Solar Turbines
A Caterpillar Company

MARS 100
Gas Turbine Generator Set

Power Generation

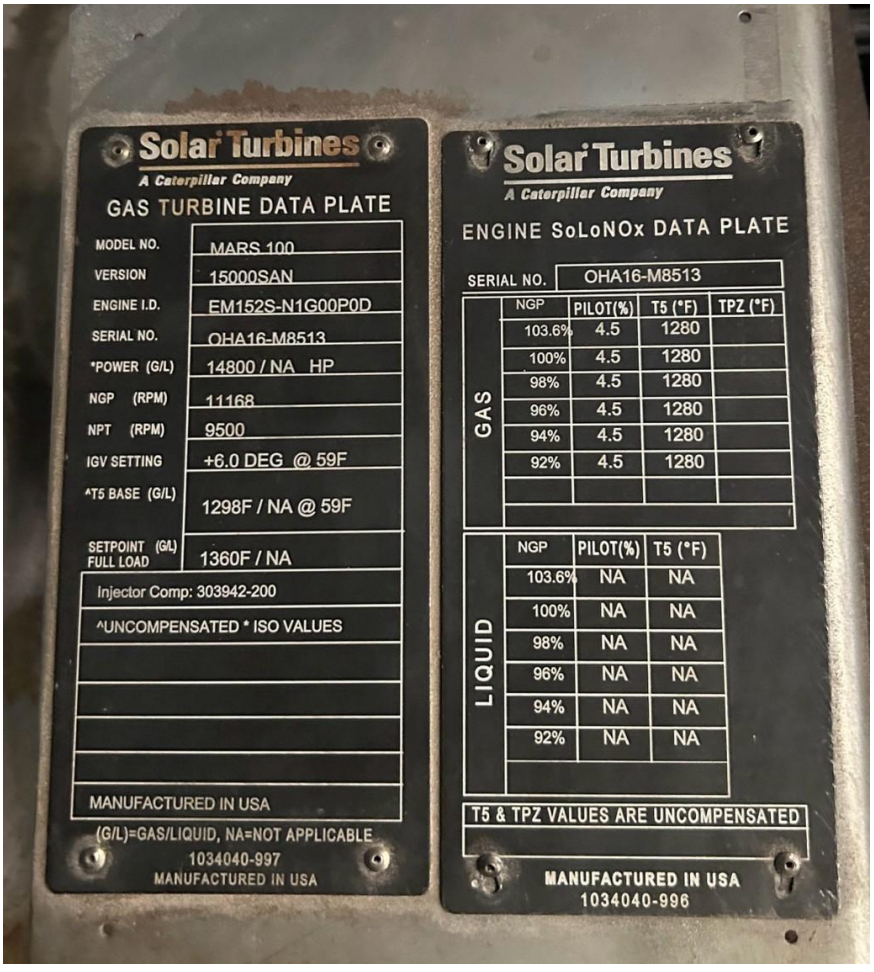
2 x SOLAR MARS 100 – SOLONOX VERSION 15000
July, 2025

1. Scope of the technical proposal.

Supply Two Solar Brand Gas Turbines:

02 x Gas Turbine model MARS 100 SoLoNOx – Version 15000SAN, 14800 HP. These are used equipment, zero hours - refurbished, manufactured in 2011.

MAIN PLATES, ONE OF THEM



The technical characteristics of the turbines are shown in the attached table.

