General Specifications

Gas Turbine
- MERCURY™ 50 Recuperated Gas Turbine Generator Set
- Industrial, Single-Shaft
- 10-Stage Axial Compressor
  - Variable Inlet Guide Vanes and Stators
  - Compression Ratio: 9.9:1
  - Inlet Airflow: 39.2 lb/sec (17.9 kg/sec)
  - Vertically Split Case
- Combustion Chamber, Annular Type
  - Ultra-Lean-Premix Combustion System
  - 8 Fuel Injectors
  - Single Torch Ignitor System
- Proximity Probe Vibration Transducers
- Turbine
  - 2-Stage, Reaction
  - Clockwise Rotation
- Bearings
  - 2 Radial: Viscous Damped Roller Bearings
  - 1 Thrust/Radial: Viscous Damped Split Inner Race Ball Bearing
- Recuperator
  - Primary Surface Type

Main Reduction Drive
- Epicyclic
  - 1500 or 1800 rpm (50 or 60 Hz)
  - Vibration Monitoring: Acceleration Transducer

Generator
- 4 Pole, 3 Phase, 6 Wire, Wye Connected, Synchronous with Permanent Magnet Exciter
- Available Construction Type:
  - Open Drip-Proof
  - Sleeve Bearings
  - Vibration Monitoring: Velocity Transducers
  - Class F Temperature Rise
  - Class B Temperature Rise

Package
- Mechanical Construction
  - Steel Base Frame with Drip Pans and Generator Alignment
  - 316L Stainless Steel Piping
- Start System
  - Direct Drive AC Motor with VFD Control
- Package Electrical Certification
  - NEC, CSA Class 1, Group D, Div 2
- Fuel System
  - Natural Gas
  - Landfill Gas*
  - Digester Gas*
- Integrated Lube Oil System
  - Main/Pre/Post Lube Pump Backup Pump
  - Air and Oil Cooler
  - Water/Oil Lube Oil Cooler*
  - Integral Lube Oil Tank
  - Lube Oil Tank Heater
  - Simplex Lube Oil Filter
  - Duplex Lube Oil Filters*
  - Oil Mist Eliminator
  - Vent Flame Trap
- 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
  - Fire Detection and CO2 Suppression System

- NEMA Class F Insulation with F Rise
- Continuous Duty Rating Voltages:
  - 3300, 6600, 11,000 (50 Hz)
  - 4160, 6900, 12,470, 13,800V (60 Hz)

- Turbine Compressor Cleaning Systems
  - On-Crank
  - Portable Cleaning Tank*
- Package Power
  - 120VDC Battery/Charger System*
- Turbotronic® On-skid Gas Turbine Control System
  - Combination Gas Turbine and Control System
  - 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
  - Auto Synchronizing
  - KW Import Control
  - KVAR/Power Factor Control*
  - ControlNet Redundant Media, Ethernet or 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

- Documentation
  - Drawings
  - Quality Control Data Book
  - Test Reports
  - Operation and Maintenance Manuals

- Factory Testing of Turbine and Package
  - Non-Dynamic
  - Dynamic

* Option
**Nominal Performance**

- **Output Power**: 4600 kWe
- **Heat Rate**: 9350 kJ/kWe-hr (8865 Btu/kWe-hr)
- **Exhaust Flow**: 63 700 kg/hr (140,400 lb/hr)
- **Exhaust Temperature**: 365°C (690°F)

*ASSUMPTIONS*
- Nominal rating – per ISO
- At 15°C (59°F), sea level
- No inlet/exhaust losses
- Relative humidity 60%
- Natural gas fuel with LHV = 35 MJ/Nm³ (940 Btu/scf)
- No accessory losses
- Engine efficiency: 38.5% (measured at generator terminals)

**Application Performance**

- **Steam (Unfired)**: 6.0 tonnes/hr (13,125 lb/hr)
- **Steam (Fired)**: 47.1 tonnes/hr (103,865 lb/hr)
- **Chilling (Absorp.)**: 5140 kW (1460 refrigeration tons)

**Available Power**

![Available Power Graph]

<table>
<thead>
<tr>
<th>Ambient Temperature (°F)</th>
<th>Heat Rate (Btu/kW-hr)</th>
<th>Thermal Efficiency (%)</th>
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<tr>
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**Enclosure Access and Maintenance Space**

- **Package Height**: 3.7m (12’ 3")
- **Package Weight**: 45 700 kg (100,700 lb)

MINIMUM SPACE CLEARANCE REQUIRED FOR ENCLOSURE ACCESS DOORS AND ROUTINE OPERATION AND MAINTENANCE

MINIMUM CLEARANCE REQUIRED FOR ENGINE REMOVAL

Package Height: 3.7m (12’ 3")

Package Weight: 45 700 kg (100,700 lb)