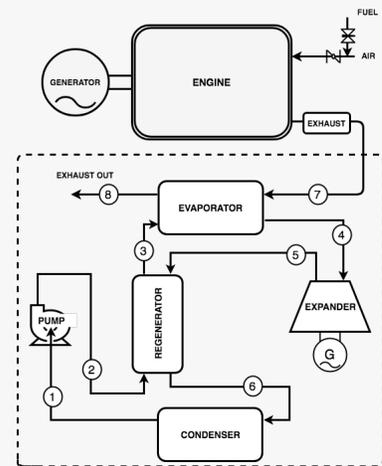


# Plug and Play Micro-ORC

A 1 kW Distributive Energy Solution for Residential or Commercial Electricity at \$3,000



## ON-SITE, EMISSION-FREE, CLEAN ENERGY FOR HOME OF BUSINESS

Air Squared is standing on the cutting-edge of distributive energy solutions with an innovative plug and play micro-organic Rankine cycle (ORC) bottoming system that delivers 1 kW of electricity, increases topping cycle efficiency by 10%, costs \$3,000, and is maintenance-free over 10,000 hours of continuous operation. The system converts low-grade heat sources into usable electricity, bringing the benefits of an industrial-scale ORC plant to residential homes and businesses. Optimized for tandem operation with continuous-load natural gas generators, the plug and play micro-ORC makes emission-free, passive energy from a small-scale waste heat recovery (WHR) system commercially viable for the first time. Learn more at <http://airsquared.com>.

### COMPACT DESIGN

Novel arrangement for reduced space

### "PLUG AND PLAY"

Pre-packaged all-in-one installation

### SCALABLE OUTPUT

1 kW system potentially scalable to 10 kW

### SHORT PAY-BACK PERIOD

Estimated at three years

### COST-COMPETITIVE

System cost of \$3,000 US in volume

### RELIABLE AND DURABLE

Over 10,000-hour operating life

With support from Advanced Research Projects Agency-Energy (ARPA-E), Air Squared was awarded funding under the Generators for Small Electrical and Thermal Systems (GENSETS) program to develop a transformative waste heat recovery system that enables distributive energy solutions utilizing stationary internal combustion engines. The project has moved into the second phase of development, where Air Squared will complete testing of alpha prototype systems by the end of 2018.

SPECIFICATION	TARGET
Electrical Power Output	1 kW
Generator	120 V AC, 60 Hz, Single-Phase
Overall ORC Efficiency	10-12%
Cycle Second-Law Efficiency	7.5%
Off-Design Second Law-Efficiency	5.5% (Over 50% Full-Load)
Working Fluid	R245fa
Maximum Pressure	2,400 kPa
Maximum Temperature	250 °C
Mass Flow Rate	0.0275 kg/sec.
Rated Speed	3,600 RPM
Maximum Heat Source Inlet Temperature	750 °C
Working Fluid Temperature at Expander Inlet	250 °C
System Dimensions	54 cm x 52 cm x 50 cm
System Weight	66 kg
Maintenance Interval	10,000 Hours

## ABOUT AIR SQUARED

Air Squared is the industry leader in scroll expander design and manufacturing. By introducing a simple design with fewer moving parts, scroll technology has established itself as a highly efficient, very reliable, cost-effective alternative to traditional expanders. With a growing line of custom and commercial expanders, Air Squared makes the many advantages of scroll technology available to OEMs worldwide.