YEAR	MAKE	MODEL	Frequency	Condition	Power HP	MW ISO	Quantity Available
2011	Solar	Mars 100 SoLoNOx	60 Hz	Zero Hours - Refurbished	14800	11.3	2

Manufacturer: Solar Turbines.
Manufacture year: 2011.
Gas turbine model: Mars 100-Version 15000SAN. SoLoNOx
Gas turbine power: 14800 HP.
Gas turbine power: 11.3 MW.
Gas turbine speed RPM: NGP 11168 NPT 9500 rpm.
Fuel Type: Natural Gas Maximum Supply Pressure 500 psig (3450 kPag).
Frequency: 60Hz

SCOPE of SUPPLY: Complete Ga Turbine including:

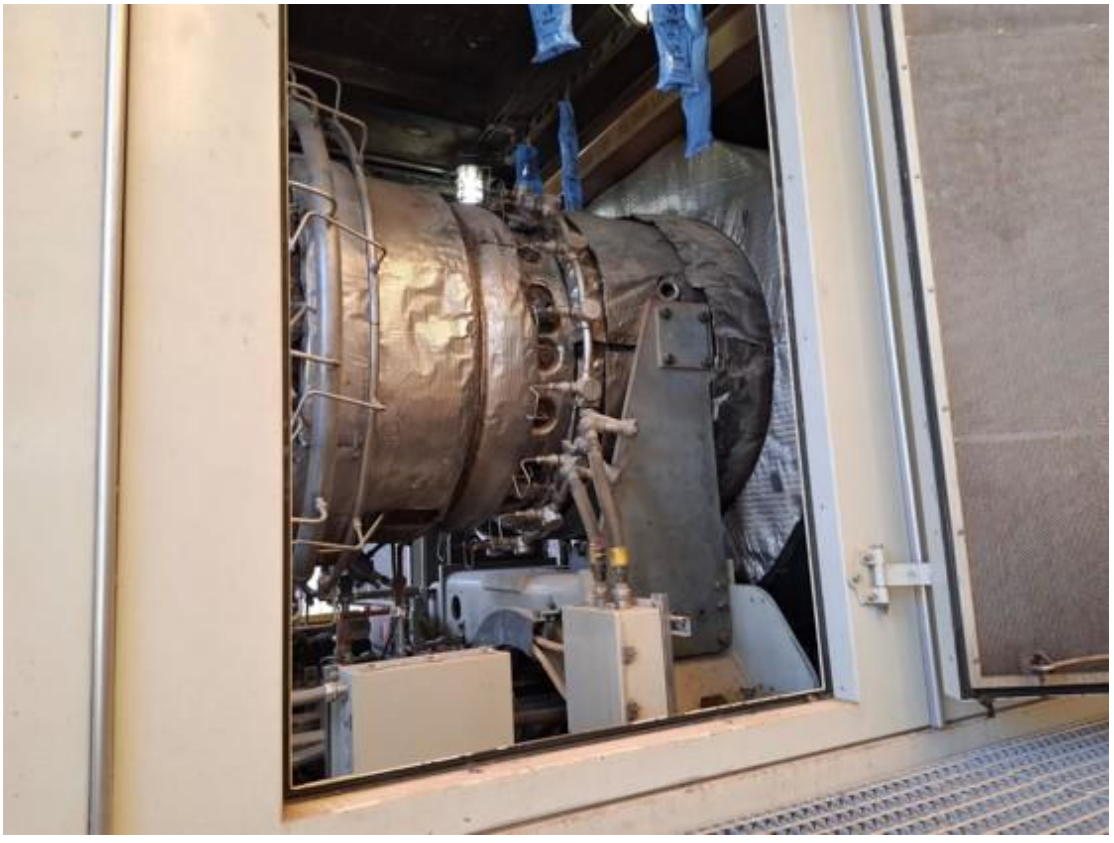
- ✓ Gas turbine (axial compressor, combustion chamber, and power turbine).
- ✓ Intake volute, inlet silencers
- ✓ Exhaust volute, exhaust silencers
- ✓ Lubricating oil system, oil tank, heater, main and auxiliary oil pumps (main mechanical, AC electric pre/post, DC electric backup), filter, 120V DC starter, pressure and temperature regulator, oil mist separator, ventilation flame arrester
- ✓ Starter motor
- ✓ Oil pressure regulation system
- ✓ Thermostat valve
- ✓ Duplex filter holder with its 6-way valve
- ✓ CO2 piping system, fire detection, and fire extinguishing system CO2
- ✓ Instrumentation associated with the turbine (pressure transmitters, vibration modules)
- ✓ Gas valves (primary, secondary, and PEC)
- ✓ IGV electro-actuator
- ✓ Oil supply and drainage hoses and pipes
- ✓ Enclosure with its panels and doors (enclosure)

