

Date: January 8, 2023

Re: TM2500 Power Solutions

See information on the TM2500 power solution. We have eight (8) units available. All have low hours. Three (3) units are ready to operate, and five(5) units require a hot section inspection (HSI) overhaul if required, updated operating system, and general maintenance.

This is covered in our cost and requires approx. three weeks in the shop, per unit, prior to release with full GE warranty.

Units come with full spare parts, warranty, shipping, and set up – if required. With the purchase of all eight units, a spare engine will be included.

The units are multi-fuel and can operate on full or mixed hydrogen.

We recommend starting with the three (3) units purchase and twenty percent (30%) deposit on the additional five (5) units, but any amount can be purchased.

Please note all units subject to previous sale and can only held with a purchase or deposit.

Price:

TM2500 Units	\$ 31,000,000.00 each
Installation and start-up	\$ 500,000.00 each

If required

Steam Turbine and HRSG	\$12,500,000.00 each (one unit required for two TM2500 units)
------------------------	---

TM2500 Enhanced

EQUIPMENT SUPPLY, ENGINEERING, AND INSTALLATION
PROPOSAL

*Environmentally Responsible
Sustainable Energy Solutions*



Table of Contents

General Scope of Supply Summary	3
Proposal Design Basis	3
Civil Design	4
Electrical Design	4
Mechanical Design	5
Security	5
Miscellaneous	5
Project Interfaces	5
Codes and Standards	6
Engineering	7
Organizational Chart.....	8
Equipment	9
General Electric TM2500	9
Services.....	16
Transportation.....	17
Schedule	17
Footprint.....	18
Preliminary Scope of Work.....	22
Pictures	24
Installation Pricing.....	27
Optional HRSG and Steam Turbine.....	27

General Scope of Supply Summary

TM2500+ Mobile Dual Fuel 50/60Hz. 30 MW units running as simple cycle with the option in the future to run as a 2 to 1 combined cycle increasing the power output to 50 MW per unit.

Engineering, Installation and Commissioning Services, Tooling, Spare Parts, LTSA etc. provided. Equipment will have all latest controls and auxiliary systems. All test reports and certifications will be made available.

All units are manufactured based on 50 or 60 cycle application. Supplier will facilitate all aspects of the purchase sale transaction conveying clear title and reassignment of all equipment used on site and transfer all remaining warranties and entitlements attached to any and all assets. Transportation, site development, startup, and additional warranty coverage arranged and negotiable through Supplier, OEM or other 3rd party service providers. Supplier can provide operations and a 10 and 20 year LTSA under a separate contract.

Proposal Design Basis

Limited Plant Design Criteria were available during the preparation of this proposal and have limited the front-end engineering design ("FEED"). Be advised, as some of the Balance of Plant specification and sizing might be changed to accommodate unforeseen factors.

1. Site Location or Layout for site has not been specified.
2. No geotechnical studies have been provided to confirm civil design or plant orientation.
3. Electrical Interconnect Studies have not been performed to confirm electrical design and have limited electrical scope to the generator terminals.
4. Fuel interconnect studies have not been performed. Interconnection is at the TM2500 on base interconnect points provided
5. Air Permitting and exhaust treatment are not considered, but will meet all US standards
6. Plant design life is for minimum of 15-years with no Maximum from Commercial Operation Date ("COD").
7. Due to unstable market conditions, all transportation, material, and labor pricing may have pricing escalators to accommodate unforeseen costs outside of our control.

Proposal content, price, and schedule are subject to change based on the emergence of additional information including without limitation, environmental and utility requirements, fuel gas, raw water, potable water and electrical grid characteristics, wastewater and local

noise limitations, other local conditions and events, and the results of detail engineering and/or constructability reviews with CUSTOMER and other parties having an interest in the Work.

The following assumptions and clarifications are presented to describe the engineering approach, equipment design, and estimated price that will be used based on the absence of any other project specific information.

Civil Design

1. A clean, level site with free and clear access, suitable for spread footing/mat foundations is to be provided by CUSTOMER. The load bearing capacity of the prepared site is assumed to be a minimum of 3000 psf at three feet below finished grade.
2. The site soil characteristics are suitable for a standard subsurface ground grid system without the need for installation of additional ground wells.
3. Adequate construction laydown area is available on or adjacent to the proposed construction site.
4. No site development is required except for structural excavation.
5. No site environmental cleanup is required.
6. Site de-watering is not required.
7. All excavation is accomplished through conventional methods and blasting is not required.
 - a. Excavated materials are suitable for structural backfill. Any excess excavated material will be disposed of onsite. Any required offsite disposal is to be handled by CUSTOMER.
 - b. No subsurface obstructions, such as existing foundations, large boulders, ledge rock, rock requiring equipment larger than 3/4 yard rubber tire backhoe, hazardous waste, archeological artifacts, undisclosed utilities, or other unsuitable and unexpected material, structures, etc.
 - c. Storm water runoff is by surface drainage to the battery limits. No runoff is assumed from adjacent areas. No provisions are included for storm water treatment or containment.
 - d. Suitable concrete batch plant available producing a minimum capacity of 1,000 cubic yards of 4000 psi quality concrete.

Electrical Design

1. Electrical interface is at the high voltage connection in the switchgear cubicle.
2. Utility will provide all high voltage electrical interconnection studies, settings, and other relevant line and load flow studies.

3. Above ground cable installation is acceptable at the discretion of CONTRACTOR.
4. Standby power capability will be provided for 480 VAC, 60 Hz loads.
5. A 480 VAC power supply shall be supplied during site construction.

Mechanical Design

1. All waste liquids will be delivered to a buried 200-gallon storage tank per GTG with the battery limits by CONTRACTOR for disposal by CUSTOMER
2. Proposed equipment may be subject to change as necessary by local environmental requirements, detail engineering and or constructability reviews.
3. Above ground pipe installation is acceptable unless otherwise specified by CUSTOMER.
4. Use of above ground high pressure hoses is acceptable.
5. Emissions monitoring equipment and/or testing is not provided.
6. Suitable cranes are readily available within country.

Security

1. CUSTOMER will provide site security during construction.

Miscellaneous

1. Engineering review and approval cycles to be a 2-day meeting.
2. Site is not classified.
3. Environmental impact study is by others, if required.
4. Air Permit and Site Studies by others. All permitting is the CUSTOMER responsibility. CONTRACTOR will assist where applicable
5. Plant is assumed to operate on a base load.
6. Commissioning spares for BOP are included.

