

**CANE AND BAMBOO TECHNOLOGY CENTRE**

**CANE AND BAMBOO TECHNOLOGY PARK,  
13<sup>TH</sup> MILE G.S. ROAD BURNIHAT, ASSAM**

**TENDER DOCUMENT**

**Supply, Installation and Maintenance for Five years  
of  
Silent Diesel Generator Sets (25/40/62.5 KVA)**

**Document Price: Rs.1000/- only**

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**1. BRIEF DESCRIPTION OF PROPOSAL:**

Cane and Bamboo Technology Centre is a premier organization providing all round support for development of bamboo in the NE region of India. The centre invites Technical and Financial proposals from reputed registered firms having income tax , sales tax registration and who are authorized dealer to supply the said item(s), for supply, installation and maintenance (five years) of a silent Diesel Generator Set for its official premises at Cane and Bamboo Technology Centre, 13<sup>th</sup>Mile,G.S. Road, Burnihat,Assam.

This is a two part bid system with Technical bid and Financial bid forming the two parts. The Technical and Financial bids should be sealed in separate envelopes and then both sealed covers to be placed in one separate envelope clearly super scribing on the envelope, **“Quotation for Supply to CBTC Burnihat”**.

## **2. COVERING LETTER:**

**Letter Comprising of Tender for supply, Installation and Maintenance (five years) of Silent Diesel Generator Sets (25/40/62.5KVA) for its official premises at Cane and Bamboo Technology Centre, 13<sup>th</sup>Mile,G.S. Road, Burnihat,Assam.**

To,  
The I/c Secretary  
Cane and Bamboo Technology Centre,  
13<sup>th</sup>Mile,G.S. Road, Burnihat,Assam  
PIN – 781023(Assam)

**Sub:** Tender for supply, installation and maintenance (five years) of 25/40/62.5KVA Silent Diesel Generator Set .

Dear Sir,

1. With reference to your TENDER notice dated ..... I have examined the TENDER document and understood its contents. I hereby submit my Bid for supply, installation and maintenance (five years) of Silent Diesel Generator Sets 25/40/62.5KVA for its official premises at Cane and Bamboo Technology Centre, 13<sup>th</sup>Mile,G.S. Road, Burnihat, Assam.
2. The Application is unconditional for the said Tender. This bid is valid for a period not less than 90 days.
3. It is acknowledged that the Authority will be relying on the information provided in the tender and the documents accompanying such tender for qualification of the bidders for the above subject project, and we certify that all information provided in the tender and in Annexure is true and correct; nothing has been misrepresented and omitted which renders such information misleading; and all documents accompanying the bid are true copies of their respective originals.
4. This statement is made for the express purpose of the above mentioned subject.
5. We shall make available to the Authority any additional information it may find necessary or require to supplement or authenticate the Qualification statement.
6. We acknowledge the right of the Authority to reject our bid without assigning any reason or otherwise and hereby relinquish, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.
7. It is declared that:
  - (a) We have examined and have no reservations to the Tender document.
  - (b) We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in respect of any Bid or request for proposal issued by or any agreement entered into with the Authority or any other public sector enterprise or any government, Central or State.
8. It is understood that the Institute may cancel the Bidding Process at any time without incurring any liability to the institute and that you are neither bound to invite the applicants to Bid for the project nor to accept any bid that you may receive.

9. It is certified that we have not been convicted by a Court of Law or indicted or adverse orders passed by a regulatory authority which could cast a doubt on our ability to undertake the Project or which relates to a grave offence that outrages the moral sense of the community.

10. It is further certified that no investigation by any regulatory agency is pending against us.

11. It is hereby affirmed that we are in compliance of/ shall comply with the O&M requirements.

12. We hereby irrevocably relinquish any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by the Authority in connection with the selection of bidders, selection of the Tenderer, or in connection with the selection/ Bidding Process itself, in respect of the above mentioned Project and the terms and implementation thereof.

13. We agree to undertake to abide by all the terms and conditions of the TENDER document.

14. We agree to undertake to be liable for all the obligations of the Tenderer under the Agreement. In witness thereof, we submit this application under and in accordance with the terms of the TENDER document.