- ✓ Local control panel with its PLC
- ✓ Cabin air intake duct with its fan, ventilation system
- ✓ Cabin air outlet ducts, ventilation system
- ✓ Filter house
- ✓ Damper with shutters for cabin insulation (cabin intake and discharge)
- ✓ Main oil tank
- ✓ Gas, flame, and heat detectors
- ✓ Thermocouples
- ✓ Skid internal pipes.
- ✓ Injectors
- ✓ Bleed valve
- ✓ Air and gas manifolds
- ✓ Electric Generator

Additional Scope of Supply:

- Zero hours, refurbished.
- Type of fuel used: Natural gas.
- Type of compatible fuel: No.
- Permanent suspension of activity: March/2023.
- Reason for interruption: End of subsidy for the acquisition of fuel (natural gas).

PHOTOS



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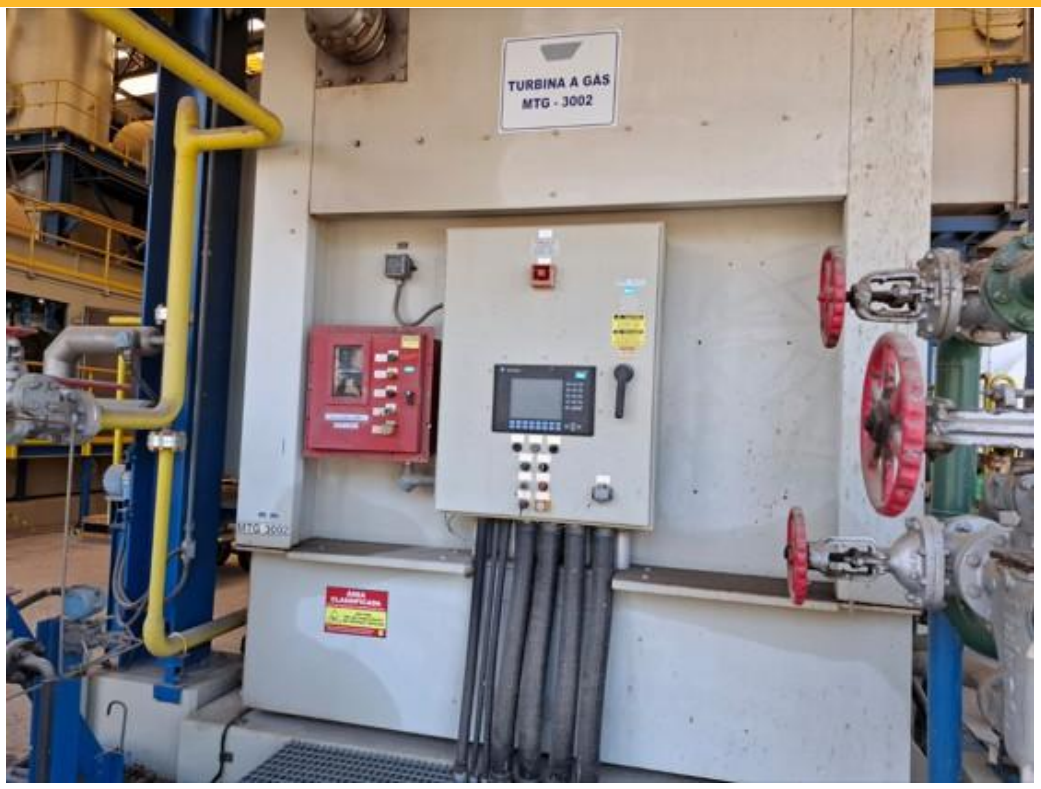