Project Interfaces

1. Gas Fuel will be delivered to site. Fuel will meet General Electric standards.
2. Storm Water: Site to be graded by CUSTOMER for collection of storm runoff generated onsite to a single water discharge point.

3. Temporary Erection Supplies: Water and electrical power for construction is to be provided at power plant boundary.

Codes and Standards

CONTRACTOR will design the power plant in general accordance with traditionally accepted power plant building practices as follows:

Building Codes, Standards, and Ordinances

- UBC, 1997, except electrical installations

Government Codes, Standards, and Ordinances

- Occupational Safety and Health Act (OSHA) - 29 CFR 1910, except Section S
- American Society of Mechanical Engineers (ASME)
- ASME Boiler and Pressure Vessel Code
- ASME B16.5 - Steel Pipe, Flanges, and Fittings
- ASME B16.34 - Steel Valves
- ASME 631,1-Power Piping
- ASME B31 .8 - Gas Transmission and Distribution Piping Systems
- ASME B133.2 - Basic Gas Turbine
- ASME B133.3 - Gas Turbine Auxiliary Equipment
- ASME B133.4 - Gas Turbine Controls and Protection Systems
- ASME B133.5 - Gas Turbine Electrical Equipment
- ASME B133.8 - Gas Turbine Installation Sound Emissions
- NEC – National Electric Code
- ASME Performance Test Codes

Industry Standards

Applicable standards are issued by the following industry organizations:

- ACI American Concrete Institute
- ASCE American Society of Civil Engineers
- AGA American Gas Association
- AISC American Institute of Steel Construction
- AISI American Iron and Steel Institute
- ANSI American National Standards Institute, except for electrical systems covered by IEC
- API American Petroleum Institute, except for electrical systems

- ASHRAE American Society of Heating, Refrigerating, and Air-Conditioning Engineers
- ASME American Society of Mechanical Engineers
- ASTM American Society for Testing and Materials
- AWS American Welding Society
- AWWA American Water Works Association
- HEI Heat Exchange Institute
- HI Hydraulic Institute Standards
- IEEE Institute of Electrical and Electronics Engineers, where not covered by NEC
- IP Institute of Petroleum
- ISA Instrumentation, Systems, and Automation Society
- ISO International Organization for Standardization
- MSS Manufacturer's Standardization Society
- NEC National Electric Code
- NEMA National Electrical Manufacturers Association, where not covered by NEC
- NFPA National Fire Protection Association, except for electrical systems not covered by NEC or other international electrical installation standards

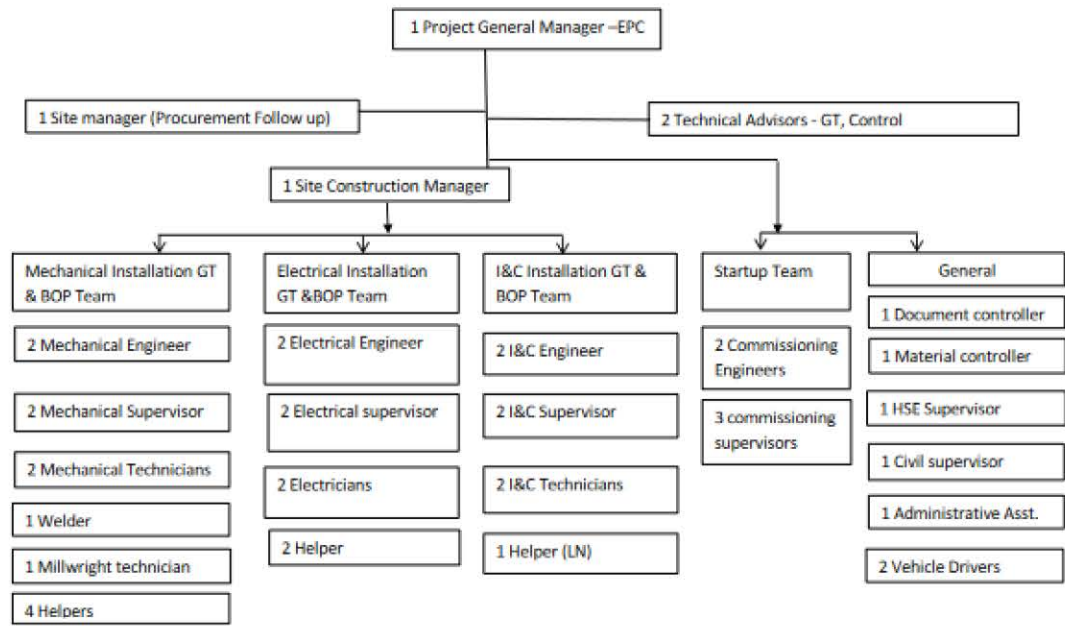
Engineering

Except where expressly described as a CUSTOMER responsibility, CONTRACTOR will provide all required engineering services, design briefs for major systems, drawings, and documentation to include facility Operation and Maintenance (“O&M”) manuals necessary to install the supplied equipment.

Engineering conducted as:

- Basic Plant Engineering
- Drawings drafted in AutoCAD format. Spreadsheets and written documents will be created in Microsoft Office formats.
- Equipment vendor drawings will be submitted in Adobe pdf format.
- CONTRACTOR will post documents and drawings to a project cloud hosted site.
- Drawings provided will include:
 - o Civil
 - o Electrical & Controls
 - o General / Plot Plan
 - o Instrumentation
 - o Piping

Organizational Chart



Note: Total manpower (including 7 helpers):-
 BOP Vendor engineers: 2
 Crane & Forklift services - rental (operator and riggers from local sources)

Equipment

General Electric TM2500

The TM2500 MGTG set is a trailer mounted mobile power package. The trailer system allows for simplified transportation and set up of the package. The TM2500 MGTG set typically consists of three trailers: the Turbine Trailer, Generator Trailer, Control House Trailer, as well as an optional Transportation Trailer. The basic scope of supply for each of these trailers is described in the following subsections.

Turbine Trailer

The main deck of the turbine trailer contains an inlet silencing system for the turbine and the turbine module. Located on the gooseneck of the trailer is the auxiliary skid, which contains the TCP (Turbine Control Panel) along with various package support systems. When the package is fully installed the turbine trailer assembly is fitted with the air filter modules, turbine exhaust silencer and ventilation fan assembly for the turbine enclosure.

