Solar Turbines

A Caterpillar Company

TAURUS 70 Gas Turbine Generator Set

Power Generation



General Specifications

Taurus™ 70 Gas Turbine

- · Industrial, Single-Shaft
- 14 Stage Axial Compressor
 - Variable Inlet Guide Vanes and Stators
 - Pressure Ratio: 17.6:1 Inlet Airflow: 26.6 kg/sec (58.5 lb/sec)
 - Vertically Split Case
- · Combustion Chamber, Annular-Type 12 Lean-Premixed, Dry Low
 - Emissions SoLoNOx Injectors Single Torch Ignitor System
- Power Turbine
 - 3-Stage Reaction
 - Clockwise Rotation
- Bearings
 - 3 Radial Journal: Tilt-Pad
 - 1 Thrust, Active: Tilt-Pad
 - 1 Thrust, Inactive: Fixed Tapered Land
- Coatings
 - Compressor: Inorganic Aluminum
 - Turbine and Nozzle Blades: Platium
- Aluminide (Stages 1 and 2)
- Vibration Transducer Type Proximity Probes, 2 per Radial Bearing/
 - 2 per Thrust Bearing
 - Velocity Pick-up*

Main Reduction Drive

- Epicyclic Type
 - 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 Generator Exciter
- Available Construction Types:
- Open Drip-Proof Construction
- 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

* Option

- Vibration Monitoring; Velocity Transducers
- Vibration Monitoring; Displacement Transducers*

- NEMA Class F Insulation
- **Class F Temperature Rise**
- Class B Temperature Rise*
- Continuous Duty Rating Voltages: 3300, 6600, 11 000 (50Hz)

Package

- Mechanical Construction
 - Steel Base Frame with Drip Pans
 - 316L Stainless Steel Piping
 - **Compression Type Tube Fittings**
- Start System
- Direct Drive AC Motor with VFD Control
 - Package Electrical Certification
 - NEC, CSA Class 1, Group D, Div.2
- Fuel System
 - Natural Gas
 - Diesel*
 - Dual (Natural Gas and Diesel)* _
 - Low BTU Gas'
- · Integrated Lube Oil System
- Turbine-Driven Lube Pump
- AC Motor Driven Pre/Post Lube Pump
- DC Motor Driven Backup Lube Pump _
- Air to Oil Cooler
- Water to Oil Cooler*
- Integral Lube Oil Tank
- Lube Oil Tank Heater
- Lube Oil Filter
- Duplex Lube Oil Filter*
- Oil Tank Vent Separator with Flame Arrestor
- 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**
- Driver Only*
- Fire Detection and CO2 Suppression System

- Turbine Compressor Cleaning Systems
- On-Crank/On-Line
- Portable Cleaning Tank*
- Package Power
 - 120VDC Battery/Charger System
- 4160, 6900, 12 470, 13 200, 13 800 (60Hz) *Turbotronic*™ 4 On-Skid Gas Turbine and
 - Generator Control System Features
 - Combination Generator Control Module with Load Share, Auto Synchronization, Voltage Control
 - 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*

ControlNet Redundant Media, Ethernet,

Data Highway Plus or Modbus RS232C/422/485 Supervisory Interface*

Multi-Unit Applications: Load Shed Control,

Import/Export or kW/KVAR Control Panels*

Neutral Grounding Resistor or Transformer*

Switchgear and Generator Protective Relay*

Heat Recovery Application Interface*

InSight System™ Equipment Health

Motor Control Center with Automatic

- Turbine Performance Map*
- KW Import Control* - KVAR/Power Factor Control*

Management*

Printer/Logger*

Transfer Switch*

Documentation

Test Reports

- Non-Dynamic

- Dynamic

O&M Manuals

- Drawings

Electrical System Options

- Quality Control Data Book

- Inspection and Test Plan

Factory Testing of Turbine

Factory Testing of Package Systems

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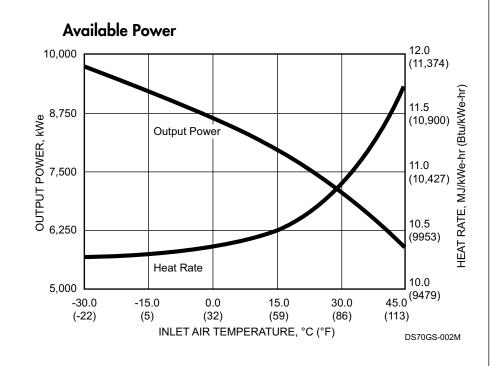
Power Generation

Performance

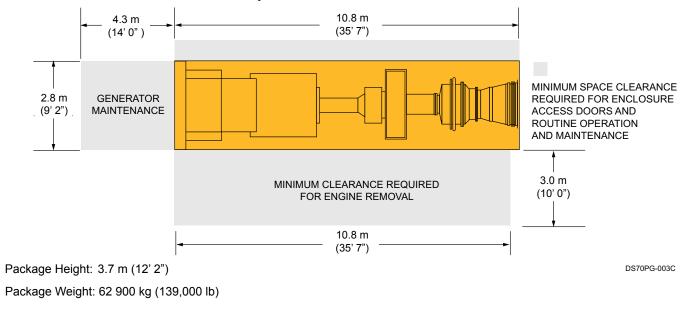
Output Power	7965 kWe
Heat Rate	10 505 kJ/kWe-hr (9955 Btu/kWe-hr)
Exhaust Flow	96 775 kg/hr (213,350 lb/hr)
Exhaust Temp.	505°C (945°F)

Application Performance

Steam (Unfired)	16.5 tonnes/hr (36,370 lb/hr)
Steam (Fired) 1536°C (2800°F)	72.3 tonnes/hr (159,530 lb/hr)
Chilling (Absorp.)	14 220 kW refrigeration tons)
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/Nm ³ (940 Btu/scf) No accessory losses Engine efficiency: 34% (Measured at generator terminals)	



Enclosure Access and Maintenance Space



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