



BHAGYANAGAR GAS LIMITED

(A JOINT VENTURE OF HPCL & GAIL)

BID DOCUMENT FOR

**PROCUREMENT OF DIESEL GENERATOR SETS FOR CNG
OPERATIONS IN VIJAYAWADA & KAKINADA.**

**UNDER LIMITED DOMESTIC
COMPETITIVE BIDDING**

Bid Document No.: BGL/165/2011-12

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SECTION – 8 MATERIAL REQUISITION (MR)

MATERIAL REQUISITION

Sr. No	Description	Location	Qty Required
1	Supply and Installation of diesel generator set of capacity of about 180KVA, 3 phase, 415 volts, 50Hz (144KW at 0.8 PF lag) complete with diesel engine, with radiator, (water cooled) along with self starting device, batteries, battery charger, engine panel, base frame, anti-vibration mounts, diesel tank, AMF control panel and all connected accessories complete as described in detailed technical specifications & Schedule of Rates.	Vijayawada	3 Sets
2	Supply and Installation of diesel generator set of capacity of about 200KVA, 3 phase, 415 volts, 50Hz (160KW at 0.8 PF lag) complete with diesel engine, with radiator, (water cooled) along with self starting device, batteries, battery charger, engine panel, base frame, anti-vibration mounts, diesel tank, AMF control panel and all connected accessories complete as described in detailed technical specifications & Schedule of Rates.	Kakinada	1 Set
3	Supply and Installation of diesel generator set of capacity of about 250KVA, 3 phase, 415 volts, 50Hz (200KW at 0.8 PF lag) complete with diesel engine, with radiator, (water cooled) along with self starting device, batteries, battery charger, engine panel, base frame, anti-vibration mounts, diesel tank, AMF control panel and all connected accessories complete as described in detailed technical specifications & Schedule of rates.	Vijayawada	1 Set

SECTION – 9 TECHNICAL SPECIFICATIONS

**Scope and Technical Specification for 180KVA/200KVA/250KVA 415V, 50Hz,
3Phase D-G set**

SCOPE OF THE WORK: Supply, installation, testing and commissioning of 180KVA / 200KVA / 250 KVA, 415V, 50Hz, DG -Sets with weather proof acoustic enclosure, with AMF Control panel for providing Stand -by source of power supply.

Detailed specification for Diesel engine and Generator set:

Stand-by Definition:

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 750 hours per year, with maximum expected usage of 1000 hours per year. Standby power shall be in accordance with ISO 8528. Fuel stop power shall be in accordance with ISO 3046. Standby ambient shown shall indicate ambient temperature at 100% load which results in a coolant top tank temperature just below the shutdown temperature.

Diesel Engine:

The diesel should be vertical cylinder type having 6 cylinders totally enclosed, compression ignition, water cooled (radiator cooled), turbo charged cooled suitable for Power generation application to drive the 180KVA/200KVA/250KVA alternator at 1500 rpm under NTP condition confirming to BS 649, complete with all interconnecting piping and the following standard accessories.


- a) Dynamically Balanced fly wheel.
- b) Necessary flexible coupling and guard for alternator and engine (applicable only for double bearing alternator).
- c) Air cleaner (dry/oil bath type) as per manufacturer standard.
- d) Radiator – heavy duty type
- e) Cooling fan
- f) Water circulating pump
- g) Corrosion resistor
- h) PT fuel pump
- i) An electronic governor to maintain engine speed at all conditions of load. (EGC)
- j) Fuel filter
- k) Fuel shut down solenoid (24Vdc, stop solenoid)
- l) Lubricating oil filter

- m) Oil cooler
- n) By pass filter
- o) Dry exhaust manifold with suitable exhaust residential grade silencer to reduce the noise level.
- p) Suitable self starter for 12 V/24 V DC.
- q) Battery charging alternator unit and voltage regulator, suitable for starting batteries, battery racks with interconnecting leads and terminals.
- r) Engine instrument panel with following:
 - ❖ Start/stop key switch.
 - ❖ Lube oil pressure indication.
 - ❖ Water temperature indication.
 - ❖ RPM indication.
 - ❖ Engine Hours indications.
 - ❖ Engine Hours indications.
 - ❖ Low lube Oil trip indication
 - ❖ High water temperature indication.
 - ❖ Over speed indication.
- S) The engine should have following:
 - ❖ Safety control trip for low lube oil pressure
 - ❖ Safety control trip for high lube oil temp.
 - ❖ Safety control trip for high water temp.
 - ❖ Safety control trip for engine over speed
- T) All moving parts of the engine shall be mechanically guarded in such a manner that a Human finger cannot touch any moving part.

Requirement for the diesel engine:

The diesel engine shall be vertical cylinder, single acting, and mechanical injection type and furnished with all the required equipments as per standard practice. The engine should develop rated horse power to drive alternator.