Trailer and optional stinger

a three-axle, air ride suspension trailer with two steerable axles is used to transport the turbine trailer components. The optional stinger has a single-axle and is used to assist in weight distribution to meet U.S. and Canadian transport requirements. At the jobsite, the turbine trailer is connected to the generator trailer. Landing legs are provided to support and level the equipment at the jobsite.

Turbine Enclosure

The turbine trailer is supplied with a weatherproof, acoustic enclosure for the turbine which provides ventilation and fire system containment. The enclosure is designed for noise abatement to 90 dB(A) for liquid fuel and 87 dB(A) for gas fuel. The enclosure is completely assembled and mounted over the equipment prior to testing and shipment. Provisions for turbine removal and personnel access are included.

Gas Turbine Engine

Located inside the turbine enclosure is a General Electric gas turbine engine (Model LM2500+G4™); the turbine engine is equipped to operate on liquid fuel or natural gas with or without water injection. The turbine engine is mounted to the turbine trailer which is independent from the generator trailer.

Fire Protection Aerosol Canisters

Fire protection aerosol canisters are located on top of the turbine enclosure, included as part of the ventilation fan assembly. These canisters are connected to the fire protection system located in the Generator Control Panel (GCP) and provide the necessary extinguishing agent in the event of fire inside the enclosure.

Auxiliary Skid

The auxiliary skid is a compact installation of several systems and equipment and is positioned on the gooseneck of the turbine trailer. This skid contains a variety of support equipment including a TCP, the Hydraulic Start System with shared turbine lube oil reservoir, Turbine Lube Oil System, and the Off-Line Water Wash System. Some of the systems on the skid contain transmitters that provide remote system monitoring. The pressure and pressure differential transmitters have instrument valves in their feed lines to simplify maintenance. Mechanical interconnections are provided to allow the required interfacing between the auxiliary skid and the control house as needed, otherwise wiring is factory installed.

Turbine Control Panel

The Turbine Control Panel mounted on the auxiliary skid will include:

- TX3i
- Bently Nevada
- VersaMax Controllers
- Jaquet T401
- Servo Position Controllers (for variable geometry and compressor discharge)

Hydraulic Start System

The hydraulic start system mounted on the auxiliary skid will include:

- Hydraulic Pump & Motor
 - Oil Reservoir (shared)
 - Various Temperature Elements, Pressure Gauges, and Hydraulic filters
- Turbine Lube Oil (TLO) System

The synthetic lube oil system mounted on the auxiliary skid will include:

- Tank Flame Arrestor
- Turbine and Hydraulic Lube Oil Reservoir
- Tank Demister
- Turbine / Hydraulic Start Fin Fan Heat Exchanger
- Off-line Water Wash System

The water wash system mounted on the auxiliary skid will include:

- Polyethylene Tank
- Water Inlet Shut-Off Valve
- Suction Pump
- Strainer
- Air Filter Assembly and Silencer Enclosure

The air filter assembly contains combustion and ventilation air filtration equipment including pre-filters, high-efficiency filters, a ventilation fan assembly, and a concentric intake silencer in an enclosure. The turbine compartment is fully ventilated by a ventilation fan which draws filtered air from the silencer enclosure.
- Dual Fuel with Water Injection System

All components for the dual fuel system with water injection, with the exception of the gas fuel skid, are located on the turbine trailer. All components come preassembled from the factory. Mechanical interconnect locations for liquid fuel and water are provided for customer connection just below the turbine gauge panel.
- Gas fuel system major components include:
 - Gas Fuel Duplex Filter Assy
 - Gas Fuel Vent Valve
 - Gas Fuel Purge & Bleed Ball Valve
 - Woodward Gas Fuel Valve
 - Gas Fuel Purge Check Valve
 - Purge Valve
- Liquid fuel system major components include:
 - Liquid Fuel Y strainer
 - Purge & Bleed Valve
 - Liquid Fuel Pump / Motor
- Primary and Secondary Shut-Off Valve
- Liquid Fuel Ball Valve
- Fuel Manifold
- Liquid Fuel Relief Valve
- 30 Fuel Nozzles
- Liquid Fuel Duplex Filter Assy
- Return Check Valve
- Liquid Fuel Control Valve

Water Injection System

GE provides the necessary controls, metering equipment, and interconnecting piping within the turbine enclosure. All piping is stainless steel, and the valves are trimmed with stainless steel. Water injection can reduce NO_x emissions to 25 ppm (51 mg/Nm³) for gaseous fuel and to 42 ppm (86 mg/Nm³) for liquid fuel. The customer must provide a supply of

pressurized water in accordance with the Injection Water Quality Specification MID-TD-0000-3.

Gas Fuel Skid

The gas fuel skid is transported on the gooseneck of the generator trailer and provides the final filtration of gas fuel to the package. When in operation the gas fuel skid is connected to the turbine trailer with the only GE mechanical interconnect provided with the package.

Turbine Exhaust

The LM2500+G4™ gas turbine exhaust flows through an exhaust collector and roof mounted exhaust silencer. The standard TM2500 GEN8 exhaust collector exit is oriented in the upright position. The exhaust collector provides a direct path into the turbine exhaust silencer. The exhaust collector consists of an inner and outer duct forming a diffusing passage from the power turbine rear frame.

Exhaust system components include:

- Exhaust Collector
- Exhaust Silencer

High Speed Coupling Shaft

A high-speed flexible coupling shaft connects the low-pressure turbine/power turbine to the generator. It consists of a forward adapter which mates with the power turbine, two flexible couplings, a distance piece, and an aft adapter which mates with the connected load. The flexibility in the coupling allows for minor deviations in- between the turbine and generator shafts, this flexibility aids in successful connection between the turbine and the generator.