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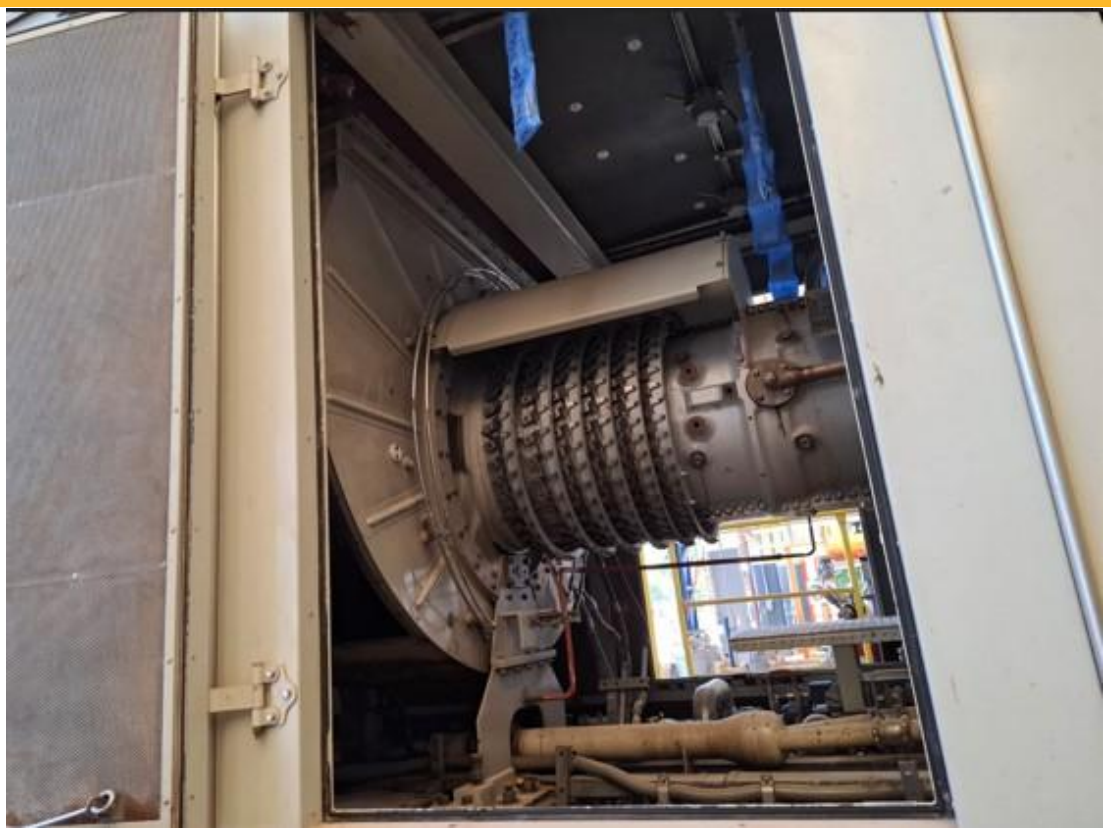