**Yours faithfully,**

**(Signature, name and designation of the Authorized Signatory)**

Place: Name and seal of the Bidder/ Lead Member

**3. PARTICULARS OF TENDER:**

1. TENDER No. :  
-----

2. Particulars of the work: Supply, installation and maintenance (five years) of 25/40/62.5KVA Silent Diesel Generator Sets.

3. Period of work : **30 days from the award of work (exclusive of coordination Period with other agencies working on site)**

4. Cost of TENDER document : Rs. 1000/- in the form of Demand Draft in favour of Cane and Bamboo Technology Centre ,payable at ICICI Bank Byrnihat Branch

5. Last date and time of submission of TENDER (by hand/courier/ post) : 13-07-2018 (1 PM)

6. Amount of Earnest money/Bid security deposited for work : 2.5% of the offered cost

7. Period of validity of TENDER for acceptance : 90 days

8. Date and time of opening of TENDER : 13-07-2018 (2 PM)

9. Place of opening of TENDER : at Cane and Bamboo Technology Centre, 13<sup>th</sup>Mile,G.S. Road, Burnihat,Assam.

10. Name of firm / company/individual to whom TENDER document is issued. : -----

**(Signature of Tenderer)  
with seal**

**4. GENERAL PARTICULARS OF TENDERER :**

1. Name of firm :
2. Communication address :
3. Telephone, Telex, Fax No :
5. E-mail :
6. Web site :
7. Name and designation of the  
representative of the Tenderer to  
whom all references/ communications  
shall be made :
8. Amount of earnest money/bid  
security deposit with instrument  
no / bank and date :
10. Firm Registration number / details :
11. Certified copies of Income Tax  
Return for Last 3 Years with PAN number :
12. GST number with certified copies of  
return of last three years:
13. Previous experience or work done by the  
Tenderer of similar nature of project. :
14. Name and address of the Authorizing  
Company to supply D G Sets (please attach  
authorization certificate). :

**(Signature of Tenderer)  
with seal**

**5. EXPERIENCE:  
(Details of Each Project)**

Item	
1. Title of the project	
2. Location	
3. No. of works/projects completed	
4. Entity/ Agency with which project has been executed	
5. Date of commencement of the project	
6. Date of completion/ commissioning	
7. Cost of the Project	
8. Scope of Work	

**Instructions:**

1. Tenderers are expected to provide information with respect to only Eligible/Qualified Projects.
2. Information provided in this section is intended to serve as a back-up for information provided in the TENDER.
3. An authentic experience certificate should be annexed with respect to each eligible/qualified Project from the Agency for which the project is executed.
4. Provide the estimated capital cost of each Eligible/Qualified Project.

**(Signature of Tenderer)  
With Seal**

\*Note – please use one page each for each project



## **6. SUBMISSION OF TENDER**

### **6.1 SEALING AND MARKING OF TENDER :**

- 6.1.1 The TENDER must be complete in all aspect and should contain requisite certificate, drawings, informative literature etc. as required in the specification.
- 6.1.2 Tender Document can be downloaded from Cane and Bamboo Technology Centre website ([www.cbtc.org.in](http://www.cbtc.org.in)).
- 6.1.3 This is a two part bid consisting of Technical bid and Financial bid. The Technical and Financial bids should be sealed in separate envelopes and then to be sealed in one separate envelope clearly super scribing on the envelope, **"Quotation for Supply, Installation and Maintenance (for five years) of 25/40/62.5KVA Silent Diesel Generator sets each separately.**

#### **The bid shall include:**

- a. Forwarding letter by the Tenderer
- b. All required documents
- c. Cost of tender by Demand Draft, towards processing charges (non-refundable)
- d. EMD 2.5% of the offered cost of DG Set for Supply, Installation including construction of generator shed and Maintenance (For Five Years) of 25/40/62.5KVA Silent Diesel Generator Sets in the form Bank Demand Draft/FDR in favour of Cane and Bamboo Technology Centre from Nationalized Bank.
- e. Technical bid.
- f. Financial Bid

#### **6.1.4 TENDER should be addressed to:-**

I/c Secretary  
Cane and Bamboo Technology Centre  
13<sup>th</sup>Mile,G.S. Road, Burnihat,Assam-781023

- a. The TENDER should be submitted at the office of Cane and Bamboo Technology Centre before **1.00 PM** on 13.07.2018.
- b. Tenders may be received through Post/courier/by hand. Cane and Bamboo Technology Centre will not be responsible for any delay or misplace in postal receipt.