Alignment System

The Laser Alignment System consists of the following components:

- IP Camera (2)
- Power Switch
- Laser (Green)
- Tablet (Microsoft Surface)
- Light

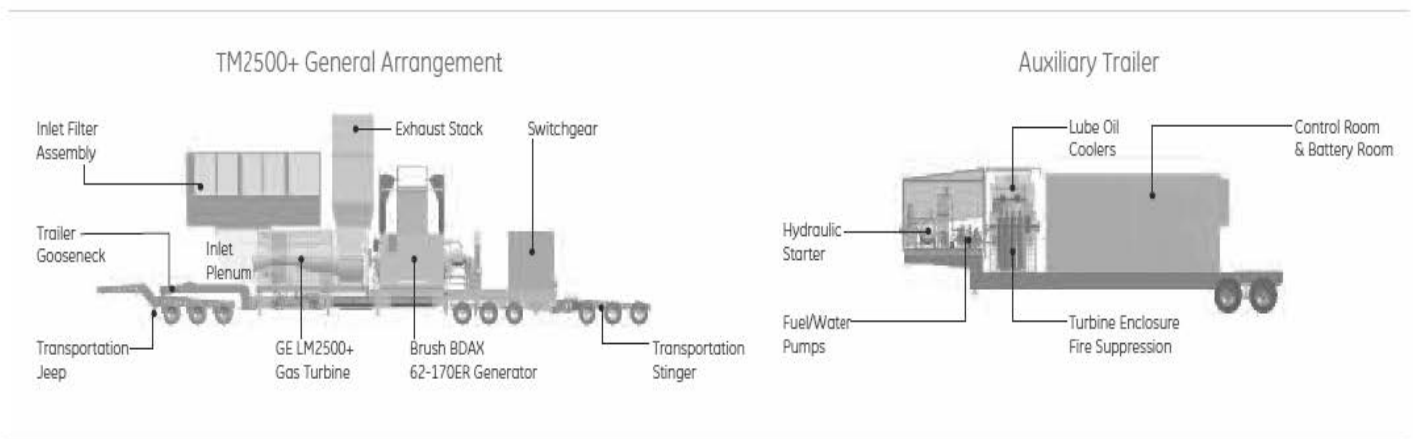
Generator Trailer

The main deck of the generator trailer contains the generator, generator ventilation,

generator lube oil system, and switchgear. The gooseneck of the generator trailer may be optionally removed in operational configurations to reduce overall footprint. Located at the rear of the generator trailer is a docking station that provides the male interface required to connect the turbine and generator trailers together for the operational configuration.

The Generator Trailer consists of the following components:

- Generator Trailer with stinger for transportation
- Generator Ventilation (when package is fully assembled)
- Generator
- Switchgear
- Generator Lube Oil Skid



Generator

The AC generator operates at a synchronous speed of 3,600 rpm (60-Hz applications) or 3,000 rpm (50-Hz applications), eliminating the need for a speed-reducing gearbox during simple-cycle operation. The TM2500 generator is an air-cooled Brush generator (Model BDAX62-170ERT) with an air filter assembly and exhaust assembly.

Dry coupled to the engine, the generator is mounted directly to the generator trailer. This arrangement enables engine/generator shaft alignment to be adjusted with the turbine trailer with the suspension system of the turbine trailer, while the generator remains fixed.

Generator Lube Oil (GLO) Skid

The GLO skid is a compact installation of generator lube system equipment on the generator trailer and is positioned on the generator end of the generator trailer. The GLO skid contains

the generator lube oil air/oil separator, GLO tank, DC lube pump and GLO filter. The skid contains transmitters that provide remote system monitoring. The pressure transmitters have instrument valves in their feed lines to simplify maintenance. The mineral lube oil system for the generator will include:

- GLO Filter
- GLO Tank
- DC Lube Oil Pump
- GLO Fin Fan Heat Exchanger
- GLO Air / Oil Separator
- GLO Pressure Control Valve

Switchgear

The TM2500 has a self-contained, metal clad switchgear; it is located on the front portion of the generator trailer.

The switchgear houses the following components:

- Generator breaker
- Current Transformers
- Buses
- Voltage Transformers

Generator Ventilation

The generator is supplied with its own ventilation components to provide cooling air solely for the generator. Shaft mounted fans direct cooling air through the generator- unit. The cooling air is then exhausted out of the generator through the exhaust silencer located on top of the generator.

Control House Trailer

The control house trailer includes a lighted and insulated control house. The control house is equipped

with an access door, air conditioner/heater, and a handheld fire extinguisher.

The control house trailer consists of the following:

- Control House Trailer
- Control House which includes:
 - Human Machine Interface (HMI)
 - Generator Control Panel (GCP)

- Motor Control Center (MCC)
- Batteries and Chargers

Control house trailer is a two-axle, air ride suspension trailer. At the jobsite, the control house trailer is inter-connected electrically to the turbine and generator trailers. Landing legs are provided to support and level the equipment at the jobsite.

The control house package equipment is described below:

HMI - Control house trailer is a two-axle, air ride suspension trailer. At the jobsite, the control house trailer is inter-connected electrically to the turbine and generator trailers. Landing legs are provided to support and level the equipment at the jobsite.

GCP - The GCP contains the voltage regulator and switches for controlling generator operation. This panel also contains local controls the Beckwith Integrated Generator Protection System (IGPS) for monitoring the operation of the turbine engine and generator. The fire protection panel and VersaMax modules integrated with the control system PLC. The GCP also houses DC circuit breakers for the distribution of DC voltage throughout the package as needed. The framework of interconnects required for complete package communications are distributed through this panel via interconnect cables.

MCC - The MCC (motor control center) is a free-standing metal cubicle that houses various low-voltage circuit breakers, motor starters, and their controls. It is installed in the control house, and also includes a 30 kVA lighting and distribution transformer.

Batteries and Chargers - The TM2500 has a 24 VDC control system battery system and charger, a 24 VDC fire system battery system and charger, and a 125 VDC switchgear and backup generator lube pump motor battery system and charger. The battery systems are fully wired and mounted in racks located in a separate ventilated compartment in the control house. The stand-up charger unit for all these components is located inside the control house trailer for easy accessibility. The 24 VDC distribution circuit breakers for the fire and gas protection system are located in the battery charger's cabinet.

BOP Equipment

Water Injection Systems

A water injection metering system is provided to reduce NOx emissions for gaseous fuel or liquid fuel operation. Demineralized water is injected into the combustor through ports in the fuel nozzles to produce NOx suppression. Water is supplied to the nozzles by a special water

manifold. Water injection can reduce NO_x emissions to 25 ppm (51 mg/Nm³) for gaseous fuel and to 42 ppm (86 mg/Nm³) for liquid fuel

GE provides the necessary controls, metering equipment, and interconnecting piping between the gas fuel skid and the engine. All piping is stainless steel, and the valves are trimmed with stainless steel. The CUSTOMER must provide a supply of pressurized water and liquid fuel in accordance with the specifications.

