General Specifications

Titan™ 250 Gas Turbine
- Industrial, Two-Shaft
- Axial Compressor
  - 16-Stage
  - Variable Inlet Guide Vane and 5 Variable Guide Vanes
  - Pressure Ratio: 24:1
  - Inlet Airflow: 73.2 kg/sec (155.2 lb/sec)
  - Vertically Split Case
- Combustion Chamber
  - Annular-Type, Lean-Premixed, Dry, Low Emission (SoLoNOx™)
  - 14 Fuel Injectors (SoLoNOx)
  - Torch Ignitor System
- Gas Generator Turbine
  - 2-Stage, Axial
  - Max. Speed: 10,690 rpm
  - Thrust Bearing, Active: Tilting-Pad
  - Thrust Bearing, Inactive: Fixed Tapered Land
- Power Turbine
  - 3-Stage, Axial
  - Max. Speed: 6500 rpm
  - Full Tilting-Pad Thrust Bearing
- Journal Bearings
  - Tilting-Pad
- Turning Gear
- Coatings
  - Compressor: Inorganic Aluminum
  - Turbine and Nozzle Blades: Precious Metal Diffusion Aluminide
- Vibration Transducer Type
  - Proximity Probes

Reduction Drive
- Epicyclic Type
  - 1500 rpm (50 Hz) or 1800 rpm (60 Hz)
  - Accessory Power Take-Off

Generator
- Salient Pole, 3 Phase, 6 Wire, Wye Connected, Synchronous, with Permanent Magnet Generator Exciter
- Available Construction Types:
  - Open Drip Proof
  - Totally Enclosed Air-to-Air Cooled
  - Totally Enclosed Water-to-Air Cooled
- Sleeve Bearings
- Oil Jacking System
- NEMA Class F Insulation
- Class B Temperature Rise
- Voltages: 6600 to 13,800 VAC
- Frequency: 50 or 60 Hz

Package
- Mechanical Construction
  - Steel Base Frame with Drip Pans
  - 316L Stainless Steel Piping ≤4” dia.
  - 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
  - 120 VDC Battery/Charger System
  - Direct-Drive AC Start System
- Fuel Types
  - Natural Gas or Dual (Gas/Distillate)
  - Integrated Lube Oil System
    - Turbine-Driven Main Pump
    - AC Motor-Driven Pre/Post Pump
    - DC (120 V) Motor-Driven Backup Pump
    - Oil Cooler and Oil Heater (Options)
    - Tank Vent Separator and Flame Trap
    - Lube Oil Filter
  - DC (120 V) Turning Gear System
  - 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 (120 VDC Input)
  - Serial Link Supervisory Interface
  - Field Programmable
- Vibration Monitoring
- Temperature Monitoring
- Generator Control
  - Selectable Control Modes
  - Solid-State Voltage Regulation
  - Automatic Synchronization
  - Metering Panel with Manual Synchronization (Option)
  - KW Control (Option)
- TT4000 Display and Monitoring System
  - Multiple Operator Display Screens
  - Data Collection and Playback
  - Turbine Performance Map (Option)
  - Printer/Logger (Option)
Performance

Output Power: 23 100 kWe
Heat Rate: 9150 kJ/kWe-hr (8670 Btu/kWe-hr)
Exhaust Flow: 253 440 kg/hr (558,740 lb/hr)
Exhaust Temp.: 460°C (865°F)

Nominal rating – per ISO
At 15°C (59°F), at sea level
No inlet/exhaust losses
Relative humidity 60%
Natural gas fuel with LHV = 31.5 to 43.3 MJ/nm³ (800 to 1100 Btu/scf)
Optimum power turbine speed
No accessory losses
Engine efficiency: 38.6% (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>16 500</td>
<td>8.5 (8060)</td>
</tr>
<tr>
<td>-15.0 (5)</td>
<td>21 250</td>
<td>9.0 (8530)</td>
</tr>
<tr>
<td>0.0 (32)</td>
<td>23 625</td>
<td>9.5 (9000)</td>
</tr>
<tr>
<td>15.0 (59)</td>
<td>26 000</td>
<td>10.0 (9480)</td>
</tr>
<tr>
<td>30.0 (86)</td>
<td></td>
<td>10.5 (9950)</td>
</tr>
<tr>
<td>45.0 (113)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Package Dimensions*

Length: 18.2 m (59' 6")
Width: 3.4 m (11' 1")
Height: 3.9 m (12' 9")
Typical Weight: 141 150 kg (311,100 lb)

*Dry weight, unenclosed height