**General Specifications**

**Mars® 90 Gas Turbine**

- **Industrial, Two-Shaft**
- **Axial Compressor**
  - 15-Stage
  - Variable Inlet Guide Vanes
  - Pressure Ratio: 16.3:1
  - Inlet Airflow: 39.7 kg/sec (87.5 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
- **Generator**
  - Type: Salient Pole, 3-Phase, 6-Wire, Wye Connected, Synchronous, with Brushless Exciter
- **Construction Options**
  - Open Drip Proof
  - Totally Enclosed Water/Air Cooled*
- **Sleeve Bearings**
- **Voltage Regulation**
  - Solid-State Regulation with Permanent Magnet Generator
- **Insulation/Rise Options**
  - NEMA Class F with B Rise
  - Voltages: 4160 to 13,800 Volts
  - Frequency: 50 or 60 Hz

**Package**

- **Mechanical Construction**
  - Steel Base Frame with Drip Pans
  - 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**
  - Conventional Combustion or Dry Low Emission (SoLoNOx)
- **Fuel Systems**
  - Natural Gas (Conventional and SoLoNOx)
  - Dual Fuel (Gas/Distillate, Conventional Only)
- **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 9450 kWe

Heat Rate 11 300 kJ/kWe-hr (10,710 Btu/kWe-hr)

Exhaust Flow 144 590 kg/hr (318,760 lb/hr)

Exhaust Temp. 465°C (870°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: 31.9% (measured at generator terminals)

Available Power

Output Power
Heat Rate

Output Power, kWe
Heat Rate, MJ/kWe-hr (Btu/kWe-hr)

HEAT RATE, MJ/kWe-hr (Btu/kWe-hr)

OUTPUT POWER, kWe

INLET AIR TEMPERATURE, °C (°F)

Performance Available Power

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: 31.9% (measured at generator terminals)

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