High Voltage System

At the time of this proposal no one line diagram or interconnect studies have been performed to dictate electrical design. This will be quoted when information is provided on a cost-plus 10% basis.

Exhaust Treatment System

At the time of this proposal no environmental or BACT studies have been performed. At such time this will be added on a cost-plus 10% basis.

Central Control Room

Central Control room will house the plant DCS and serve as the plant hub.

Plant Bulk

1. Civil Bulks – all earthwork to include concrete / rebar and bulks to be provided to include grout, anchors, fencing, and other embedment.
2. Mechanical bulks include but not limited to the following – piping, fittings, plant valves, insulation, plant installed instrumentation, platforms, ladders, piping to be field routed.
3. Electrical bulks include but not limited to the following – interconnect cables, cable tray/conduits, grounding, lighting, cathodic protection.
4. Painting and Protection by CONTRACTOR.

Services

Installation, Commissioning, and Startup

CONTRACTOR will provide technical advisory supervision, contract personnel, and equipment necessary to install, commission, and start up the GTG and facility to Original Equipment Manufacturer (“OEM”) standards.

Transportation

All transportation provided will be on a cost-plus 10% basis. Pricing has been provided as an estimated budgetary number where applicable.

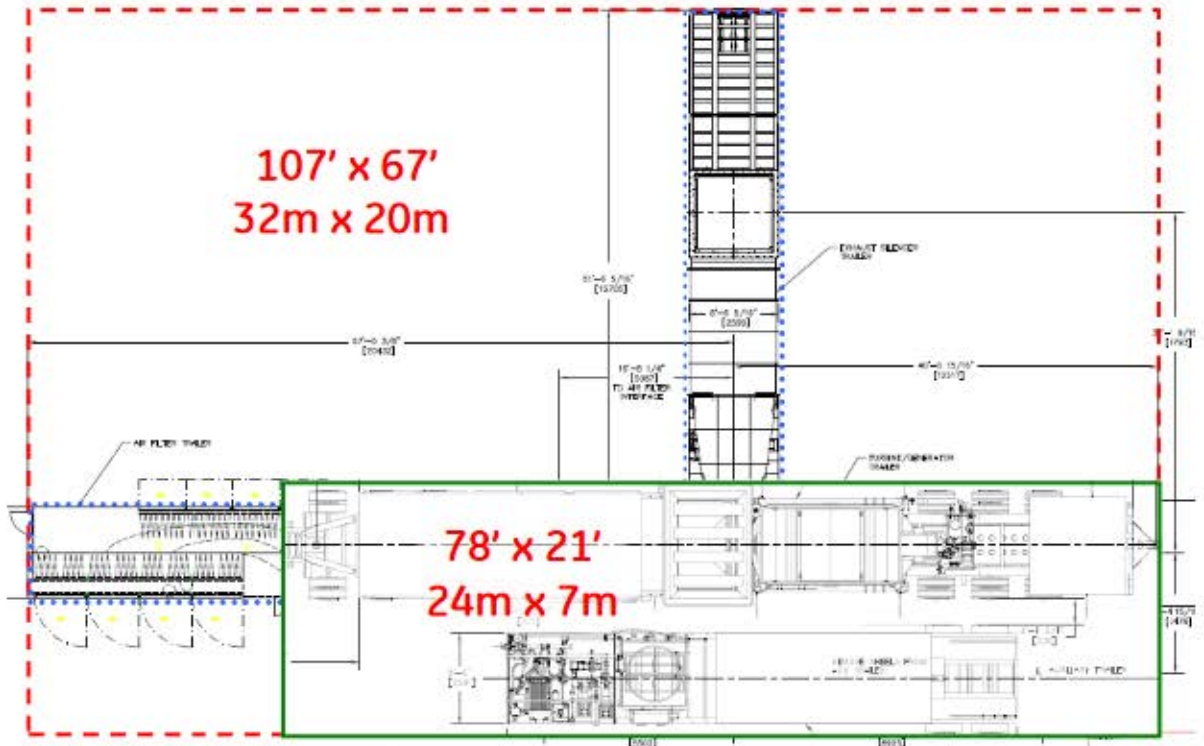
	Approx. Weight (lbs.)	L x W x H (feet)
Turbine Trailer ^{1,2}		
Without Stinger	90,145	55' L x 9.8' W x 13.2' H
With Stinger	95,139	69.6' L x 9.8' W x 13.2' H
Generator Trailer ^{1,2}		
Extendable Stinger set to EU	157,380	68.6' L x 9.8' W x 12.4' H
Extendable Stinger to US	157,380	76' L x 9.8' W x 12.4' H
Extendable Stinger set to CAN	157,380	84' L x 9.8' W x 12.4' H
With Cold Steel Version	161,822	Dependent on Stinger Setup
Control House Trailer ^{1,2}	47,490	41.7' L x 9.2' W x 14' H
Transportation Trailer ^{1,2,3}	49,435	43.2' L x 9.8' W x 13.6' H
Air Filter Assembly (including support bracket) ²	8,674	17.8' L x 8.3' W x 10.2' H
Switchgear	8,900	6' L x 9.4' W x 8.1' H
Generator 62-170ERT	84,878	19' L x 8.9' W x 7.2' H
Generator Ventilation	6,724	12.7' L x 8.4' W x 9.1' H
Control House	25,463	22.8' L x 8.3' W x 9.4' H
Ventilation Fan Assembly	4,530	10.3' L x 8.3' W x 7.9' H
Exhaust Stack	16,323	12.2' L x 8.3' W x 11' H
Crane ²	9,140	5.3' L x 8.3' W x 8.75' H
Generator Air Filters ²	1,600	4.4' L x 8.3' W x 8.75' H

Schedule

It is estimated that when the MGTG's are delivered to the site, installation will be 2 weeks per turbine.

Footprint

Compact Footprint. Ultra Dense Power.