### **6.2 EXPENSES OF AGREEMENT:**

All the expenses of completing of the agreement including cost of stamp or any other kind of expenditure incurred in the process of TENDER submission till final compliance shall be borne by the Tenderer.

### **6.3 DEADLINE FOR SUBMISSION OF BIDS:**

TENDER must be received by the Cane and Bamboo Technology Centre, Burnihat at the date, time and address specified in the TENDER notice/ TENDER documents.

#### **6.4 LATE BIDS :**

Any TENDER received after the deadline for submission of TENDER prescribed by the Cane and Bamboo Technology Centre, Burnihat shall be rejected and / or returned unopened to the Tenderer.

#### **NOTE:-**

1. Please submit quotations in two separate SEALED envelopes, one indicating Technical specifications and the other containing commercial terms & prices. These two envelopes should be again kept in one envelope, indicating Quotation for "SUPPLY, INSTALLATION OF GENERATOR AND MAINTENANCE FOR FIVE YEARS OF 25/40/62.5KVA SILENT DIESEL GENERATOR SET EACH SEPARATELY TO Cane and Bamboo Technology Centre, Burnihat".
2. Financial bid will be opened only of the bidders who will be qualified in the Technical bid.
3. The Centre will contact only bidders meeting the requirements including the rates.
4. The payment will be made after successful on-site installation of ordered items.
5. Cane and Bamboo Technology Centre, Burnihat reserves the right to split the order among two or more vendors.
6. The price quoted will be applicable to the specifications mentioned in this quotation notice.
7. The bidders may, specifically mention if any higher specifications are offered.
8. The selected vendors will be required to supply the items within the time mentioned in the work order.
9. Please indicate whether you will be able to supply the item within time specified after receiving the order.
11. Please specify the minimum period for delivery if you are not able to supply within the said period. Early delivery will also be a factor for consideration in deciding the successful bidder.
12. A penalty of 0.5% of the total order value will be imposed per week for late delivery.
13. The bid should be accompanied by an earnest money deposit of 2.5% of the total value of Bid and to be attached as DD in favour of Cane and Bamboo Technology Centre, Burnihat payable at ICICI Bank Burnihat Branch.
14. In addition, before release of payments of the work, 5% of the total cost of the item will be required to be submitted as Performance Security during the warranty period. The EMD will be returned subsequently.
15. No advance payment will be made; any offer linked with advance payment is likely to be ignored.
16. After winning the order, if you fail to supply, your EMD will be forfeited and you will be blacklisted from participating in any future bid/tender.

17. Only OEM or their Authorized dealers of the Product can participate in the bid.

18. Delivery will be made at :

I/c Secretary

Cane and Bamboo Technology Centre

13<sup>th</sup>Mile,G.S. Road, Burnihat ,Assam-781023

19. The decision of acceptance of the quotation will lie with the competent authority of Cane and Bamboo Technology Centre , who does not bind himself to accept the lowest quotation and who reserves the right to himself to reject or partially accept any or all quotations received, without assigning any reason.

**(Signature of Tenderer)  
with seal**

## **7. TENDER OPENING**

### **7.1 OPENING OF TENDER:**

The procedure of opening of the TENDER shall be as under:

Financial Bid of the Tenderer who qualify in the technical bid shall be opened in the presence of designated Authority and Tenderers who wish to be present there. The Financial bid will be opened subsequently in same day.

### **CLARIFICATION OF TENDER:**

**7.2.1** To assist in the examination, evaluation and comparison of TENDER, Cane and Bamboo Technology Centre, Burnihat may at its discretion ask the Tenderer for a clarification on the TENDER which is submitted by him/her. The request for clarification and the response shall be in writing.

**7.2.2** Cane and Bamboo Technology Centre, Burnihat will be at liberty to involve any expert or consultant in evaluating the bid for completing the entire bid process.

**(Signature of Tenderer)  
With seal**

## **8. AWARD OF CONTRACT**

The Tenderer should pass in all items of "Eligibility Criteria". Eligible tenderer quoting the lowest offer price shall be awarded the contract.

