

# Thermoelectrics for waste-heat recovery: Introducing E1

October 11 2014, by Nancy Owano

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Alphabet Energy has an inexpensive thermoelectric generator, the E1, for waste heat recovery. The generator captures exhaust heat and converts it into electricity. The E1 uses Alphabet's thermoelectric materials to convert the waste heat.

Matthew Scullin, CEO, in introducing the E1 Thermal Electric Generator in a promotional video, said, "With the E1, [waste heat](#) is now

valuable." He said the waste heat recovery product meets the oil and gas and mining industry criteria for a strong but simple solution. The E1 generates up to 25 kWe per 1,000 kWe engine, saving 52,500 liters of diesel fuel per year, per engine. "Saving fuel turns out to be one of the biggest levers a company has in reducing its operating expenses," said Scullin. "When we set out, we knew it had to be a piece of simple equipment rather than a complex power plant." Customers want waste-heat recovery solutions that are simple pieces of industrial equipment; earlier this year, he blogged that "Owners of waste heat do not have the bandwidth to: 1. Take a significant risk on unproven technology and 2. Worry about maintenance, oversight, and potential downtime to their operations. I've heard this for seven years now from nearly everyone who produces waste heat, whether they are miners, oil and gas operators, steel plant owners, or the like."

The E1 operates with technology that has no moving parts, no working fluids and requires minimal maintenance. Keeping the [waste heat recovery](#) system simple was in line with the concept of a system suitable for remote and industrial applications where system support capacity is limited. The E1 requires no engine modifications and is installed with a process only involving exhaust coupling and electrical hookup. The company said a standard connection can be completed in as little as two hours of previously scheduled engine downtime. Updates to the host engine's exhaust system are performed within a standard engine maintenance service interval.

What is more, said the company, "Our PowerBlocks are assembled into modules that generate power from an exhaust source. These modules include proprietary hot- and cold-side heat exchangers, advanced interfaces, and highly specialized geometries. They are strong, reliable, and the first and only upgradable thermoelectric modules. As Alphabet continues to make PowerBlocks advances, modules in existing generator systems can be swapped out for higher-performing, next-generation

modules."

After speaking to hundreds of customers looking for ways to introduce profitability in their business, he added, the company team is excited to help a range of industries reduce their fuel costs. Thermoelectric materials are semiconductors that generate electricity while in a temperature gradient. In order to be a good thermoelectric, these semiconductors must have the unique combination of both high electrical conductivity and low [thermal](#) conductivity: a rare set of properties for one material to hold, according to the company site. According to the press release, Alphabet Energy was founded in 2009 at Lawrence Berkeley National Laboratory.

**More information:**

[www.prweb.com/releases/2014/10/prweb12229734.htm](http://www.prweb.com/releases/2014/10/prweb12229734.htm)

[www.alphabetenergy.com/](http://www.alphabetenergy.com/)

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