

THE SMART POWER DIFFERENCE

The integration of a semi-hermetic twin-screw expander – along with proprietary SMART POWER technology – gives ElectraTherm’s Organic Rankine Cycle (ORC) systems an advantage over competitive technologies and opens market opportunities where waste heat recovery has previously been either impossible or unpractical.

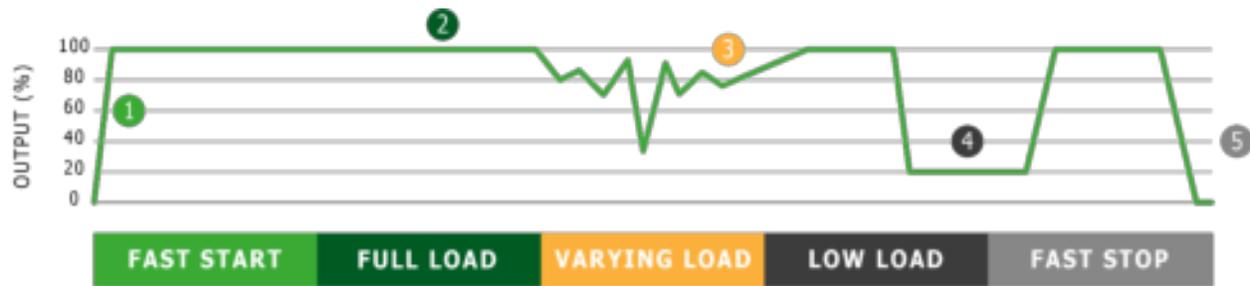
The custom-built expander, along with proprietary technologies, provides a more cost-efficient, robust design that greatly enhances reliability and functionality. Much lower operating speeds enable “wet” dual phase flow; this makes the expander more equipped for transient operation, reliably generating power from heat sources with fluctuations in both temperature and flow. Additionally, the expander has a far greater turndown ratios than turbines, able to operate everywhere from 5 kW up to 150 kW. The factors make ElectraTherm’s ORC technology more ideal for lower temperature, variable heat sources when compared to other systems.



Since ElectraTherm’s founding in 2005, our ORC systems have undergone countless iterations to become what you see today. We have over 100 units operating in 13 countries and have accumulated over 2,000,000 fleet operating hours. Our successes – and failures – have led us to developing a product with industry-leading efficiencies that we confidently stand behind. We are always learning and applying our knowledge to developing more efficient ways to harness the world’s most vast resource, heat.



FLEXIBLE OPERATION



1. FAST START

After installation and configuration, the system is set by default to go from “off” to full load in 60 seconds. This is the only point the system will consume power that is not its own.

2. FULL LOAD

At full output our heat recovery systems boost efficiency as much as 10% with no additional fuel consumption and minimal operating expenses. This amounts to an extremely low levelized cost of electricity, making the system a great sustainable asset for any size operation. Our units are modular, scalable, and mobile so you can use them however, whenever, and wherever you need to.

3. VARYING LOAD

ElectraTherm’s proprietary expander and ORC technology allows our systems to withstand variances in both temperature and flow while allowing for turbine-destroying moisture. The ability to automatically load follow allows you to leave the machine unattended, confident that it will continue producing power, as long as there is hot water. This gives businesses with inconsistent supplies of heat the ability to still take advantage of waste heat recovery.

Power output also fluctuates with the primary purpose the system is serving. Some sites use our systems solely to increase efficiency, while others may take advantage of our net-zero cooling or combined heat and power (CHP)

abilities. The system will automatically turndown power production in order to fulfill the primary purpose of the system. The system will then resume optimal power production once the conditions are met.

4. LOW LOAD

Another benefit of using a twin-screw expander is the ability to produce electricity from low-temperature sources previously seen as uneconomical for power generation. While a heat source may not provide sufficient thermal energy for maximum output, any heat upcycled into clean electricity is energy not wasted.

Lower operating speeds allow for consistent power generation at low loads, these lower speeds also mean less wear and tear in addition to noise reduction.

5. FAST STOP

When site conditions become too volatile or the hot water source is suddenly cut off, the unit will automatically shut down to protect your investment. Unlike other ORC solutions on the market that breakdown or become permanently damaged when fluctuations occur repeatedly, ElectraTherm’s smart power solutions are built to withstand abrupt changes in conditions.

For net-zero cooling to power applications, the ORC will be bypassed and the coolers will provide full-load cooling to ensure continued safe operation with no downtime.

THAT IS **SMART POWER**