The required auxiliaries, guarantee of fuel consumption for rated output, provision or parallel operation, governor performance and torsional vibration shall be in accordance

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with BS: 649. The engine shall conform to IS: 10000/ISO 3046/BS; 649/BS 5514 amended up to date.

The engine shall be provided with an exhaust gas turbo charger and a charged air cooler, integral air intake filter and silencer.

The engine should have throttle control, the engine water cooling should have radiator. For charged air cooler, the cooling water inlet flow shall be thermostatically controlled.

Engine governing system:

Electronic governor of class A1, as per ISO 3046/BS 5514 with actuator shall be provided as per standard design of manufacturer. Governor shall be a self-contained unit capable of monitoring speed. An over speed trip mechanism shall be provided to automatically shut off the fuel supply in case of set speed reading about 110% of rated speed.

Frequency Variation:

The engine speed shall be so maintained that frequency variation at constant load including no load shall remain within a band of 1% of rated frequency.

Fuel system:

Fuel (Diesel) system to the engine shall be supplied from a fuel tank. The supplier should provide a fuel tank that can run the DG Set for at least 8 Hrs, to be installed in a weather proof enclosure. The supplier should provide mechanical fuel level indicator with 'Low' and 'High' markings.

The fuel tank shall be free standing, floor mounting type with mounting brackets, fuel inlet and outlet, air vent, drain plug, opening with cover for direct filling from the top of the tank. Provide suitable fuel pipe lines for suction and return with bend collars etc.

An engine driven booster pump shall be provided to deliver fuel from the supply line to the fuel injector through two numbers of fuel filters.

Lube oil system:

The automatic pressure lubrication shall be provided by an engine driven pump. This system should be complete with an oil cooler and 2Nos. of 100% capacity mesh filters. The oil cooler should be water cooled and equipped with necessary bypass arrangement, to bypass cooler during starting until oil temperature reaches the minimum (or the threshold) temperature.



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Engine starting system:

Starting of the diesel engine shall be of electric starting. This shall comprise of necessary set of heavy duty Lead acid batteries 12V/24V DC (as per manufacturer standard), and suitable starter motors and axial type gear to match with the toothed ring on the fly wheel. A timer in the control panel to protect the starter motor from excessively long cranking runs shall be suitably integrated with the protection system and shall be included within the scope of the work. Battery capacity shall be suitable for meeting the needs of starting system (as three attempt starting), as well as the requirements of control panel, indications and auxiliaries such as priming pump as applicable etc. The scope shall cover all cabling, terminals, including initial charging etc. The system shall be capable of starting the DG set within 20-30 seconds, even in winter condition with an ambient temperature down to 5°C.

Batteries:

The batteries shall be sized taking in to account the starting load requirement of the D-G set. 2Nos. of 12V, Lead acid batteries, of suitable capacity to start the engine by 24V DC electrical starting Motor without struggling, and with suitable capacity of battery cable. The batteries must be capable to try 3 unsuccessful starts continuously. The batteries have to be placed on a suitable well painted steel stand.

Battery charger:

The battery charger shall be suitable to charge required numbers of batteries at 12V/24 Volts complete with, transformer, rectifier, charge rate selector switch, indicating ammeter & voltmeter etc. Connections between the battery charger & batteries shall be provided with suitable copper leads with lugs etc.

Piping work:

All pipe lines, fittings and accessories requirement inside the enclosure and outside for exhaust piping shall be provided by the contractor. This shall include necessary flexible pieces in the exhaust, fuel, lube oil and water lines as are necessary in view of the vibration isolation requirement in the installation. Piping of adequate size shall be used for lube oil of the material as per manufacturer standard. However, only M.S. pipes for the exhaust and fuel oil lines shall be used. The pipe work shall be inclusive of all fittings and accessories required such as bends, reducers, elbows, flanges, flexible connection, necessary hardware etc. The installation shall cover clamps, supports, hangers etc. as are necessary for completing the work.

Common bed plate:

Engine and alternator shall be coupled by means of flexoplate/flexible coupling as per manufacturer standard design and both units shall be mounted on a common bed plate together with all auxiliaries to ensure perfect alignment of engine and alternator with

minimum vibration. The bed plate shall be suitable for installation on suitable anti-vibration mounting system.

Air intake system:

Air intake system should have requisite air filters and complete interconnecting piping, supports etc.

