

NORTHEAST

ENERGY SYSTEMS

Power Systems Specialists

December 13, 2011

Mr. W. Gary Craig
Greenfield Energy LLC
225 Greenfield Parkway
Suite 102
Liverpool, NY 13088

Re: Nelson Gardens LFG Project

Dear Mr. Craig;

Northeast Energy Systems is pleased to present our proposal for the Nelson Gardens LFG project located in San Antonio TX. Our proposal is based on four (4) GE JGS 320 gas engine generator packages equipped for landfill gas. The GE JGS 320 gas engine is rated at 1,059 kW, 480 volt, 3 phase, 60HZ, 1.0PF. Included is the horizontal radiator packages designed for 110°F ambient conditions and critical grade silencers. We have also included are a number of items required by the utility for parallel operation. We have found these items are continually required by the utility and are best ordered with the engines as the factory can install these items in the DIANE control module. Also included are the new updated LFG gas trains that provide greater fuel flexibility. I have not included a “utility relay” package. We are not familiar with the requirements of the local utility and their preferred vendor for a utility relay package. This can be added at a later date after discussions with the local utility. The following presents our proposed scope of supply, performance and fixed cost for four (4) GE JGS 320 engine generator packages. All prices are quoted F.O.B. jobsite with rigging and removal required by others.

Four (4) JGS 320 engine generator packages

Standard Engine Generator Package

1. Four (4) GE Jenbacher JGS 320 B82 engine generators each rated at 1,059 kW, 480 volts
2. Four (4) GE Jenbacher DIA.NE XT generator set control systems w/generator protection relays
3. One (1) DIA.NE WIN communication license
4. One (1) DIA.NE WIN firewall software
5. One (1) Remote message center
6. Four (4) LFG gas trains
7. Four (4) Vibration sensors
8. Four (4) Generator anti condensation heaters
9. Four (4) DVR's
10. Four (4) Input export signals



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11. Four (4) Power factor signal
12. Four (4) CT packages
13. Four (4) Winding & Bearing PT 100's
14. Four (4) Exhaust manifold insulation blankets
15. Four (4) M1 panel air conditioners
16. Technical support
17. Startup and commissioning services
18. Training

SMITHCO Radiator Package

1. Four (4) SMITHCO model F14-093-1 110 deg F design radiator, 85 DbA at 3 FT
2. Eight (8) Rad. HT 4.0"ASA x 4.0" S/S braid x4.0" ASA x 16"L
3. Eight (8) Rad. LT 3.0"ASA x 3.0" S/S braid x3.0" ASA x 12"L
4. Four (4) John Wood model JAER-23907 60 gallon ASME bladder type expansion tanks (HT)
5. Four (4) John Wood model JAER-23903 24 gallon ASME bladder type expansion tanks (LT)
6. Eight (8) Kunkel model 20 20psig PRV's
7. Eight (8) UE-J400-156 low pressure switches
8. Eight (8) UE-J6-358 high pressure shutdown switches
9. Eight (8) UE B100-120 high temp shutdown switches
10. Eight (8) WE Anderson model V6 flow switches
11. Eight (8) SARCO model 13ws air separators
12. Four (4) FPE model AF2510-155 3.0" 2.5"-way Thermostatic valve (high temp circuit)
13. Four (4) FPE model AF2012-140 2.0" 2.5"-way Thermostatic valve (low temp circuit)
14. Four (4) Aurora model 344-2 x 3 x 9 150 GPM HT circuit pump 15 HP
15. Four (4) Suction pump braid 3.0" ASA x 3.0" S/S Braid x 4.0" ASA x 12" L
16. Four (4) Discharge pump braid 2.5" ASA x 2.5" S/S Braid x 4.0 ASA x 12" L
17. Four (4) Aurora model 344-1.5 x 2 x 9B 110 GPM LT circuit pump 5 HP
18. Four (4) Suction pump braid 2.0" ASA x 2.0" S/S Braid x 3.0" ASA x 12" L
19. Four (4) Discharge pump braid 1.5" ASA x 2.0" S/S Braid x 3.0 ASA x 12" L
20. Four (4) Radiator ABB 60 AMP non-fused disconnects
21. Four (4) High temp pump 30 AMP non-fused disconnects
22. Four (4) Low temp pump 16 AMP non-fused disconnects

