

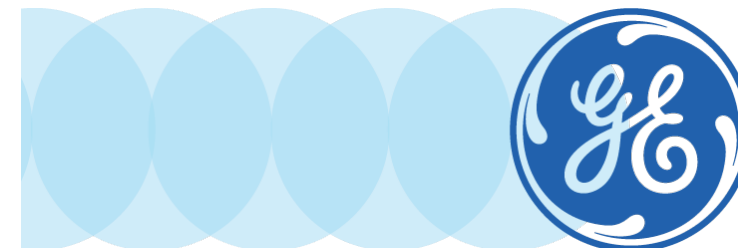
Extra Power

With no additional fuel burned



Benefits of an advanced bottoming cycle technology without the complexity of steam

- 50%+ prime mover efficiency
- 35% reduction in footprint/weight
- Lower emissions and life cycle cost



CO₂ Power Solutions

GE has teamed up with Echogen Power Systems to provide an innovative exhaust energy recovery system to marine customers.

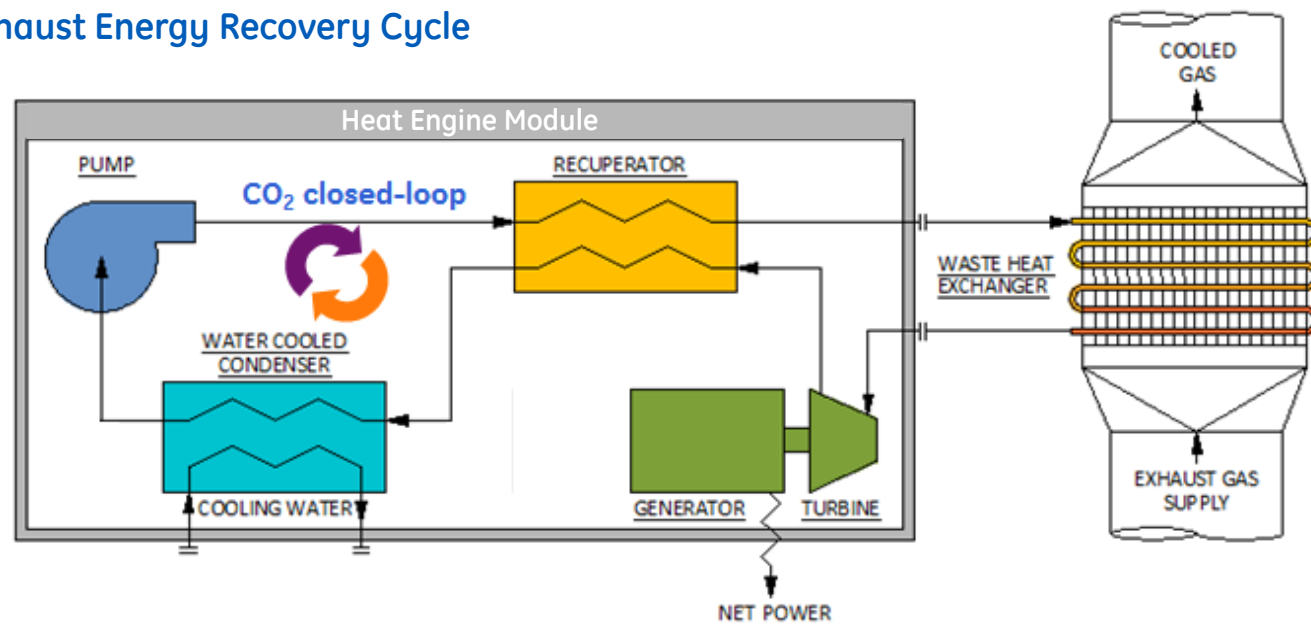
Echogen's patented* exhaust energy technology transforms an old concept of steam heat recovery and brings it into the 21st century. The closed-loop system uses carbon dioxide (CO₂) as working fluid to create electricity, generating fuel free, power and lower emissions.

The distinctive properties of CO₂ provide lower operational costs and smaller footprint, improving your ship's bottom-line performance.

The system works efficiently with exhaust gas supplied from either gas turbines or diesel engines, with exhaust temperatures ranging from 240°C to 600°C (464°F to 1112°F).

*U.S. and international patents issued and pending

Exhaust Energy Recovery Cycle



Benefits

- **Cost Reduction** - Generates power at installed cost competitive with steam systems, but with lower operational and maintenance expenses.
- **Reduced Footprint** - System components are smaller than a comparable steam system, packaged on a single base for ease and low installation cost.
- **Safe** - CO₂ is nonflammable and thermally stable. This exhaust recovery system eliminates the need for water chemistry balancing required for steam systems.
- **Operational Simplicity** - The closed-loop system is fully automated, reducing training and expertise required for on-board personnel.
- **Operational Flexibility** - No primary engine operating restrictions, regardless of exhaust energy recovery system operating status.
- **Long Product Lifetime** - High-quality manufacturing and non-corrosive fluids extend the integrity and life of system components.
- **Technical Support** - Global service plans available from GE.

Technical Specifications

Electrical Output	Model 8000	Model 1500	Model 500
Generator Output ⁽¹⁾ kW	8000	1500	500

(1) Does not include parasitic and auxiliary loads

Component Design	Model 8000	Model 1500	Model 500
Generator ⁽²⁾	Geared synchronous 13.8kV	PM alternator	PM alternator
Turbine	Single-stage radial	Single-stage axial	Single-stage axial

(2) Voltage Output: 480 VAC, frequency: 60Hz. Additional voltage/frequency available

(3) Integrated with plant operation and control system and configured to site requirements

General Specifications	Model 8000		Model 1500	Model 500
Size Envelope (LxWxH)/ (m/ft)	Process Skid:	11x3x4/35x11x12	6.7x3.6 x2.4/ 22x12x8	3x1.8x2.4/ 10x6x8
	Power Skid:	11x3x4/35x11x12		
Skid Weight, Dry (kg/lb)	Process Skid:	54,431/120,000	28,120/62,000	6,800/15,000
	Power Skid:	52,163/115,000		

Weights and dimensions do not include exhaust heat exchangers

⁽³⁾ Other equipment not specified: CO₂ storage unit and controls

Standard Conditions	Model 8000	Model 1500	Model 500
Ambient Temperature (°C/°F)	25/77		
Seawater Temperature	25/77		
Humidity	60%		
Heat Supply Temperature (°C/°F)	532/990	350/662	400/752
Heat Flow Rate (kg/s / lb/h)	68/540,644	32/254,016	8/63,507
Heat Input (kW / MMBTU/h)	33,300/114	12,423/42.4	2,545/8.68

System	Model 8000	Model 1500	Model 500
Working Fluid	CO ₂ , industrial-grade		
Controls	PLC based		
Remote Monitoring	LAN/WAN		
Operation	Designed for remote control/marine applications		
Package	Skid-based, fully enclosed		