Exhaust system:

Engine exhaust system shall consist of exhaust gas driven turbo charger with lagged piping, interconnecting cylinder head outlets with the turbo charger inlet. Exhaust gas from the turbo charger shall be let out through exhaust gas silencer. The exhaust gas silencer, necessary pipes etc., shall be provided by the contractor. Exhaust piping shall be suitably cladded with aluminium sheets, mineral wool etc. The silencer should be of residential type. Flexible connection (expansion joints) shall be provided in the exhaust piping to avoid transmission of vibration from engine to the structure (acoustic and weather proof enclosure etc.). Also the exhaust line with suitable bends, collars, flanges, angle supports and other accessories should be provided. Provide necessary arrangements to avoid entry of rain water, falling dust etc. at the top of the exhaust pipe. The exhaust piping system should be designed and laid upto a height of 5 Meters above the acoustic enclosure or as directed by the BGL authorities to suit the site and environmental condition as per the controller pollution board, standards.

Exhaust Piping:

All M.S. Pipes for exhaust lines shall be conforming to relevant IS. The runs forming part of factory assembly on the engine flexible connections upto exhaust silencer shall be exclusive of exhaust piping item. The work includes necessary cladding of exhaust pipe work using 50mm thick glass wool/mineral wool/rock wool, density not less than 46 kg/m² and Aluminium cladding (0.80mm thick) for the complete portion. The exhaust pipe work includes necessary supports, foundation etc. to avoid any load & stress on turbo charger/ exhaust piping.

- a) Exhaust system should create minimum back pressure.
- b) Number of bends should be kept minimum and smooth bends should be used to minimize back pressure.
- c) Pipe sleeve of larger dia should be used while passing the pipe through concrete wall & gap should be filled with 'felt lining.
- d) Exhaust piping inside the Acoustic Enclosure should be lagged with asbestos rope along with aluminium sheet cladding to avoid heat input to the room.

- e) Exhaust flexible shall have it's free length when it is installed. For bigger engines, two flexible bellows can be used.
- f) For engines only one bellow is required. However, If exhaust pipe length is more than 7 m, then additional bellow/provision for expansion should be provided.
- g) 'Class B" MS pipes and long bend/elbows should be used.
- h) The exhaust outlet should be in the direction of prevailing winds and should not allow exhaust gases to enter air inlet/windows etc.
- i) When tail end is horizontal, 45 Degree downward cut should be given at the pipe to avoid rain water entry into exhaust piping.
- j) When tail end is vertical, there should be rain trap to avoid rain water entry. If rain cap is used, the distance between exhaust pipe and rain cap should be higher than diameter of pipe. Horizontal run of exhaust piping should slope downwards away from engine to the condensate trap. Silencer should be installed with drain plug at bottom.
- k) Care should be taken to ensure that no carbon particle emitted due to exhaust leakage enters and deposits on alternator windings and on open connections.
- l) Exhaust piping should be supported in such manner that load of exhaust piping is not exerted to turbocharger.

Cooling System:

- a) System should be designed for ambient temperature of 50 Deg. C.
- b) Coolant should be used mixed with additive (in suitable proportion) as per recommendation of OEM/Manufacturer for various engine models.
- c) Radiator fan flow should be free from any obstruction.

The Alternator:

The Alternator shall be screen protected, drip proof, separately excited system (with PMG) of brush less, continuously rated to give an output of 180KVA/200KVA/250kVA at 0.8 pf at 415V, 50Hz, 1500rpm, 3 - phase, 4wire. The alternator should be provided with automatic voltage regulator with voltage regulation of $\pm 0.5\%$ (MX321) and is designed, tested for confirming to IS 4772/1992 or IEC 34.

Requirement of alternator:

- a) KVA rating: 180/200/250

- b) Terminal voltage: 415V
- c) Power factor: 0.8 (lag)
- d) No. of phases: 3
- e) No. of wires: 4
- f) Type of excitation: with built in PMG
- g) Voltage regulation: $\pm 0.5\%$
- h) Frequency: 50Hz
- i) Enclosure: SPDP
- j) Degree of protection: IP-23
- k) Ventilation: Self ventilated air cooled
- l) Ambient Temperature: 50^o C Maximum
- m) Insulation Class: H
- n) Temperature Rise: Within class H limits at rated load
- o) Voltage Regulation: $\pm 1\%$
- p) Voltage variation: $\pm 5\%$
- q) Overload duration/capacity: 10% for one hour in every 12 hours of continuous use.
- r) Frequency variation: As defined by the Engine Governor ($\pm 1\%$)
- s) Excitation: Self /separately excited (Self excitation)
- t) Type of AVR: Electronic
- u) Type of Bearing and Lubrication arrangement: Anti-friction bearings with Grease
- v) Standard: IS-4722 & IEC: 34 as amended upto date.

The insulating material of the alternator shall be non-hygroscopic and fully tropicalised. The Alternator shall be suitable for operation with its neutral solidly grounded. The neutral shall be formed at the terminal box.

The alternator terminal box is made out of 16 SWG sheet steel having louvers and removable type bottom gland plate, top inspection cover and 600A capacity tinned Copper Bus-bars for all phases and Neutral. The Bus-bar should be properly supported with porcelain/resin cast epoxy moulded bus supports. Provide sufficient clearances between phases and earth as per BS / IS standards.