Exhaust Silencers

1. Four (4) HARCO model 36132-VCS-14-SI critical grade silencers carbon steel

JGS 320 Engine Performance

Ratings are per ISO-ICFN continuous power with the following standard reference conditions

- Barometric pressure 14.5 PSI,
or 328 feet above sea level
- Air temperature 77 ° F
- Relative humidity 30 %

Jenbacher JGS 320 B82 engine generator performance (each engine)		
Electric output	1,059 kW @ 480 volt, 3 phase 60 Hz	0% tolerance
Fuel input-	9,796,000 BTU/HR @ LHV of 365 BTU/CF	+5% tolerance
Heat rate	9,250 BTU/kW	+5% tolerance
Electrical efficiency	36.9 %	-5% tolerance

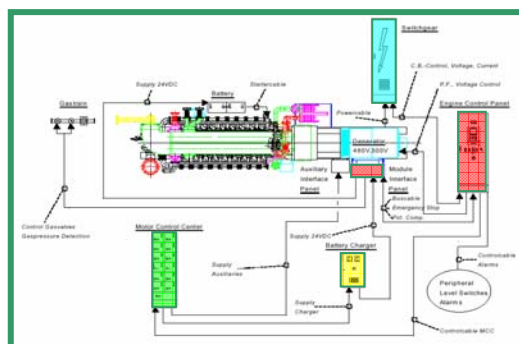
GE Jenbacher Guaranteed Emissions	
Emission	Untreated
NO _x	.6 grams/BHP-Hr (49PPM)
CO	3.0 grams/BHP-Hr (403PPM)
NMHC	.46 grams/BHP-Hr (108PPM)

The technical description for the JGS 320 is attached
The GE emission guarantee letter is attached

DIA.NE Engine Generator Control System General Description

The GE Jenbacher generator set is equipped with a DIA.NE control system. This systems works in conjunction with GE patented LEAN NOX® emission control system to provide stable engine operation while maintaining NO_x emissions. The system works with the owners supplied electrical equipment, i.e. breakers, MCC panel and switchgear. Installation, wire, cables, and terminations are by others. Below is a typical controls sequence utilizing the DIA.NE XT control system and customer's electrical equipment.

- Generator set
- Starting systems
- Interface panels



The DIA.NE (Dialog-Network) freestanding control panel provides an engine-generator management system featuring a membrane touchpad display for interface and operation of the generator set equipment.

The DIA.NE system includes:

- Central engine and control module.
- An industrial grade computer with 10" VGA TFT color graphics display, 10 function keys, display selection keys, 10-key numeric keyboard for input of operating parameters, auxiliary keys for START, STOP, lamp test, and special functions. A RS485 serial port interfaces to the central computer and multi-transducer.

Dimensions for the DIA.NE panel are 87"high x 32" wide x 24" deep.

Main displays available from the DIA.NE panel include:

- Generator set interconnection electrical values:
 - Phase current
 - Neutral current
 - Voltage (Phase-to phase)
 - Active power
 - Reactive power
 - Apparent power
 - Power factor
 - Frequency
- Engine oil pressure and temperature



