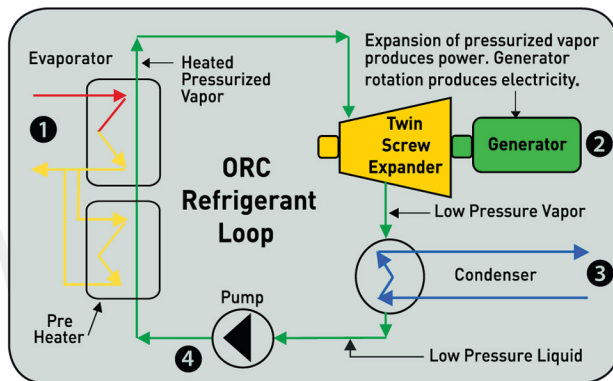


HOW ELECTRATHERM'S HEAT TO POWER SYSTEMS WORK

ElectraTherm's heat to power systems operate in a closed loop organic Rankine cycle (ORC). Similar to a conventional steam engine that boils water into steam to produce mechanical work, an ORC uses low grade heat to boil a working fluid into gas.

Steps in the process:

1. Heat is captured by the evaporator and boils the working fluid into a vapor. The boiling vapor creates pressure.
2. The vapor is forced through the screw expander, spinning an electric generator.
3. The vapor is cooled by a cold water source and condensed back into a liquid in the condenser.
4. The working fluid is pumped to higher pressure and returned to the evaporator to repeat the process.



ElectraTherm's twin screw expander offers distinct advantages for small-scale ORCs. These advantages include simple design, low speed operation, 3:1 turn down ratio, no gear box or oil pump, competitive cost and proven technology.



FUEL-FREE, EMISSION-FREE POWER



ElectraTherm, Inc. | 4750 Turbo Circle
Reno, Nevada 89502
P: 775 398-4680 | Toll Free: 1-877-883-7101

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THE GREEN MACHINE



Low Temperature Heat-to-Power Generating System

WWW.ELECTRATHERM.COM

ELECTRATHERM'S HEAT TO POWER TECHNOLOGY REWRITES THE ECONOMICS OF ENERGY EFFICIENCY

ElectraTherm's award winning "Green Machines" employ untapped low grade heat sources to make electricity with:

- No fuel requirement
- Zero emissions
- Low maintenance
- Attractive payback
- 20-year design life



Production Facility in Nevada



The Green Machine

DELIVERING CLEANTECH ENERGY SOLUTIONS FOR A SUSTAINABLE FUTURE, NOW

Hot Liquids to Power* US Units

Electrical Output	Waste Heat Conditions			Condensing Conditions	
kW	Inlet Temp °F	Btu/hr	GPM	Inlet Temp °F	Condensing Load Btu/hr
30-50	190-240	1,470,000-2,440,000	150-170	50-70	1,370,000-2,270,000

**Sources: Stationary IC Engines - Geothermal - Solar Thermal- Biomass or Hot Water from Industrial Processes. Values are approximate and will vary by application.*

Hot Liquids to Power* Metric Units

Electrical Output	Waste Heat Conditions			Condensing Conditions	
kW	Inlet Temp °C	kW	Flow m3/hr	Inlet Temp °C	Condensing Load kW
30-50	88-116	430-715	34-39	10-21	400-665

**Sources: Stationary IC Engines - Geothermal - Solar Thermal- Biomass or Hot Water from Industrial Processes. Values are approximate and will vary by application.*

To receive an estimate of ElectraTherm's power output at your site, go to:

www.electratherm.com/pef

ELECTRATHERM GREEN MACHINES MAKE ELECTRICAL POWER FROM THE FOLLOWING HEAT SOURCES:

Stationary Engines

(Jacket Water – Engine Exhaust)

- Diesel Gensets
- Cogeneration (CHP)
- Distributed Generation
- Landfill Gensets
- Digester Gas Gensets
- Compressor Stations
- Pumping Stations
- Trigeneration (CCHP)

Solar Thermal

- Bottom Cycle
- Direct Hot Liquid
- Steam Condensate

Geothermal

- Geothermal Water
- Oil & Gas Wellhead Fluid

Biomass

- Wood Chips
- Landfill Waste
- Bio-Based Fuels

Other Applications

- Thermal Oxidizers
- Process Heat
- Boilers



Application Capabilities