Mounting:

Design, fabricate suitable base frame, which is a welded construction using channel iron etc. to mount D-G set. The whole set and base frame should be mounted on 12 Nos. (Min) of heavy duty type Anti vibration mounts of 'DUNLOP' (b - SERIES) or its equivalent make.

Foundation:

Provide BGL with foundation drawing suitable for 180 KVA/200 KVA/250 KVA DE Sets and BGL will provide necessary foundations as per the drawing.

Earthing:

a) The Generator Neutral should be earthed with 2 Nos. of Copper plates earthing as per BS: 6043. Each Neutral of DG shall be solidly earthed to 2 different earth pits through insulated Cu copper strip of suitable size & Via Neutral Contactor. Control scheme shall be provided to ensure that one neutral only of one generator in the group shall be connected to the earth to avoid problem during synchronizing. Also when generator neutral is connected to earth supply transformer earth should be disconnected and vice-versa.

b) On equipment on the skid shall be bonded to the base frame of the skid and the skid shall be connected to the grid earthing by 2 independent parts with GI strips in accordance with IS : 3043.

c) Similarly day tank, panel, battery rack, Electrical panels shall also be grounded by 2no. GI strips.

d) Terminations at equipment shall have flexibility for movement of equipment.

e) Earth Pit: As per detailed in Schedule of quantities.

f) Earth Electrodes in Earth Pits:

g) Earth Bus and Earth Continuity Conductor as required.

h) Artificial Treatment of Soil

If the earth resistance is too high and the multiple electrode Earthing does not give adequate low resistance to earth, then the soil resistivity immediately surrounding the earth electrodes shall be reduced by adding sodium chloride, calcium chloride, sodium carbonate, copper sulphate, salt and soft coke or charcoal in suitable proportions.

i) Entire earth system shall conform to the Code of Practice as per IS 3043.

j) The resistance of Earthing Grid shall not exceed 1.0 ohm.

k) Each body of the DG / Electrical panels shall be connected to minimum 2 nos of earth pits

Tests

Supplier shall perform all standard tests (Shop tests) on Engine and alternator and the test reports pertaining to the engine and alternator should be submitted.

Following minimum tests shall be carried out on the generators for all DG sets as per IS 4722.

- 1) Measurement of cold resistance.
- 2) Remnant voltage measuring.
- 3) Voltage balance.
- 4) Rotating field control.
- 5) Load characteristic of P.F = 0.8
- 6) Vibration
- 7) Excitation system Fuel efficiency with respect to power generation.
- 8) AVR
 - a) Adjustment of voltage regulator
 - b) Under speed protection adjustment
- 9) Short-time overload with P.F. = 1 or SC.
- 10) Winding test.
- 11) Over speed test at 120% rated speed.
- 12) High voltage test
- 13) Measurement of insulation resistance.
- 14) Adjustment of additional units for voltage regulators.

Type Test:


The report on type test conducted for generator not more than 5 Years old as per IS 4722 shall be submitted before dispatch of DG set.

Alternator:

- a. Open Circuit characteristic test
- b. Short Circuit characteristic test
- c. Temperature rise test

DG Set:

- a) Over load test
- b) Over speed test
- c) Vibration measurement test

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The Vendor shall submit authenticated test certificate for the type test carried out by manufacturer and if required the CLIENT/CONSULTANT can insist for a type test to be carried out on the Generator in the presence of CLIENT / CONSULTANT. Vendor shall indicate in offer cost of carrying out active type Testing (separate cost for each test).

FINAL CHECK:

After installation at site the following checks and tests shall be conducted:

DG Set:

- a) Checking of piping interconnections.
- b) Checking electrical interconnections.
- c) Checking of insulation resistance.
- d) Checking of Earthing.
- e) Checking of instruments and controls.
- f) Checking of alignment.
- g) Checking of vibration transmission to building a structure.
- h) Checking of expansion joints.
- i) Pressure testing of piping.

Exhaust System:

- a) Checking of silencer operation
- b) Checking of surface temperature of exhaust piping
- c) Checking of emission as per PCB norms.

Acoustic and Weather proof Enclosure:

Design, fabricate, supply and install outdoor type acoustic and weather proof enclosure for the healthy operation of 180KVA/200KVA/250KVA D-G set at site. The enclosure should be well fabricated structure using 14 SWG sheet steel on all sides. Provide sufficient working clearance around the D-G set inside the enclosure.

- a) Special acoustic panels of optimum sound attenuation using special aluminium sheets (perforated) and acoustic grade high density wool sandwiched with gypsum.
- b) Self insulated ventilation louvers for proper air aspiration and temperature control with suitable incorporation of special blower/axial fans of heavy duty depending on the on-site fresh air needs.