- Jacket water circuit pressure and temperature
- Exhaust gas temperatures
- Engine controller
- Auxiliary PID controller
- Auxiliary status
- Operational data such as operating hours, service hours, number of starts, active power demand (kWh), reactive power demand (kVArh), and measured values required for the operational logbook.
- System set-up
- Graphical data logging and trending for up to sixteen (16) measured values
 - Long term trending of data for 30 second intervals up to one (1) month duration
 - Short term trending provides data for troubleshooting
- PLC base central engine management which controls the following:
 - Speed control in no load and isolated operation
 - Power output control in a parallel operation.
 - LEANOX® control system for control of boost pressure relative to generator terminal output and fuel mixture temperature via the GE Jenbacher engine driven air-gas mixer.
 - Knocking controls enable adjustment of the ignition point, power output, and potentially the mixture temperature in the event of a knocking condition.
 - Load sharing between generator sets is isolated operations.
 - Proportional power reduction as a result of a fault
 - Generator set logic control
 - Generator monitoring of up to eight (8) functions simultaneously:
 - Overload/short-circuit [51], [50]
 - Over voltage [27]
 - Under voltage [59]
 - Asymmetric voltage [64], [59N]
 - Unbalance current [46]
 - Failure Excitation [40]
 - Over frequency [81>]
 - Under frequency [81<]
- Three (3) position lockable operation mode selector switch
 - “OFF”- Unit is disabled
 - “MANUAL”- unit is manually operable
 - “AUTOMATIC”- Full automatic operation is enabled via remote signal. A remote stop is enabled with a cool down period following signal. Auxiliary equipment will continue to operate for a period following engine shutdown.
- Three (3) position demand switch
 - External demand OFF
 - External demand
 - Override external demand
- The following shut down functions are displayed:
 - Low lube oil pressure
 - Low lube oil level
 - High lube oil level
 - High lube oil temperature
 - Low jacket water pressure
 - High jacket water pressure
 - High jacket water temperature
 - Over speed
 - Emergency stop
 - Gas train failure
 - Start failure

- Stop failure
- Engine start blocked
- Engine operation blocked
- Misfiring
- High mixture temperature
- Measuring signal failure
- Overload/output signal failure
- Generator overload/short circuit
- Generator over/under voltage
- Generator over/under frequency
- Generator asymmetric voltage
- Generator unbalanced power
- Generator reverse power
- Synchronizing failure
- Knocking failure
- The following alarms are displayed:
 - Low jacket water temperature
 - CPU battery failure
- Operational functions displayed:
 - Ready to start
 - Operation
 - Generator circuit breaker “ON”
- Four (4) auxiliary contacts are available for remote start, shut down, operation, and a common alarm.
- Additional contacts are optionally available for start/stop controls, thermal processes, and electrical synchronization.

DIA.NE WIN Communication Package

The GE Jenbacher DIA.NE WIN system provides for remote operation and monitoring of the generator set and related auxiliaries via a PC station as well as remote monitoring via I/P address. The DIA.NE WIN system enables:

- Remote monitoring of operating parameter and alarm displays, trend data.
- Management, starting and stopping of generator set and auxiliaries along with remote acknowledgement of error/alarm messages.
- Connection options include modem, Internet, and LAN.
- Remote host computers and monitors are optional. All I/P fees and costs are by others.

GE Jenbacher and NES Technical Support:

Northeast Energy Systems provides technical support through its engineering office located in Philadelphia. This office is staffed with both mechanical and electrical engineers along with project managers. They support projects pre-sale through commissioning and operations. The competence center can assist customers with any problems or issues that come up during engine operations. They will utilize the DIA.NE WIN communication system and monitoring program to help diagnose problems and implement solutions. The following is a partial list of activities and deliverables provided by our technical support group.

- Development of sequence of electrical operations in association with GE Jenbacher and owner's engineer for synchronizing, paralleling, and load sharing of the generator set.
- Provide GE Jenbacher mechanical-electrical equipment drawings and submittal packages. GE Jenbacher furnished installation and interface drawings along with technical data will be prepared for use by others to develop integrated installation and point-to-point wiring diagrams required for installation of equipment. All detailed engineering drawing is by others.
- Coordinate with and provide technical support for integration of the DIA.NE XT
- Provide emissions data and support for air permitting.
- Develop and customize DIA.NE panel operating systems for site specific conditions and parameters.
- Develop and provide six (6) sets of submittal documentation in hard copy and CD format for review by construction managers and sub-contractors.
- Develop and provide six (6) sets of as-built documentation, following final startup and commissioning, in hard copy and CD format for the owners use.

