



POWERING BUSINESS. EMPOWERING PEOPLE

(5) Mobile Solar Centaur Turbines

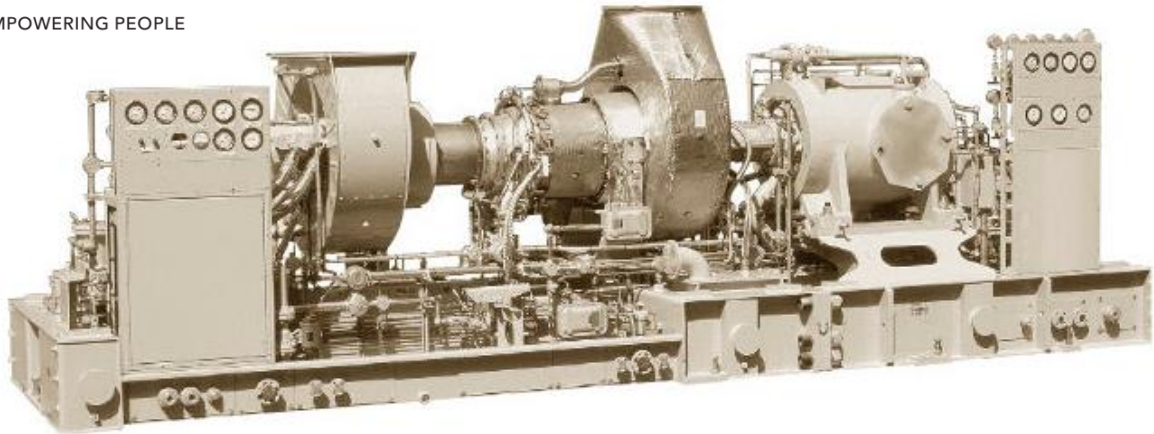
Generator 2,800 kW / 3125 KVA (Continuous)

2,800 kW / 3,500 KVA (Prime) Trailer Mounted,

Self-contained

Black start capability/Switchgear

(FIVE UNITS AVAILABLE)



Centaur 40[®] Turbine Generator Arrangement

1 Scope Details

We will supply 5 each generator sets that are comprised of the gas turbine assembly from the air inlet filtration system to the exhaust silencer with the main gearbox, auxiliary gearbox and electric generator. Fully enclosed in sound proof weather proof.. With all accessories. The supplied equipment shall be mounted on a industrial steel frame and shall include the complete lubricating oil system incorporated w enclosures with air inlet systems within the boundaries of the turbine enclosure plus the air to oil cooler, the fuel system between the interface at the gas turbine package and additional equipment consisting of:

1. Battery chargers/inverters
2. All on skid cabling and pipe-work
3. Ventilation AC motors and fans that are part of the turbine enclosure
4. Turbine control module, fire and gas system
5. Acoustic enclosure
6. Vibration monitoring system
7. Start system
8. Main air inlet filter assembly
9. Fire and gas system
10. Generator control (including synchronization) system
11. A C Generator
12. Exhaust silencer
13. Switch gear

Each Trailer is equipped with the following:

Sophisticated air intake filters, allowing for units to operate in extreme dust conditions.

3 heavy duty oil coolers.

Exhaust silencer.

Turbo-hydraulic starting system

Fire detection and suppression system

Generator protection breaker

Battery bank / charger for auxiliaries and starting system

Controls

Liquid Fuel base tank

Three (03) axle, 12 tire arrangement, DOT approved

1.1 Prime Mover and Driven Equipment

	Scope of Supply	Work scope
1	Gas Producer, Taurus T-4001 Gas Fuel/diesel Standard Combustion	Overhauled to zero hours. Full Warranty
2	Reduction Gear Box, 1800 RPM.	Overhauled to zero Hours Full Warranty

	Scope of Supply	Work scope
3	Ideal Generator, 1800RPM	Overhauled -13800V-tested-60hz - . warranty

Expanded Details:

Engine: Solar Turbine, Model T4000, zero hour single shaft, straight flow, 11 stage axial compressor, annular combustion chamber, axial flow 3 stage turbine. The turbine shaft couples with a zero hour reduction gear box, to lower the engine speed from 14,950 RPM to 1800 RPM. Fuel is liquid (diesel, kerosene), but can be set up for dual fuel or gas only.

Generator: Ideal Electric, zero hour, Class F, drip proof, three phase, 13,800 volt, 60 Hz. Capacity in Continuous Duty: 2,500 kW / 3,125 KVA, and 2,800 kW / 3,500 KVA in prime.

Fuel System: Units are set up to run on liquid fuel (diesel / kerosene), but can be delivered to operate with gas only, or dual fuel capability.