- c) Corrugated steel frames and sturdy supporting material for housing the panels, effective sealing with the right gasket/ neoprene materials.
- d) Well fabricated / nylon wheeled smooth sliding doors to be provided for easy access to the set. Suitable locking arrangement has to be provided on the doors.
- e) Aesthetic finish (with intensive painting care) for perfect integration with the surroundings.
- f) Noise level should be less than 65 ± 3 dB at 3 meter distance from the enclosure.
- g) Acoustic and weather proof enclosure system should be complete in all respect as per prevailing standards.
- h) Adequate and suitable lighting arrangement inside the acoustic enclosure shall be made.

Note: Separate DP MCBS with control box to be provided for Lighting and blower fans.

LIST OF APPROVED MAKE:

1. ENGINE: CUMMINS/CATERPILLER/KIRLOSKAR
2. ALTERNATOR: STAMFORD/LEROY SOMER
3. CONTACTOR: L & T / SIEMENS / ABB/SCHNEIDER
4. CURRENT TRANSFORMER: KALPA / KAPPA
5. INDICATING METER: AE / MECO / ENERCON
6. PROTECTIVE RELAYS: GEC ALSTOM
7. INDICATING LAMPS: VAISHNO / TEKNIC (CLUSTER LED)
8. MAINTENANCE FREE BATTERY VRLA & BATTERY CHARGER: EXIDE/ AMCO
9. SELECTOR SWITCH: SIEMENS / KAYCEE/ L&T
10. SDF & FUSES: L&T/ ABB/ MERLINGERIN
11. PUSH BUTTONS: VAISHNO/ TEKNIC
12. ENERGY METER: ENERCON (DM5240)
13. CABLES: UNIVERSA / CCI / NICCO
14. MCB: MERLINGERIN / SIEMENS/L&T / SCHNEIDER

SECTION – 10 SPECIAL CONDITIONS OF CONTRACT (SCC)

SPECIAL CONDITIONS OF CONTRACT (SCC)

GENERAL

- 1.1 Special Conditions of Contract shall be read in Conjunction with the General Conditions of Contract, Specification of work, Drawing and any other documents forming part of this Contract wherever the context so requires.
- 1.2 Notwithstanding the sub-division of the documents into these separate sections and volumes every part of each shall be deemed to be supplementary to and complementary of every other part and shall be read with in the Contract so far as it may be practicable to do so.
- 1.3 Where any portion of the General Conditions of Contract is repugnant to or at variance with any provisions of the Special Conditions of Contract, unless a different intention appears, the provisions of the Special Conditions of Contract shall be deemed to over-ride the provisions of the General Conditions of Contract and shall be the extent of such repugnancy, or variations, prevail.
- 1.4 Wherever it is mentioned in the specification that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost and the **Value of Contract** shall be deemed to have included cost of such performance and provisions, so mentioned.
- 1.5 The materials, design, and workmanship shall satisfy the relevant Indian Standard, the Job Specifications contained herein and Codes referred to where the job specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.

2.0 WARRANTY:

Bidder has to guarantee for the Generator Set against defects in materials / workmanship for 24 months from the date of supply or 12 months from the date of installation & commissioning whichever is later.

3.0 DELIVERY PERIOD:

Delivery & Installation shall be done within 60 days from the date of intimation by BGL Engineer-In-Charge.

4.0 DELIVERY LOCATION:

Will be intimated by BGL prior to dispatch by the Engineer-In-Charge.

5.0 **PAYMENT TERMS:**

Payment will be released within 15 days on submission of necessary documents as below:

A) For Supply (Sr. No.1):

I) 90% of the payment will be released against receipt of the material at site and submission of the following Documents:

- I. Invoice in Triplicate
- II. Delivery Challan
- III. Packing Slip
- IV. Lorry Receipt
- V. Copy of Performance Bank Guarantee of Amount equal to 10% the contract value
- VI. Guarantee/ Warrantee Certificate
- VII. Acceptance of the goods by Engineer- in - charge

II. 10% of payment will be released after successful completion of job in all respects and submission of the following documents.

- i. Final Acceptance Certificate from the Engineer In Charge
- ii. Payment Reconciliation Statement

B) For Service (Sr. No. 2-9):

I) 90% payment will be released after completion of the work in all respects.

II) 10% Payment will be released after Commissioning of DG Sets and submission of the following documents.

- i) Final Acceptance Certificate from the Engineer In Charge
- ii) Payment Reconciliation Statement.

6.0 SECURITY DEPOSIT/ CONTRACT PERFORMANCE GUARANTEE:

10% of total contract value (excluding Taxes & Duties) in the form of DD or BG valid for 90 days beyond the defect liability period is to be submitted by the bidder as per Clause no. 12 of GCC.