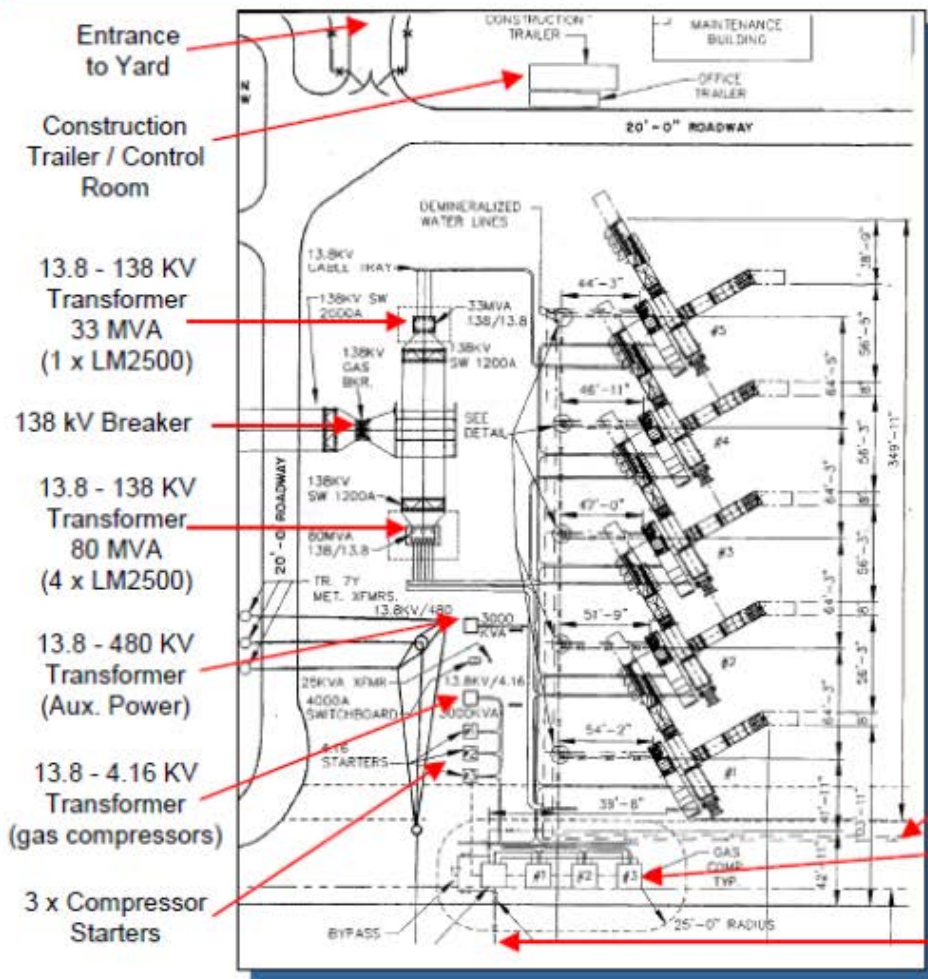


77% reduction in installed footprint
(compared to previous generation TM2500)





Site Preparation / Arrangement (typical)



- Minimal site preparation required
 - Loading may require some foundation modifications
- Fuel, water, electrical connections all tie into Aux Trailers
- Low elevation profile (20 ft. max. height)

- Demin Water Supply
- 3 x Electric Gas Compressors + Control Skid
- Natural Gas Supply

Customer Interface Requirements

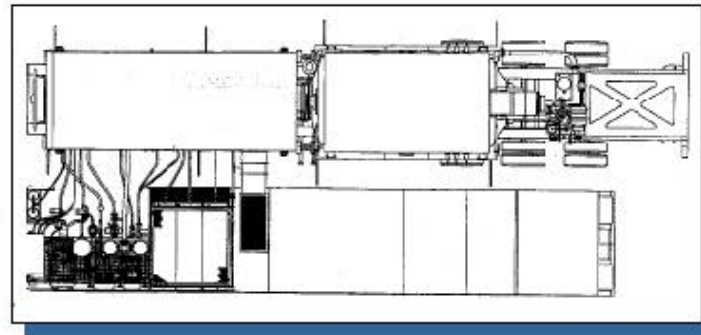
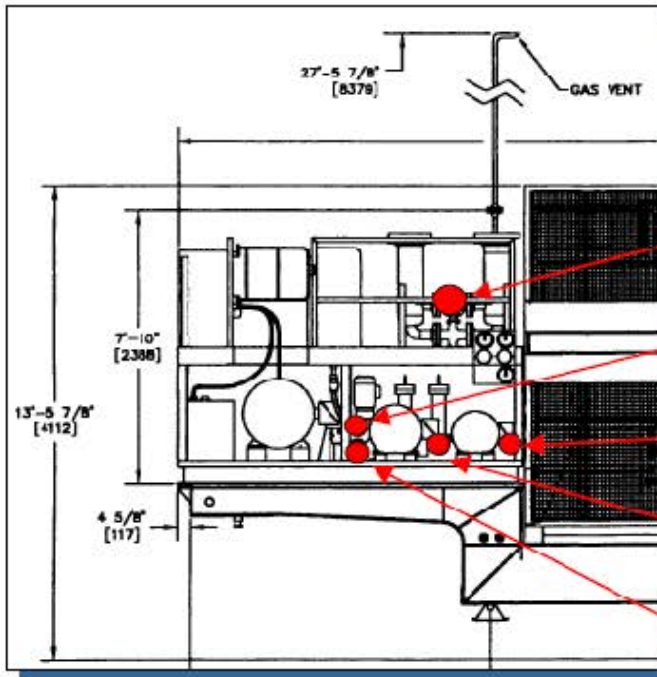
- **Electrical**
 - Customer required to supply 480 Volt, 60 Hz, auxiliary power to Motor Control Center main circuit breaker (450 kW) located in control room / Auxiliary Trailer
 - Operating load approx. 190 kW
 - Suitable ground grid and lightning protection
- **Natural Gas Fuel**
 - Customer responsible to supply natural gas at 375 (+/- 20) PSIG at a rate of 12,000 pph (200 mmbtu/hr or 6 mscf/day)
 - Must conform to GE Specification MID-TD-0000-1 (Natural Gas Fuel for GE Aircraft Derivative Gas Turbines in Industrial Applications)
- **Liquid Fuel (Diesel)**
 - Customer responsible to supply liquid fuel at 30 (+/- 10) PSIG, up to 40 GPM (max.)
 - Must conform to GE Specification MID-TD-0000-2
- **Water for NOx Suppression**
 - If desired, customer responsible to supply demineralized water at 15 PSIG (min.) up to 28 GPM (max.)
 - Must conform to GE Specification MID-TD-0000-3
- **Foundation**
 - Suitable foundation in a secure location





