

## 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
- 1500 or 1800 rpm

### 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: 3300 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
  - Conduit/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 (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)
- TT4000 Display and Monitoring System
  - Multiple Operator Display Screens
  - Data Collection and Playback
  - Turbine Performance Map (Option)
  - Printer/Logger (Option)
  - Predictive Emissions Monitoring (Option)

\* Non-standard option

### Performance

Output Power Continous Duty	9450 kW
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

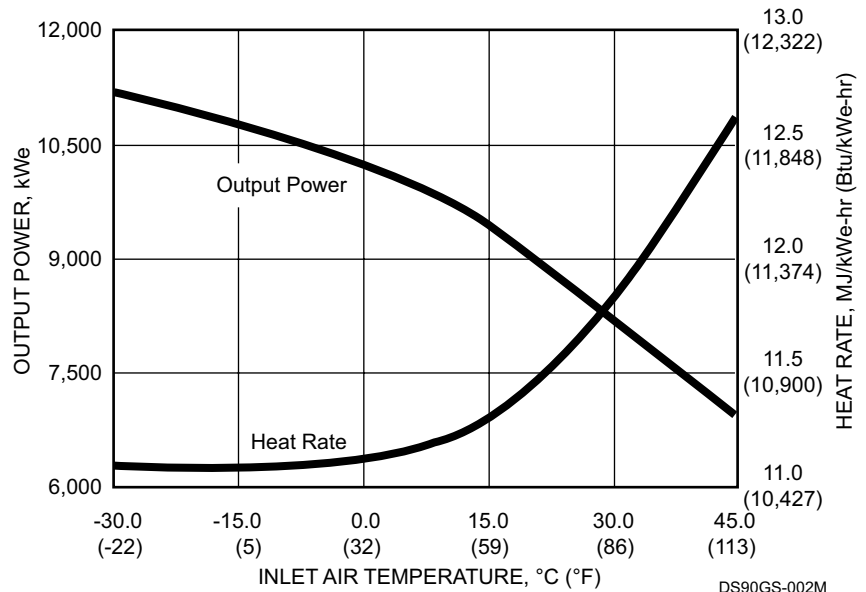
Relative humidity 60%

Natural gas fuel with  
LHV = 35 MJ/nm<sup>3</sup> (940 Btu/scf)

No accessory losses

Engine efficiency: 31.9% (measured at  
generator terminals)

### Available Power



### Package Dimensions

- Length: 14.2 m (46' 6")
- Width: 2.8 m (9' 2")
- Height: 3.8 m (12' 6")
- Typical Weight: 86 180 kg (190,000 lb)