7.0 PRICE REDUCTION SCHEDULE:

In case the CONTRACTOR fails to complete the SUPPLY within the stipulated period as mentioned in the time schedule, then, unless such failure is due to Force Majeure as defined in clause 26 of GCC or due to EMPLOYER'S defaults, the value of that particular delayed lot shall be reduced by ½ % per complete week of delay or part thereof subject to a maximum of 5 % of the delayed lot price, by way of reduction in price for delay and not as penalty.

The decision of the Engineer-In-Charge in regard to applicability of price reduction schedule shall be final and binding to the contractor.

8.0 EVALUATION CRITERIA:

Evaluation shall be done on city wise lowest cost basis.

9.0 CONTRACT VALIDITY:

The duration of this contract shall be six months from the date of issue of Purchase Order / LOI.

SECTION – 11 TIME SCHEDULE



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DELIVERY SCHEDULE / COMPLETION PERIOD

Delivery & Installation shall be done within 60 days from the date of intimation by BGL Engineer-In-Charge.

However the contract shall be valid for Six months from the date of Purchase Order.

Signature of Authorized Signatory:.....

Name:.....

Designation:.....

Seal:.....

SECTION – 12 SCHEDULE OF RATES (SOR)

SCHEDULE OF RATES (SOR)

SOR A: for VIJAYAWADA

Sr. No.	Description	Quantity	UOM	Unit Price Ex-works including cost of imported raw material/ components & Projected Rate of Custom Duty thereon, pkg/ fwd, but excluding ED &ST on finished goods (Rs.)	Per Unit Excise Duty @ _____ % (Rs.)	Per Unit Sales Tax with 'C' Form @ _____ % / VAT @ _____ % (Rs.)	Per Unit Freight up to Project Site by Road Including Transit Insurance, LOADING AND UNLOADING and taxes & duties such as entry tax, octroi etc. (Rs.)	Per Unit FOT Site Basis (Rs.)	Total FOT Site Basis (Rs.)
Part A									
1.1	Supply and handing over of a diesel generator set of capacity of 180KVA, 3 phase, 415 volts, 50Hz (144KW at 0.8 PF lag) complete with diesel engine, with radiator, (water cooled) along with self starting device, batteries, battery charger, engine panel, base frame, anti-vibration mounts, diesel tank, AMF control panel and all connected accessories complete as described in detailed technical specifications.	3	Set						
SUB TOTAL - 1A (Rs.)									

Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @___ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
Part - B							
1.2	Installation in position, testing, commissioning of a diesel generator set of capacity of about 180KVA, 3 phase, 415 volts, 50Hz (144 KW at 0.8 PF lag) complete as described in detailed technical specifications	3	No.				
SUB TOTAL - 1B (Rs.)							
Part - C							
1.3	Supply and laying of 31/2C x 240 sq.mm. PVC armoured Aluminium conductor cable to be laid on wall / ceiling / trench with required materials complete as directed between alternator terminals and AMF control panel etc. complete as per specifications and as directed	110	Mtr				
1.4	Termination of above 31/2 C x 240 sq.mm PVC cable with required materials such as aluminium lugs, heavy duty compression type brass gland, insulating tapes, chromium plated nut and bolts etc. complete as directed.	18	No				

Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @___ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
1.5	Supply and laying of 31/2C x 240 sq.mm. PVC armoured Aluminium conductor cable to be laid on wall/ceiling/trench with required materials complete as directed between main ACB terminals (Substation) and AMF control panel (DG Room) etc. complete as per specifications and as directed	15	Mtr				
1.6	Cost of providing Earth Station with Copper Plates 600 x 600 x 3.14 mm embedded at least at a depth of 12 feet and filling of alternate layers of charcoal, salt and making a 300 mm x 300 mm chamber(brick masonry) with chequered, MS sheet cover, funnel, water pipe including supply & laying of 25 mm x 3 mm Copper Earth Strip up to the test point as directed etc. as per detailed IS specification No.3043 /1966 amended till date and as directed.	6	No				



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Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @___ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
1.7	Supply and Fixing of 25 mm x 3 mm Copper Earth Strip with required materials such as brass clamps, screws, spacers and with riveted joints and connections with chromium plated nut and bolts complete as directed.	60	Mtr				
1.8	Supply and installation of insulated MS exhaust piping of suitable dia. for 180 KVA DG set as recommended by the manufacturer of the diesel engine with thermal insulation by using glass wool and covering with aluminium sheet complete with required materials such as supports etc. as directed (NB – size of the pipe proposed may please be Indicated). Size -----mm dia.	30	Mtr				
SUBTOTAL - 1C (Rs.)							