Startup and Commissioning and Training Services

Northeast Energy Systems will provide startup and commissioning services. Startup personnel will include a factory startup engineer and service technician provided by NES. Services will be scheduled after receipt of completed installation checklists. A complete startup and commissioning work scope will be provided 14 days prior to start up date. Startup and commissioning will include all required travel and lodging.

Project Qualification and Experience

GE Jenbacher is the world's leading manufacturer of pure natural gas engines with over 12,000 units in operation providing hospitals, universities, manufacturing facilities and government buildings with reliable electricity and thermal energy. GE Jenbacher is known world wide for making high efficient reliable gas engines. Many developing countries depend on GE Jenbacher for their power requirements bringing power to remote areas for the first time.

Northeast Energy Systems

Northeast Energy Systems is the exclusive GE Jenbacher distributor for the Northeast U.S, California, Oregon, Alaska and Hawaii. As part of Penn DDA/Penn Power Systems organization, NES brings many years of experience in reciprocating engine power generation applications. The following is a partial list of GE Jenbacher installations currently being maintained by NES.

Reference Sites

- Wellesley College – Wellesley Massachusetts, Five (5) JMS 616's
- Corning Glass – Corning NY, One (1) JMS 320
- Locite Corp- Rocky Hill CT, Two (2) JMS 312's
- Bedford Hills Correction facility, Bedford Hills, NY, One (1) JMS 312
- Chicopee LFG facility, Chicopee Massachusetts, Four (4) JGS 616's
- SUNY CHP- Westbury LI, NY, One (1) JMS 612
- LI Jewish Medical Center, Two (2) JMS 420's
- Covidan, New Haven CT, One (1) JMS 620
- Covidan, New Haven CT, One (1) JMS 612
- Casella Waste Services, Bangor ME, Three (3) JGS 320's
- West Lynn Creamery, Lynn MA, One (1) JMS 616
- Garlick Farms, Franklin MA, One (1) JMS 616

- Burlington County LFG, Burlington NJ Five (5) JGS 420's
- Warren County- Warren County NY, Two (2) JGS 616's
- Raritan CC, Raritan NJ, One (1) JMS 420
- Bergen County NJ Waste Water, Two (2) JMS 420's
- Stafford County LL, Stafford VA, Two (2) JGC 320's
- USCG Baltimore MD, Three (3) JMS 320's
- ACUA- Atlantic City NJ, Two (2) JMS 616's
- Ortho McNeil- Raritan NJ, One (1) JMS620
- Cellu Tissue- E. Hartford CT, One (1) JMS 620
- Wesleyan University- Middletown CT, One (1) JMS 616
- Auburn LFG project- Auburn NY, Three (3) JMS 320's
- Cayuga County Biogas project- Auburn NY, One (1) JMS 312
- KB Compost- Akron Ohio, One (1) JMC 208
- Synergy biogas- Wyoming NY, One JMC 420

Commercial Proposal

The following presents our commercial pricing for the Nelson Gardens landfill gas project as described above. All prices are quoted F.O.B. jobsite with rigging and removal required by others. No provisions are made for local taxes, permits, or fees. Current deliveries are estimated at 6.5 months Xworks (leaving the factory). Pricing is valid until December 22, 2011

Four (4) GE Jenbacher JGS 320 B82 engine generator packages

The GE Jenbacher equipment is proposed with GE's standard limited (1) year warranty. A second year warranty is available on request. **A copy of the standard warranty is attached**

We sincerely appreciate this opportunity to present our proposal for the Nelson Gardens LFG project. Northeast Energy Systems and its parent company Penn Power Systems bring over 50 years of reciprocating engine experience. If you have any questions please don't hesitate to call me at 781-771-7536 or email ffarrand@neesys.com.

Sincerely Yours

Fred Farrand

Fred Farrand

Vice President

Northeast Energy Systems