General Specifications

Mars® 100 Gas Turbine

- Industrial, Two-Shaft
- Axial Compressor
  - 15-Stage
  - Variable Inlet Guide Vanes
  - Pressure Ratio: 17.8:1
  - Inlet Airflow: 42.0 kg/sec (92.5 lb/sec)
  - Vertically Split Case
- Combustion Chamber
  - Standard: Annular-Type (Conventional)
  - Optional: Annular-Type, Lean-Premixed, Dry, Low Emission (SoLoNOX™)
  - 21 Fuel Injectors (Standard)
  - 14 Fuel Injectors (SoLoNOx)
  - Torch Ignitor System
- Power Turbine
  - 2-Stage, Axial
  - Speed, 50-Hz Generator: 8625 rpm
  - Speed, 60-Hz Generator: 8570 rpm
- Bearings
  - Journal: Tilt-Pad
  - Thrust, Active: Tilt-Pad
  - Thrust, Inactive: Fixed Tapered Land
- Coatings
  - Compressor: Inorganic Aluminum
  - Turbine and Nozzle Blades: Platinum Aluminide
- Vibration Transducer Type
  - Proximity Probes
  - Velocity Pick-up

Main Reduction Drive
- Epicyclic Type
- 1500 or 1800 rpm

Generator
- Type: 4 Pole (Salient) Solid Rotor, 6-Wire, Wye Connection, Synchronous Generator with Brushless Exciter

- Construction Options
  - ODP (Open Drip Proof)
  - WPII (Weather Protected II)
  - 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
- Voltage Regulation
  - Solid-State Regulation with Permanent Magnet Generator (PMG)
- Insulation/Temperature Rise
  - NEMA Class F w/VPI / Class B
  - NEMA Class F w/VPI / Class F
- Voltages: 4160 to 13,800 Volts
- Frequency: 50 or 60 Hz

Package
- Mechanical Construction
  - Steel Base Frame with Drip Pans
  - 316L Stainless Steel Piping
  - Compression-Type Tube Fittings
  - Suitable for 3-Point Mounting
  - FPSO Modifications (Option)
- Electrical System
  - NEC, Class 1, Group D, Div 2
  - CENELEC/ATEX Zone 2
  - Cable Tray Wiring
  - 120VDC Battery/Charger System
- Direct-Drive AC Start System
- Fuel Systems
  - Conventional Combustion or Dry Low Emission (SoLoNOx)
- Fuel Types
  - Natural Gas or Dual (Gas/Distillate)
- Integrated Lube Oil System
  - Turbine-Driven Main Pump
  - AC Motor-Driven Pre/Post Pump
  - DC (120V) Motor-Driven Backup Pump
  - Oil Cooler and Oil Heater (Options)
  - Tank Vent Separator and Flame Trap
  - Lube Oil Filter
  - On-Crank or On-Crank/On-Line Turbine Compressor Cleaning System (Options)
  - Portable Cleaning Tank (Option)
- Air Inlet and Exhaust System
  - Carbon Steel
  - Stainless Steel
  - Marine-Type Filters
- Enclosure (Driver Only or Complete)
  - Fire Detection and Suppression
- Factory Testing of Turbine and Package
- Documentation
  - Electrical Drawings
  - Mechanical Drawings
  - Quality Control Data Book
  - Inspection and Test Plan
  - Test Reports
  - Operation and Maintenance Manuals
- Digital Onskid Display Panel

Turbotronic™ Control System
- Onskid Control System (Optional Offskid System)
  - 24 VDC Control Power (120VDC Input)
  - Serial Link Supervisory Interface
  - Field Programmable
- Vibration Monitoring
  - Turbine Bearings and Shaft
  - Gearbox
  - Generator Bearings
- Temperature Monitoring
  - Turbine Combustion Process
  - Turbine Bearings and Lube Oil
  - Generator Bearings and Windings
- Generator Control
  - Selectable Control Modes
  - Solid-State Voltage Regulation
  - Automatic Synchronization
  - Metering Panel with Manual Synchronization (Option)
  - KW Control (Option)
- Display and Monitoring System
  - Multiple Operator Display Screens
  - Data Collection and Playback
  - Turbine Performance Map (Option)
  - Printer/Logger (Option)

* Non-standard option
Performance

Output Power
Continuous Duty 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)

Nominal Rating – 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: 33%
(measured at generator terminals)

Available Power

<table>
<thead>
<tr>
<th>INLET AIR TEMPERATURE, °C (°F)</th>
<th>OUTPUT POWER, kWe</th>
<th>HEAT RATE, MJ/kWe-hr (Btu/kWe-hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-30.0 (-22)</td>
<td>12.0 (11,374)</td>
<td>10.5 (9953)</td>
</tr>
<tr>
<td>-15.0 (5)</td>
<td>11.5 (10,900)</td>
<td>10.0 (9479)</td>
</tr>
<tr>
<td>0.0 (32)</td>
<td>11.0 (10,427)</td>
<td></td>
</tr>
<tr>
<td>15.0 (59)</td>
<td>10.5 (9953)</td>
<td></td>
</tr>
<tr>
<td>30.0 (86)</td>
<td>10.0 (9479)</td>
<td></td>
</tr>
<tr>
<td>45.0 (113)</td>
<td>9.5 (8916)</td>
<td></td>
</tr>
</tbody>
</table>

Package Dimensions

Length: 14.2 m (46' 6")
Width: 2.8 m (9' 2")
Height: 3.8 m (12' 6")
Typical Weight: 82 145 kg (181,000 lb)

*Dry weight, unenclosed height