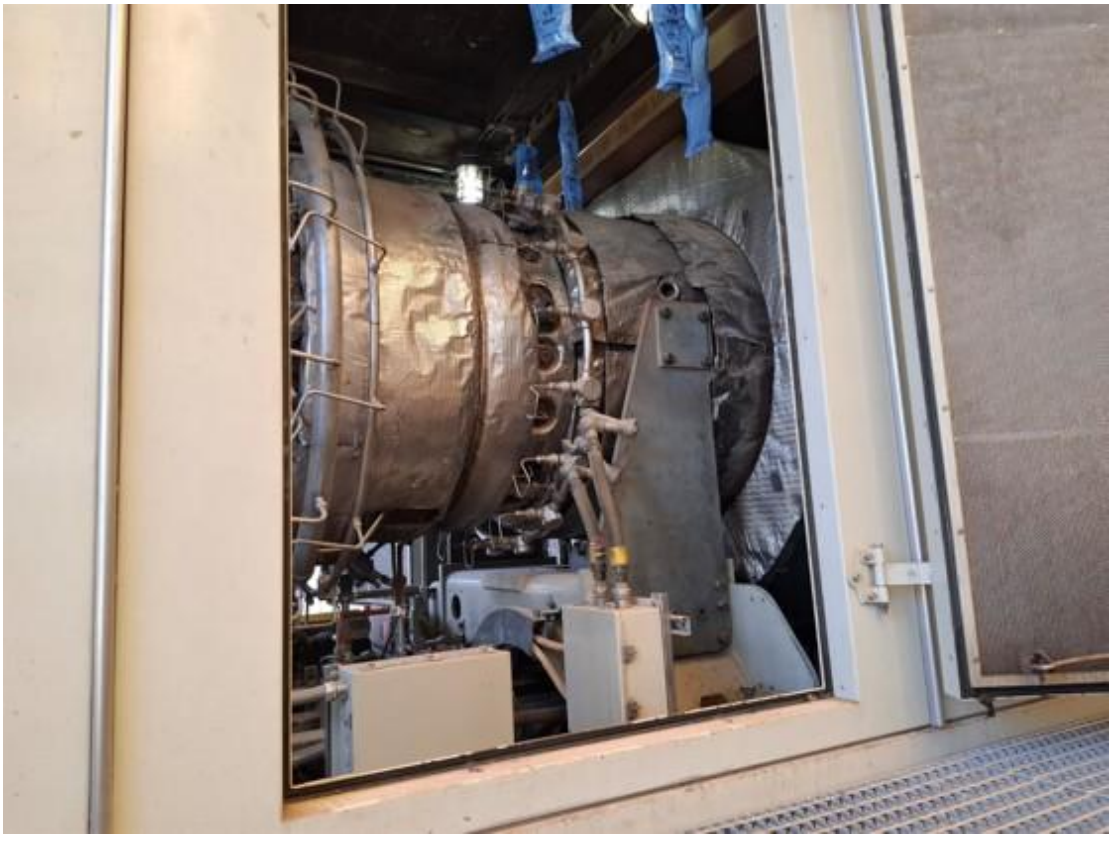

2. Prices

- Each Solar Gas Turbine included an Electric Generator: US$6,000,000 (six million dollars).
- The total price for two Solar Gas Turbines is US$12,000,000 (twelve million, dollars).

The Contract Price will be payable solely in US Dollars, the official currency of the United States of America.

3. Terms and conditions of payment

The following payment method is established.

A. A down payment fee of $60,000.00, payable before the inspection visit with the signed Sale Contract, is required. This amount is 1% of the price of a Solar Gas Turbine, and serves as a security deposit, which is refundable if not utilized as presented.
B. A deposit of 79% was paid with the official purchase order (P/O) five working days after the inspection visit.
C. The balance is 20% before shipping.

4. Delivery

Three months after receiving the purchase order.
Solar Turbines: Disassembled, CIF – ASWP.

Offer Validity: This quotation is valid for 30 days.

This offer does not include taxes. No warranty.

- **Note**:
  - **Equipment can be sold separately**
  - **Attachment: Solar Mars 100 Brochure**

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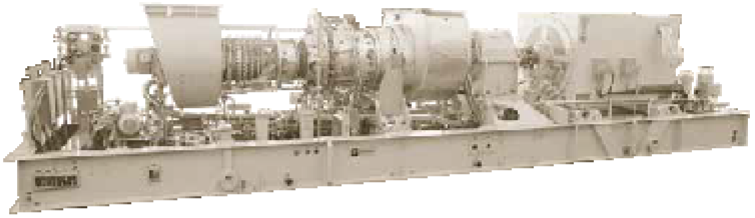

