ECHOGEN power systems

Heat Recovery Solution

EPS35

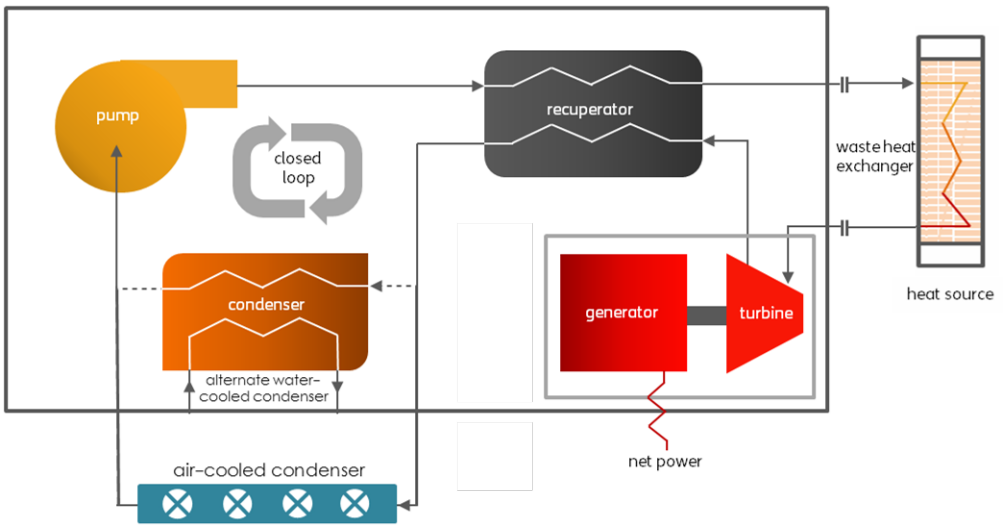
1.8MW Nominal Output

Echogen's EPS35 Heat Recovery System is an advanced Rankine Cycle for an extensive range of heat recovery applications. Our patented technologies are compatible with a wide variety of heat sources to extract significant amounts of energy and convert it into usable, higher value power.

The EPS35 uses industrial-grade carbon dioxide (CO_2) as the working fluid, which allows the system to deliver reliable power from a more compact, flexible and low-cost thermal engine. Power output can be optimized for a broad range of heat sources and applications.

Echogen's economical, emission-free power will enable fuel-intensive operations to lower the cost of energy, meet higher environmental standards and improve bottom-line performance.

Simplified EPS35 CO_2 Heat Recovery Cycle



Benefits:

Economical
Generates power at a competitive installed cost, reducing overall cost of electricity

Small Footprint
System components are compact, yielding a small, skid-based system for ease of installation

Clean
Produces fuel-free, emission-free electricity to meet environmental regulations

Safe
Working fluid is environmentally benign, thermally stable and non-flammable

Cooled with Air or Water
No water consumption for operation if air-cooled

Low Maintenance
System is capable of remote operation and does not require on-site personnel

Long Product Lifetime
High-quality manufacturing and use of non-corrosive fluids extend the life of system components

ECHOGEN power systems

EPS35 Heat Recovery Solution

Component Design

Generator / Gearbox	Synchronous / epicyclic
Turbomachinery	Integrated CO_2 turbopump

Design Standards

Classification Rules	ABS, ASME, IEEE, API (as applicable)
Piping	ASME 31.3
Electrical Components	NEMA4, IEEE

System

Working Fluid	CO_2, industrial-grade
Controls	PLC based
Remote Monitoring	LAN/WAN
Operation	Designed for remote control
Package	Skid-based, enclosed
Applications	Gas turbines, industrial heat, diesel engines, biogas

Design Conditions

Ambient Temperature	15°C	59°F
Relative Humidity	60%	
Waste Heat Supply Temperature	500°C	932°F
Waste Heat Flow Rate	20 kg/s	44.1 lb/s
Waste Heat Input	9,000 kW	31.2 MMBtu/hr

Electrical Output

Gross Output	2.0 MW
Net Output (air-cooled option)	1.8 MW
Voltage / Frequency*	13.8 kV, 3-phase, 60Hz

* Other voltages and frequencies available per customer requirements

General Specifications

	Size envelope (L x W x H)		**Weight, dry**	
Main Enclosure	6.1 x 3 x 3.6 m	20 x 10 x 12 ft	23,000 kg	50,000 lbs
Generator Skid	3 x 3 x 2.4 m	10 x 10 x 8 ft	13,500 kg	30,000 lbs

Other equipment may be required specific to installation, including: waste heat exchanger, cooling system and CO_2 storage tank.

ECHOGEN

Heat recovery reinvented.

Echogen Power Systems | 365 Water Street | Akron, OH 44308 | 234.542.4379 | echogen.com