Interface Connections

- Quick disconnect lines between trailers
- All lines neatly stowed and pre-connected where possible



Natural Gas Supply

Liquid Fuel Return

Water Inj. Inlet

Water Inj. Return

Liquid Fuel Supply

- Designed for 3-day set-up where infrastructure is in place
- Drawings and detailed requirements allow for site preparation in advance of genset arrival



Preliminary Scope of Work

REV 1 Schedule 0: Contractor Scope of Work

MP25 EQUIPMENT

5/23/2015

ITEM	DESCRIPTION	SUPPLY	INSTALL	Crew Oper.	Fork Lift Oper.	ESTIMATED MAN-HOUR	Rigger	Millwright	Fitter	Electroan	Helper	REMARKS
1A	MP25 Power Trailer											
1.1	Position Trailer and Secure	P/W/S	SUB CONTRACTOR			4						AUTORIZED SUBCONTRACTOR IS
1.2	Install three jacks & level	P/W/S	SUB CONTRACTOR		4	8						
1.3	Unbolt Bogs and reposition	P/W/S	SUB CONTRACTOR			16						
1.4	Assemble set & secure 5 access ladder platforms	P/W/S	SUB CONTRACTOR			4						
1.5	Unbox the Generator	P/W/S	SUB CONTRACTOR			4						
1.6	Remove End Wall	P/W/S	SUB CONTRACTOR			4						
1.7	Remove Generator Lube Oil Skid	P/W/S	SUB CONTRACTOR		1	4						
1.8	Install Generator Neutral Cables to Generator	P/W/S	SUB CONTRACTOR			4						
1.9	Remove Non Exhaust and Rotor Clamp	P/W/S	SUB CONTRACTOR			2						
1.10	Remove Decant Bags	P/W/S	SUB CONTRACTOR			1						
1.11	Install All Mechanical Assy to Generator	P/W/S	SUB CONTRACTOR			2						
1.12	Assemble Generator Insulation Tool	P/W/S	SUB CONTRACTOR			8						
1.13	Install Generator	P/W/S	SUB CONTRACTOR			80						
1.14	Remove Installation Tools	P/W/S	SUB CONTRACTOR			12						
1.15	Remove Generator Gear Lube Oil Pump	P/W/S	SUB CONTRACTOR			2						
1.16	Install Generator Lube Oil Skid	P/W/S	SUB CONTRACTOR		2	2						
1.17	Install End Wall	P/W/S	SUB CONTRACTOR			4						
1.18	Install Generator Lube Oil Piping	P/W/S	SUB CONTRACTOR			4						
1.20	Install Generator Wiring from Connectors	P/W/S	SUB CONTRACTOR			20						
1.21	Install Duct Work to Air Outlet	P/W/S	SUB CONTRACTOR			8						
1.24	Install Primary Air Inlet Silencers	P/W/S	SUB CONTRACTOR			8						
1.25	Assemble and Install Primary Air Inlet Filter Houses	P/W/S	SUB CONTRACTOR			48						
1.26	Install Exhaust Silencers	P/W/S	SUB CONTRACTOR			12						
1.27	Alignments (PT to Generator & Collector Box)	NA	SUB CONTRACTOR			160						
1.28	Connect water grounding pads to ground grid	SUB CONTRACTOR	SUB CONTRACTOR									
1.29	NV Cable Receiving System	P/W/S	SUB CONTRACTOR			20						
1.30	NV Cables	P/W/S	SUB CONTRACTOR			12						
1.31	NV Cable Terminations	P/W/S	SUB CONTRACTOR			12						
1.32	Power/Control Receiving System	P/W/S	SUB CONTRACTOR			20						
1.33	Power/Control Cables	P/W/S	SUB CONTRACTOR			48						
1.34	Power/Control Cables Terminations (Quick Disconnect)	P/W/S	SUB CONTRACTOR			24						
2A	Hydraulic Start Skid											
2.1	Install Package to the bottom of Power Trailer	P/W/S	SUB CONTRACTOR		4	12						
2.2	Piping	P/W/S	SUB CONTRACTOR									
2.3	LV Cable	P/W/S	SUB CONTRACTOR			2						
2.4	LV Cable Terminations	P/W/S	SUB CONTRACTOR			2						
2.5	Power/Control Receiving System	P/W/S	SUB CONTRACTOR			4						
2.6	Power/Control Cables	P/W/S	SUB CONTRACTOR			2						
2.7	Power/Control Cables Terminations (Quick Disconnect)	P/W/S	SUB CONTRACTOR			2						
3A	Gas Fuel Metering and Filter Skid											
3.1	Set the Skid and Secure	P/W/S	SUB CONTRACTOR		1	4						
3.2	Connect Skid grounding pads to ground grid in two pieces	SUB CONTRACTOR	SUB CONTRACTOR									
3.3	Piping	P/W/S	SUB CONTRACTOR									
3.4	Power/Control Receiving System	P/W/S	SUB CONTRACTOR			8						
3.5	Power/Control Cables	P/W/S	SUB CONTRACTOR			1						
3.6	Power/Control Cables Terminations (Quick Disconnect)	P/W/S	SUB CONTRACTOR			1						
4A	Buffer Air Heat Exchanger Skid											