General Specifications

Mars® 100 Gas Turbine

- Industrial, Two-Shaft
- 15 Stage Axial Compressor
  - Variable Inlet Guide Vanes and Stators
  - Pressure Ratio: 17.8:1
  - Inlet Airflow: 42.0 kg/sec (92.5 lb/sec)
  - Vertically Split Case
- Combustion Chamber, Annular-Type
  - 21 Conventional Fuel Injectors or 14 Lean-Premixed, Dry Low Emissions Injectors
  - Torch Ignitor System
- Power Turbine
  - 2-Stage Reaction
  - Speed, 50-Hz Generator: 8625 rpm
  - Speed, 60-Hz Generator: 8570 rpm
- Bearings
  - 4 Radial Journal: Tilt-Pad
  - 2 Thrust (GP & PT), Active: Tilt-Pad
  - 2 Thrust (GP & PT), Inactive: Fixed Tapered Land
- Coatings
  - Compressor: Inorganic Aluminum
  - Turbine and Nozzle Blades: Platinum Aluminide
- Vibration Transducer Type
  - Proximity Probes, 2 per Radial Bearing/2 per Thrust Bearing

Main Reduction Drive

- Epicyclic Type
  - 1500 or 1800 rpm

Generator

- 4 Pole, 3 Phase, 6 Wire, Wye Connected, Synchronous with Permanent Magnet Generator Exciter
- Available Construction Types:
  - Open Drip-Proof Construction
  - CACA/TEAAC (Closed Air, Cooling Air/Totally Enclosed, Air to Air Cooling)*
  - CACW/TEWAC (Closed Air, Cooling Water/Totally Enclosed, Water to Air Cooling)*
- Sleeve Bearings
- Vibration Monitoring; Velocity Transducers
- Vibration Monitoring; Displacement Transducers*
- NEMA Class F Insulation
- Class F Temperature Rise
- Class B Temperature Rise*
- Continuous Duty Rating Voltages:
  - 3300, 6600, 11 000 (50Hz)
  - 4160, 6900, 12 470, 13 200, 13 800 (60Hz)

Package

- Mechanical Construction
  - Steel Base Frame with Drip Pans
  - 316L Stainless Steel Piping
  - Compression Type Tube Fittings
- Start System
  - Direct Drive AC Motor with VFD Control
- Package Electrical Certification
  - NEC, CSA Class 1, Group D, Div.2
- Fuel System
  - Natural Gas
  - Diesel*
  - Dual (Natural Gas and Diesel)*
  - Low BTU Gas*
- Integrated Lube Oil System
  - Turbine-Driven Lube Pump
  - AC Motor Driven Pre/Post Lube Pump
  - DC Motor Driven Backup Lube Pump
  - Air to Oil Cooler
  - Water to Oil Cooler*
  - Integral Lube Oil Tank
  - Lube Oil Tank Heater*
  - Lube Oil Filter
  - Duplex Lube Oil Filter*
  - Oil Tank Vent Separator with Flame Arrestor
- Air Inlet and Exhaust Systems
  - Carbon Steel
  - Stainless Steel*
  - Barrier Type Filters
  - Self-Cleaning Filters
  - Inlet and Exhaust Silencers*
  - Inlet Evaporative Cooler*
  - Inlet Chiller Coils*
- Enclosure
  - Complete Package
  - Driver Only*
  - Fire Detection and CO_2 Suppression System
- Turbine Compressor Cleaning Systems
  - On-Crank/On-Line
  - Portable Cleaning Tank*
- Package Power
  - 120VDC Battery/Charger System*
- Turbotronic™ On-Skid Gas Turbine and Generator Control System Features
  - Combination Generator Control Module with Load Share, Auto Synchronization, Voltage Control
  - Standard Display with Discrete Event Log, Strip Chart, Historical Trend, Maintenance Screen
  - Vibration and Temperature Monitoring
  - English Display Text and Labels
  - Spanish, Portuguese, German, French or Simplified Chinese Display Text and Labels*
  - Auxiliary and Remote Display/Control Terminals*
  - Turbine Performance Map*
  - KW Import Control*
  - KVAR/Power Factor Control
  - ControlNet Redundant Media, Ethernet, Modbus RS232C/422/485 Supervisory Interface*
  - Heat Recovery Application Interface*
  - Multi-Unit Applications: Load Shed Control, Import/Export or kW/KVAR Control Panels*
  - InSight Platform™ Equipment Health Management*
  - Printer/Logger*
- Electrical System Options
  - Neutral Grounding Resistor or Transformer*
  - Switchgear and Generator Protective Relay*
  - Motor Control Center with Automatic Transfer Switch*
- Documentation
  - Drawings
  - Quality Control Data Book
  - Inspection and Test Plan
  - Test Reports
  - O&M Manuals
- Factory Testing of Turbine
- Factory Testing of Package Systems
  - Non-Dynamic
  - Dynamic