1.2 Generator Skid

	Scope of Supply	Work scope
4	Generator Skid, Lube Oil Tank, and Lube Piping.	Lubrication System: Complete lubrication system including: oil level, filters, pre and post lube pumps, extra heavy duty oil cooler radiators, exterior mounted forward of engine compartment.
5	Start system – AC Direct Drive	All units are equipped with Solar Turbo-hydraulic starter system, allowing to start without any (black-start). The system operates with a hydraulic starter.
6	Fuel system – Natural gas	Units will be set up to run on natural gas.
7	Lube oil system. (Pre/Post Lube Pumps, Main Lube Pump, Regulators, Thermostats, Filters)	All major components will be tested and replaced or repaired as needed by Solar Turbine™ specifications.
8	Lube Oil Cooler	On Skid Cooler
9	Tubing/Fittings.	All skid tubing 316L Stainless steel will be new.
10	OnSkid Electrical.	On skid junction boxes, wiring, connectors & terminal blocks will be inspected, passed or repaired by Solar Turbine™ standards.



1.3 Controls

	Scope of Supply	Work scope
12	PLC Control (On Skid)	All new air conditioned/ heat pump Integrated control room and system that incorporates the turbine fuel control, gas turbine start-stop sequencing, Generator Control, temperature monitoring and shutdown protection into a single new PLC system.
13	Generator Control and Monitoring System	All new Integrated monitoring & control of the generator is provided using a specially designed module in the PLC. The system includes Automatic Synchronizing, Motorized Voltage Adjust, KW Controller and KVAR/Power Factor Controller.

1.4 Enclosure

	Scope of Supply	Work scope
14	Gas Turbine Skid Enclosure	Weatherproof sound attenuating enclosure, with all steel construction and ancillary skid on the roof to support the Air Inlet Filtration and the exhaust silencer for desert high dust climates. Scope will vary with stationary unit.
15	Reducing Vent Silencers and Exhaust Fan	Reducing vent silencers with fire shutters and exhaust fan.
16	Gas Detection	Gas detectors on skid.
17	Fire detection and suppression system	UV flame detectors, and rate of rise thermal detectors will be used to detect enclosure fires, The Fire monitor will control the release of the Main and extended release fire systems and send signals to shut down the turbine. Scope will vary with stationary unit.

1.5 Turbine Inlet and Exhaust Systems

	Scope of Supply	Work scope
18	Inlet System	Sophisticated air intake filters, allowing for units to operate in extreme dust conditions. Scope will vary with stationary unit.
19	Exhaust System	Exhaust bellows and silencer suitable for industrial site standards. on the skid. Scope will vary with stationary unit.

1.6 Switchgear and Power Control Building

	Scope of Supply	Work scope
--	-----------------	------------

Scope will vary with the stationary unit.

20	Switchgear	Unit comes with high switchgear including breaker safety. Scope will vary with stationary unit.
21	Motor Control Center	Motor controls for turbine package associated equipment are on board. Scope will vary with stationary unit.
22	Power Control Room	Onboard
23	Switchgear	Switchgear capable of handling full generator output provided with PT's and CT's for monitoring current. Scope will vary with stationary unit.
24	Transformer	Equipment includes transformer to feed turbine auxiliary electric load. Scope will vary with stationary unit.

1.7 Battery System

	Scope of Supply	Work scope
25	Batteries	Lead Acid batteries sized to safely shutdown the turbine.
26	Battery Charger	24 Volt 30 amp Charger, Single phase input

1.8 Freight and Cranage

	Scope of Supply	Work scope
27	Freight	Not Included.
28	Export Crating	Not Included.
29	Lift & spreader bars, & cabling	Not Included.

1.9 Installation and Commissioning

	Scope of Supply	Work scope
30	Final hookup and Commissioning.	Not included.

1.10 Trailer Characteristics and Dimensions

Each trailer is equipped with three (03) axles, access doors on both sides.

Dimensions:

Length: 45 ft. (13.71 meters)

Width: 10 ft. (3.05 meters)

Height: 13.5 ft. (4.11 meters)

Peso: 83,300 pounds (37,784 Kilos)

All units have new tires, and have been DOT inspected and certified.

	Scope of Supply	Work scope
31	Operational and Critical Spares	We will not be providing spares or Operational parts.

2 Excluded Scope

The following are assumed not included in the current bid. Should any of these be required a separate proposal will be prepared to cover these items.

- Motor starters for plant equipment
- Interconnect Wiring and cabling.
- Import duties, taxes or receiving port fees.
- Air Inlet/Exhaust ducting if remote mounted.
- Civil work.
- Commissioning.
- Freight.
- Cranage.

Equipment is subject to prior sale.

5 Site Services

We have a team of multi-disciplined, specialist engineers, and technicians on call 24 hours a day, 365 days a year. We can supply engineering and a field team, installation, commissioning, and maintenance of your equipment. In the event of an operations problem resulting from an alarm or trip within the turbine controls panel, we also provide immediate solutions with our 24-hour telephone support.

Our Site Service teams routinely complete job scopes covering the complete skid, gas producer, power turbine, gearboxes, driven equipment and package control systems. We have a strategic supply of parts available for immediate dispatch to support our field service teams and your procurement department.

