

MODULE DATA SHEET



powered exclusively by 

BENEFITS

Caterpillar Engine

- proven reliable and durable for long life
- worldwide product support
- multiple fuel options including natural gas, biogas and LPG

Marathon Generator

- single-bearing, synchronous

Compliance

- meets or exceeds industry standards including UL, Rule 21, IEEE and EPA

Utility Interconnection

- integrated, fault protection switchgear for simplified interconnection
- stored energy breaker for quick transition

GenView™ Control System

- Internet based remote system monitoring
- onboard data capture, storage, and communication capable of 24/7 narrowband and wireless connection
- trend analysis to anticipate wear
- early alerts to system problems to minimize downtime

Exhaust Emissions

- NSCR system with A/F Ratio Control
- complies with EPA, JJJ requirements

Integrated Design

- primary containment protects the environment from fluid leaks
- removable door and roof panels for maximum serviceability
- rain-tight construction provides protection from weather
- sound attenuated cabinet and air ducts for noise reduction
- integrated battery charger for reliable operation

200 kWe Cogeneration Module

Caterpillar® SI Engine
Marathon Synchronous Generator

E3NV designs, develops and manufactures cogeneration modules unmatched in reliability and cost-effectiveness.

EQUIPMENT

In addition to the standard module features and equipment (see module configuration document), the following equipment is specific to this module only:

Engine

G3406TA manufactured by Caterpillar
in-line 6 cylinder, 4-stroke cycle, turbocharged
137 mm bore x 164 mm stroke, 14.6 liters displacement
10.3:1 compression ratio

Generator

Marathon model 432RSL4013 - 12 lead
reconnectable synchronous
PMG brushless excitation

Air Intake System

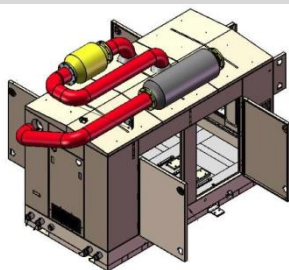
Outside combustion air ducted to a standard Caterpillar two-stage air cleaner
Inlet temperature up to 105°F (40°C) before derate

Complete System Heat Recovery

Stainless steel, brazed plate engine jacket water loop isolation heat exchanger
Stainless steel, water jacketed, exhaust heat exchanger

TECHNICAL DATA

Frequency	Hz		60 ^(a)	
Continuous Electric Output @ 0.85 pf	kWe		200	
Mechanical Power	bhp	kWb	279	208
RPM			1,800	
Heat Rate	Btu/kWe-hr	MJ/kWe-hr ^(b)	10,362	10.9
Combined Efficiency	%		84.4	
electrical efficiency	%		32.9	
thermal efficiency	%		51.5	
Fuel Consumption @ 905 Btu/scf – LHV	scfh	nm³/h	2,290	64.8
Fuel Consumption	therms per hour	kW	20.7	607
Total Thermal Energy Output	Btu/hour	kW	1,067,263	313
heat from water jacket	Btu/hour	kW	766,143	225
heat from exhaust	Btu/hour	kW	301,120	88
cooling (absorption chilling) ^(c)	tons		68 - 77	
engine out exhaust temperature	°F	°C	1,079	582
module out exhaust temperature	°F	°C	300	149
exhaust flow	lbm/hour	kg/hour	1,741	791
minimum cogeneration loop water flow	gpm	m³/hour	112	25.4
maximum cogeneration loop water pressure	psig	bar	50	3.4
maximum module out water temperature	°F	°C	207	97
nominal cogeneration return temperature	°F	°C	176	80
Environmental				
NOx	grams/bhp-hour	ppmv@15% O₂	1.0	82
CO	grams/bhp-hour	ppmv@15% O₂	2.0	270
noise	dBA @ 3 meters		< 65 ^(d)	
Generator Electrical Output	3 phase AC voltage		208 or 480	
^(a) 50 Hz values available on request				
^(b) heat rate assumes maximum exhaust back pressure of 2 inches Hg (6.7 kPa)				
^(c) depending on site conditions and application parameters				
^(d) 600 V available on request				

DIMENSIONS

Length	134"	3.40m
Height	84"	2.13m
Width	67"	1.70m
Weight	10,200lb	4,640kg