* Option

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Performance

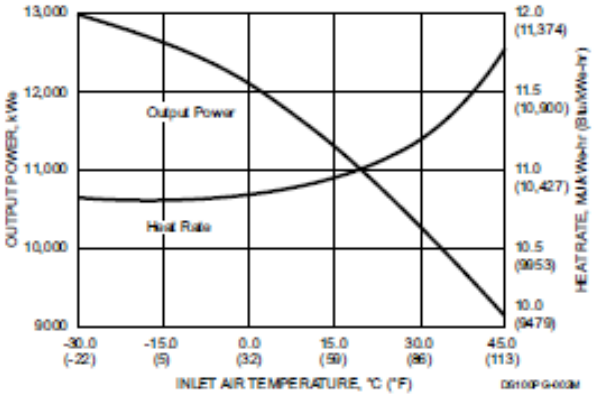
Output Power	11 350 kWe
Heat Rate	10 935 kJ/kWe-hr (10,365 Btu/kWe-hr)
Exhaust Flow	153 245 kg/hr (337,850 lb/hr)
Exhaust Temp.	485°C (905 °F)

Application Performance

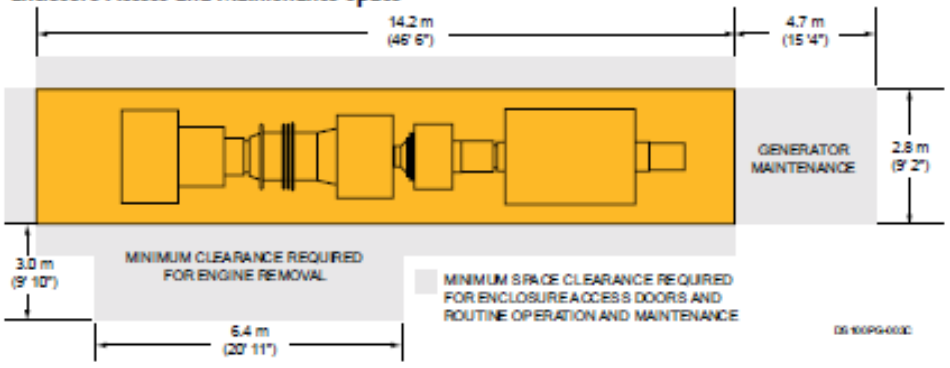
Steam (Unfired)	23.7 tonnes/hr (52,340 lb/hr)
Steam (Fired) 1536°C (2800°F)	113.8 tonnes/hr (250,880 lb/hr)
Chilling (Absorp.)	20 490 kW (5820 refrigeration tons)

Nominal rating – per ISO
At 15°C (59°F), sea level
No inlet/exhaust losses
Relative humidity 60%
Natural gas fuel with
LHV = 36 MJ/nm³ (940 Btu/scf)
No accessory losses
Engine efficiency: 33%
(Measured at generator terminals)

Available Power



Enclosure Access and Maintenance Space*



Package Height: 3.8 m (12' 6")
Package Weight: 82 145 kg (181,000 lb)

**Dry weight, unenclosed height*

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FOR MORE INFORMATION

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