GRAND TOTAL FOR 180KVA DG SET (SUB TOTAL - 1A + SUB TOTAL - 1B + SUB TOTAL - 1C) IN RS. :

Signature & Seal of Bidder

SOR A: for VIJAYAWADA

Sr. No.	Description	Quantity	UOM	Unit Price Ex-works including cost of imported raw material/ components & Projected Rate of Custom Duty thereon, pkg/ fwd, but excluding ED &ST on finished goods (Rs.)	Per Unit Excise Duty @ _____ % (Rs.)	Per Unit Sales Tax with 'C' Form @ _____ % / VAT @ _____ % (Rs.)	Per Unit Freight up to Project Site by Road Including Transit Insurance, LOADING AND UNLOADING and taxes & duties such as entry tax, octroi etc. (Rs.)	Per Unit FOT Site Basis (Rs.)	Total FOT Site Basis (Rs.)
Part A									
2.1	Supply and handing over of a diesel generator set of capacity of 250KVA, 3 phase, 415 volts, 50Hz (200KW at 0.8 PF lag) complete with diesel engine, with radiator, (water cooled) along with self starting device, batteries, battery charger, engine panel, base frame, anti-vibration mounts, diesel tank, AMF control panel and all connected accessories complete as described in detailed technical specifications.	1	Set						
SUB TOTAL - 2A (Rs.)									

Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @___ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
Part - B							
2.2	Installation in position, testing, commissioning of a diesel generator set of capacity of about 250KVA, 3 phase, 415 volts, 50Hz complete as described in detailed technical specifications	1	No.				
SUB TOTAL - 2B (Rs.)							
Part - C							
2.3	Supply and laying of 31/2C x 240 sq.mm. PVC armoured Aluminium conductor cable to be laid on wall / ceiling / trench with required materials complete as directed between alternator terminals and AMF control panel etc. complete as per specifications and as directed	35	Mtr				
2.4	Termination of above 31/2 C x 240 sq.mm PVC cable with required materials such as aluminium lugs, heavy duty compression type brass gland, insulating tapes, chromium plated nut and bolts etc. complete as directed.	6	No				



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Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @___ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
2.5	Supply and laying of 31/2C x 240 sq.mm. PVC armoured Aluminium conductor cable to be laid on wall/ceiling/trench with required materials complete as directed between main ACB terminals (Substation) and AMF control panel (DG Room) etc. complete as per specifications and as directed	5	Mtr				
2.6	Cost of providing Earth Station with Copper Plates 600 x 600 x 3.14 mm embedded at least at a depth of 12 feet and filling of alternate layers of charcoal, salt and making a 300 mm x 300 mm chamber (brick masonry) with chequered, MS sheet cover, funnel, water pipe including supply & laying of 25 mm x 3 mm Copper Earth Strip up to the test point as directed etc. as per detailed IS specification No.3043 /1966 amended till date and as directed.	2	No				

Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @___ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
2.7	Supply and Fixing of 25 mm x 3 mm Copper Earth Strip with required materials such as brass clamps, screws, spacers and with riveted joints and connections with chromium plated nut and bolts complete as directed.	20	Mtr				
2.8	Supply and installation of insulated MS exhaust piping of suitable dia. for 250 KVA DG set as recommended by the manufacturer of the diesel engine with thermal insulation by using glass wool and covering with aluminium sheet complete with required materials such as supports etc. as directed (NB – size of the pipe proposed may please be Indicated). Size -----mm dia.	10	Mtr				
2.9	Supply and installation of insulated MS exhaust piping of suitable dia. for 250 KVA DG set as recommended by the manufacturer of the diesel engine with thermal insulation by using glass wool and	5	Mtr				



Bhagyanagar Gas Ltd.
BHAGYANAGAR
GAS LIMITED

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covering with aluminium sheet complete with required materials such as supports etc. as directed (NB – size of the pipe proposed may please be Indicated). Size -----mm dia – WITHOUT INSULATION						
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SUBTOTAL - 2C (Rs.)

GRAND TOTAL FOR 250KVA DG SET (SUB TOTAL - 2A + SUB TOTAL - 2B + SUB TOTAL - 2C) IN RS. :

GRAND TOTAL FOR SOR A (GRAND TOTAL FOR 180KVA DG SET + GRAND TOTAL FOR 250KVA DG SET): IN RS.:

Signature & Seal of Bidder

SOR B: for KAKINADA

Sr. No.	Description	Quantity	UOM	Unit Price Ex-works including cost of imported raw material/ components & Projected Rate of Custom Duty thereon, pkg/ fwd, but excluding ED &ST on finished goods (Rs.)	Per Unit Excise Duty @ _____ % (Rs.)	Per Unit Sales Tax with 'C' Form @ _____ % / VAT @ _____% (Rs.)	Per Unit Freight up to Project Site by Road Including Transit Insurance, LOADING AND UNLOADING and taxes & duties such as entry tax, octroi etc. (Rs.)	Per Unit FOT Site Basis (Rs.)	Total FOT Site Basis (Rs.)
Part A									
1.1	Supply and handing over of a diesel generator set of capacity of 200KVA, 3 phase, 415 volts, 50Hz (160KW at 0.8 PF lag) complete with diesel engine, with radiator, (water cooled) along with self starting device, batteries, battery charger, engine panel, base frame, anti-vibration mounts, diesel tank, AMF control panel and all connected accessories complete as described in detailed technical specifications.	1	Set						
SUB TOTAL - 1A (Rs.)									

Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @__ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
Part - B							
1.2	Installation in position, testing, commissioning of a diesel generator set of capacity of about 200KVA, 3 phase, 415 volts, 50Hz complete as described in detailed technical specifications	1	No.				
SUB TOTAL - 1B (Rs.)							
Part - C							
1.3	Supply and laying of 31/2C x 240 sq.mm. PVC armoured Aluminium conductor cable to be laid on wall / ceiling / trench with required materials complete as directed between alternator terminals and AMF control panel etc. complete as per specifications and as directed	35	Mtr				
1.4	Termination of above 31/2 C x 240 sq.mm PVC cable with required materials such as aluminium lugs, heavy duty compression type brass gland, insulating tapes, chromium plated nut and bolts etc. complete as directed.	06	No				

Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @___ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
1.5	Supply and laying of 31/2C x 240 sq.mm. PVC armoured Aluminium conductor cable to be laid on wall/ceiling/trench with required materials complete as directed between main ACB terminals (Substation) and AMF control panel (DG Room) etc. complete as per specifications and as directed	5	Mtr				
1.6	Cost of providing Earth Station with Copper Plates 600 x 600 x 3.14 mm embedded at least at a depth of 12 feet and filling of alternate layers of charcoal, salt and making a 300 mm x 300 mm chamber(brick masonry) with chequered, MS sheet cover, funnel, water pipe including supply & laying of 25 mm x 3 mm Copper Earth Strip up to the test point as directed etc. as per detailed IS specification No.3043 /1966 amended till date and as directed.	2	No				



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Sr. No.	Description	Qty	Unit	PER UNIT RATE INCLUDING ALL TAXES & DUTIES EXCEPT SERVICE TAX (Rs.)	PER UNIT SERVICE TAX @___ % (Rs.)	PER UNIT RATE INCLUDING ALL TAXES AND DUTIES (Rs.)	TOTAL AMOUNT INCLUDING ALL TAXES AND DUTIES (Rs.)
1.7	Supply and Fixing of 25 mm x 3 mm Copper Earth Strip with required materials such as brass clamps, screws, spacers and with riveted joints and connections with chromium plated nut and bolts complete as directed.	20	Mtr				
1.8	Supply and installation of insulated MS exhaust piping of suitable dia. for 200 KVA DG set as recommended by the manufacturer of the diesel engine with thermal insulation by using glass wool and covering with aluminium sheet complete with required materials such as supports etc. as directed (NB – size of the pipe proposed may please be Indicated). Size -----mm dia.	10	Mtr				
1.9	Supply and installation of insulated MS exhaust piping of suitable dia. for 200 KVA DG set as recommended by the manufacturer of the diesel engine with thermal insulation by using glass wool and	5	Mtr				



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BHAGYANAGAR
GAS LIMITED

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covering with aluminium sheet complete with required materials such as supports etc. as directed (NB – size of the pipe proposed may please be Indicated). Size -----mm dia. WITHOUT INSULATION						
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SUBTOTAL - 1C (Rs.)

GRAND TOTAL FOR SOR B: 200KVA DG SET (SUB TOTAL - 1A + SUB TOTAL - 1B + SUB TOTAL - 1C) IN RS. :

Notes:

1. Bidders to clearly indicate “Quoted or Not Quoted” against each Sr. No. in the Price column and submit in the un-priced part of the bid. Bidder to submit price part of above SOR in their Priced Bid. All column of price schedule must be filled with required information as applicable.
2. Bidders quoting for any group(s) must quote for full quantity of that group (s) otherwise his bid shall be considered as non-responsive.
3. Bidder must quote the price in the copy of given Schedule of Rates formats only. Bids submitted with changed format / description is liable to be rejected.
4. Evaluation shall be done on city wise basis, i.e. SOR A and SOR B Separately. Bidders have to quote for full quantity of the quoted SOR.
5. Quoted rates should remain firm and fixed till complete execution of the entire order.
6. Bidders to note that full amount of Excise duty, VAT and Service Tax is a cenvatable amount & bidder will submit cenvatable invoices for availing cenvat credit by BGL. Bidder to provide break up for rates of taxes and duties in applicable columns above in both price & un-price bids.
7. Above quoted rates are inclusive of all and nothing shall be paid extra by purchaser.

Signature & Seal of Bidder