ITEM	DESCRIPTION	SUPPLY	INSTALL	ESTIMATED MAN-HOUR								REMARKS	
				Crane Oper.	Fork Lift Oper.	Rigger	Miniwright	Pipefitter	Electrician	Helper			
4.1	Set the Skid and Secure	P/WRS	SUB CONTRACTOR			8						2	AUTORIZED SUBCONTRACTOR IS
4.2	Connect skid grounding pads to ground grid in two pieces	SUB CONTRACTOR	SUB CONTRACTOR	1								2	
4.3	Piping	P/WRS	SUB CONTRACTOR					24					
4.4	Install Insulators	P/WRS	SUB CONTRACTOR									18	
4.5	Power/Control Raceway System	P/WRS	SUB CONTRACTOR									1	
4.6	Power/Control Cables	P/WRS	SUB CONTRACTOR									2	
4.7	Power/Control Cables Terminations (Quick Disconnect)	P/WRS	SUB CONTRACTOR									1	
5A	Drain Tank												
5.1	Set the tank and Secure	P/WRS	SUB CONTRACTOR			8						2	AUTORIZED SUBCONTRACTOR IS
5.2	Connect tank grounding pads to ground grid in two pieces	SUB CONTRACTOR	SUB CONTRACTOR									2	
5.3	Piping	P/WRS	SUB CONTRACTOR					2					
5.4	Power/Control Raceway System	P/WRS	SUB CONTRACTOR									2	
5.5	Power/Control Cables	P/WRS	SUB CONTRACTOR									1	
5.6	Power/Control Cables Terminations (Hard Wired)	P/WRS	SUB CONTRACTOR									1	
8A	CO2 Bottle Rack Assembly												
8.1	Set the Skid and Secure	P/WRS	SUB CONTRACTOR		1		4					2	AUTORIZED SUBCONTRACTOR IS
8.2	Connect skid grounding pads to ground grid in two pieces	SUB CONTRACTOR	SUB CONTRACTOR									2	
8.3	CO2 Bottles (Steel & Charged)	SUB CONTRACTOR	SUB CONTRACTOR			2	10						
8.4	Weight CO2 Bottles & Install to CO2 Rack	SUB CONTRACTOR	SUB CONTRACTOR			3	18						
8.5	Piping	P/WRS	SUB CONTRACTOR					8				1	
8.6	Power/Control Raceway System	P/WRS	SUB CONTRACTOR									2	
8.7	Power/Control Cables	P/WRS	SUB CONTRACTOR									2	
8.8	Power/Control Cables Terminations (Quick Disconnect)	P/WRS	SUB CONTRACTOR									1	
7A	Liquid Fuel Metering and Filter Skid												
7.1	Set the Skid and Secure	P/WRS	SUB CONTRACTOR			1	4					1	AUTORIZED SUBCONTRACTOR IS
7.2	Connect skid grounding pads to ground grid in two pieces	SUB CONTRACTOR	SUB CONTRACTOR									2	
7.3	Piping	P/WRS	SUB CONTRACTOR					8					
7.4	Power/Control Raceway System	P/WRS	SUB CONTRACTOR									2	
7.5	Power/Control Cables	P/WRS	SUB CONTRACTOR									2	
7.6	Power/Control Cables Terminations (Quick Disconnect)	P/WRS	SUB CONTRACTOR									2	
8A	Water Inlet/Out Skid												
8.1	Set the Skid and Secure	P/WRS	SUB CONTRACTOR		1		4					1	AUTORIZED SUBCONTRACTOR IS
8.2	Connect skid grounding pads to ground grid in two pieces	SUB CONTRACTOR	SUB CONTRACTOR									2	
8.3	Piping	P/WRS	SUB CONTRACTOR					8				2	
8.4	Power/Control Raceway System	P/WRS	SUB CONTRACTOR									2	
8.5	Power/Control Cables	P/WRS	SUB CONTRACTOR									2	
8.6	Power/Control Cables Terminations (Quick Disconnect)	P/WRS	SUB CONTRACTOR									2	
8A	Water Wash Cart												
8.1	Set the Cart and Secure	P/WRS	SUB CONTRACTOR		2							4	Unload and store equipment
10A	MP 26 Control Trailer												
10.1	Set the Trailer and Secure	P/WRS	SUB CONTRACTOR									4	AUTORIZED SUBCONTRACTOR IS
10.2	Install Trailer Support Struts	P/WRS	SUB CONTRACTOR					8				2	
10.3	Assemble, set & secure 2 access ladder platforms	P/WRS	SUB CONTRACTOR									12	
10.4	Connect trailer grounding pads to ground grid	SUB CONTRACTOR	SUB CONTRACTOR									4	
10.5	NV Cable Raceway System	P/WRS	SUB CONTRACTOR									20	
10.6	NV Cables	P/WRS	SUB CONTRACTOR									24	

Pictures







Installation Pricing

Quantity	Description	Price
	Civil Structural	Included
1	Buildings – Central Control Room (optional)	\$534,000.00 (only 1 needed)
	Sound Mitigation if required	\$40,000.00
	Black Start system	\$250,000.00
	Mechanical	Included
	Electrical	Included
	Instrumentation	Included
	DCS System	Included
	Plant Erection	\$500,000.00
	Equipment Rental	Included
	Painting	Included
	Site Costs	Included
	Engineering	Included
	Project Management	Included
	Travel & Per Diem	Included
	TA	Included
	Testing	Included
	Bonding BAR	Not Included
	Contingency	Not Included
	Transport to site	Cost +10%
	Import Costs	N/A

Optional HRSG and Steam Turbine

Estimated Cost \$12,000,000.00

Phase 2, keeps with the concept of modulization and limiting work at site, Bridge Power in Ghana is the model. They used 5 TM2500 simple cycle units, operating at 33 MW each, and five fully modularised vertical once-through-boilers (OTBs) – designed, engineered, manufactured and installed by John Cockerill Energy.

Our units will use the same concept but use small modular HRSG Steam turbine units in a 2to1setup, using Cleaver-Brooks Max-Fire® and installed on trailers by Supplier.

The HRSG pressure parts to be manufactured in modular box to maximise shop fabrication by enabling 100% of the pressure parts to be pre-assembled in a single module.

Benefits of OTB

Key benefits of the OTB include: improved thermal cycling capabilities thanks to the design; superior tube metallurgy; “dry running” capability, as already noted; simplified controls; superior operational flexibility; and enhanced modularity and constructability.

In short, the vertical OTB promises lowest lifecycle cost, deriving from flexibility, reliability, and simplicity.

The OTB experiences no efficiency loss due to bypass stack damper leakage, and no maintenance is required on a diverter damper, with less piping and E&I scope, while simplified operation minimises operating costs.

Some other OTB salient features can be summarised as follows:

- Unrestricted GT start up without holding time from steam cycle.
- Fast steam cycle start up and shut down capability.
- A good fit with intermittent renewable energy.
- Dry running OTB with properly equipped SCR system provides good control of GT emissions in open cycle.
- Steam temperature controlled by feed water flow.
- Ability to operate down to 30% of GT load while maintaining steam temperature.
- Low thermal inertia, with thin wall pressure parts throughout and elimination of the thick wall drum.
- Thin-wall tubes and no limitation on pressure gradient compare favourably with limitations created by of thick-walled drum.
- Efficient off-design performance: steam temperature can be controlled by the feedwater flow with or without the need for desuperheating.
- Improved capability for controlling emissions during start up: the SCR is quickly heated up to operating conditions.

