

# Heat Recovery Solution

# EPS100

## 8+ MW Nominal Output

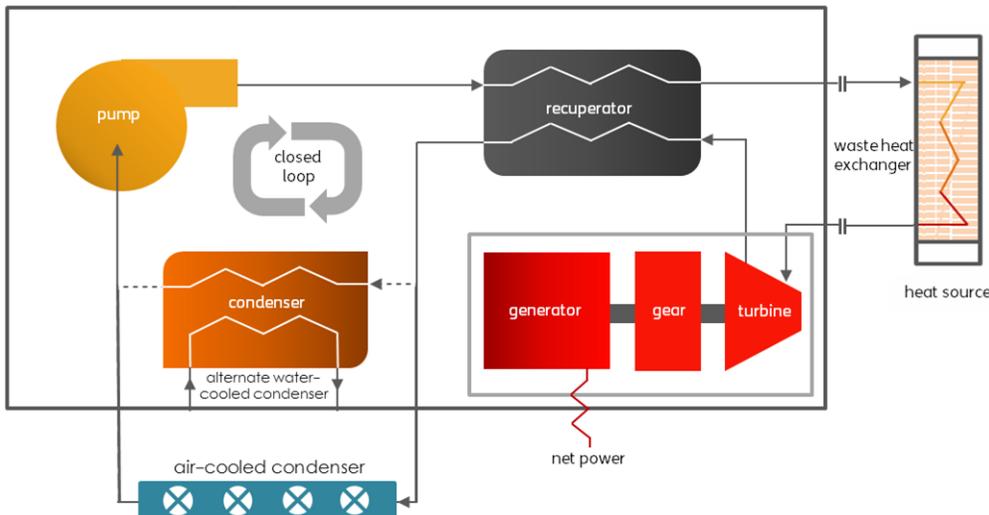


**Echogen's EPS100 Heat Recovery System** is an advanced Rankine Cycle for exhaust heat recovery applications. Our patented technologies are compatible with a wide variety of heat sources to extract significant amounts of energy and convert it into usable, higher value power.

The EPS100 uses industrial-grade carbon dioxide (CO<sub>2</sub>) 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. The EPS100 can also be modified for higher output (up to 9 MW) for applications with sufficient available heat.

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 EPS100 CO<sub>2</sub> 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

### Component Design

Generator	Synchronous 13.8 kV
Turbomachinery	CO <sub>2</sub> turbopump, power turbine

### Design Standards

Pressure Vessel Construction	ASME Section VIII
Piping	ASME 31.3
Electrical Components	NEMA4, IEEE

### System

Working Fluid	CO <sub>2</sub> , industrial-grade
Controls	PLC based
Remote Monitoring	LAN/WAN
Operation	Designed for remote control
Package	Skid-based, enclosed
Applications	Gas turbines, industrial heat, biogas

### Design Conditions\*

Ambient Temperature	15°C	59°F
Relative Humidity	60%	
Waste Heat Supply Temperature	532°C	990°F
Waste Heat Flow Rate	68 kg/s	150 lb/s
Waste Heat Input	33,300 kW	114 MMBtu/hr

\* Conditions required for 8.0 MW net output (see below). Higher outputs are possible with additional available heat.

### Electrical Output

Gross Output	8.6 MW
Net Output (air-cooled configuration)	8.0 MW
Voltage / Frequency	13.8 kVAC, 3-phase, 60Hz

### General Specifications

	Size envelope (L x W x H)		Weight, dry	
Main Enclosure	15 x 4 x 4 m	50 x 12 x 12 ft	64,000 kg	140,000 lbs
Generator Skid	4.5 x 2.5 x 3 m	14 x 8 x 10 ft	27,000 kg	60,000 lbs
Electrical House	10 x 6 x 4 m	34 x 19 x 12 ft	9,000 kg	20,000 lbs

Other equipment may be required specific to installation, including: waste heat exchanger, cooling system, CO<sub>2</sub> storage tank and lube oil cooler.