- 8.1 Cane and Bamboo Technology Centre, Burnihat reserves the right of negotiation with eligible Tenderer before the finalization of the TENDER
- 8.2 Cane and Bamboo Technology Centre, Burnihat reserves the right at the time of award of contract to increase or decrease the numbers of locations/ quantities without any change in terms and conditions.
- 8.3 Cane and Bamboo Technology Centre, Burnihat reserves the right to accept any bid and to reject any or all bids or accept any TENDER in total or in parts or to split the work among various Tenderers without assigning any reason thereof.

## **8.4 NOTIFICATION OF AWARD**

Prior to the expiration of the period of TENDER validity, the Centre will inform the Tenderer by registered letter or by phone or fax or by e-mail that the bid has been accepted and the work has been awarded.

## **8.5 EXECUTION PERIOD**

The entire work shall be completed in all respect within **two months** from the date of award of work.

**(Signature of Tenderer)**  
**With seal**

**9. FINANCIAL BID****Name of Work-**

**Supply, Installation and Maintenance (For Five Years) of 25/40/62.5KVA Silent Diesel Generator Sets each separately for Cane and Bamboo Technology Centre, Burnihat**

I / We .....(Name of the firm) do hereby apply for the tender and in case of acceptance of our proposal, we agree to carry out the following work for a consolidated amount each separately as mentioned below -:

WORK	BRANDS OF DG SET RECOMMENDED FOR QUOTATION (RATES TO BE QUOTED IN Rs.)						Remarks
	25KVA		40KVA		62.5KVA		
	Qty	Rate	Qty	Rate	Qty	Rate	
Supply of Silent Diesel Generator Sets - as per specification mentioned in Para (10) on Page 15							
Installation of Silent Diesel Generator Sets (as per the specification attached)							
Maintenance including supply of spares and personnel as and when required for five years of 25KVA Silent Diesel Generator Set							
<b>Grand Total</b>							

**NOTE:-**

(i) \* - A list along with contact details of at least **five** clients to whom the DG Set capacity not less than 25 KVA has been supplied by you and with whom it is still continuously in use shall be enclosed.

\*\* - A list along with contact details of at least **ten** clients to whom the DG Set capacity not less than 25 KVA has been supplied by you and with whom it is still continuously in use shall be enclosed.

(ii) When Financial bid is opened, the price comparison will be made for each brand and not across brands, and due recognition will be given to the brand reputation & perceived quality of each of the brands while making the decision.

**(Signature of Tenderer)**

**with seal**

**(Signature of Officers)**

**opening the TENDER**

**10. TECHNICAL SPECIFICATIONS AND OTHER DETAILS FOR SUPPLY, INSTALLATION TESTING AND COMMISSIONING OF 25/40/62.5 KVA SILENT DG SETS TO CANE AND BAMBOO TECHNOLOGY CENTRE, BURNIHAT**

Sl. No.	Description	Unit	Rate @ Rs.
1	Supply including installation, testing and commissioning of Water Cooled Diesel Generator set coupled to suitable alternator of 220/415 V, AC, 3-phase 0.8 p.f. (1a mounted on a 1) M.S. fabricated base frame. 2) M.S. fuel tank of required capacity. 3) Residual Silencer. 4) Standard Control Panel. 5) Suitable low maintenance free lead acid automotive duty battery. 6) First fill of lube oil. 7) Acoustic Enclosure complete with all accessories as specified and directed by the department confirming to IS comprising of Technical specification as per reputed manufacturer. (RANGE FROM 5 KVA TO 625 KVA), Stamford, Leroy somer alternator	Each	
2	Supply with fitting and fixing Four Pole 415V Front handle operated open execution ON Load Changeover switch fitted on the existing cubicle panel of capacity 100/125A complete with making necessary connection as approved and specified.	Each	
3	Supply with fitting and fixing 4P 10 KA 240/415V 50Hz MCB of capacity 100/125A complete with making necessary connection as approved and specified.	Each	
4	Supply, installation and testing of G.I. earth station with perforated 40mm dia and 4.50 Meter long heavy duty G.I. pipe with necessary 40 mm. dia. G.I. Fittings such as socket for funnel including locking arrangement 300mmX300mmX6mm hinged cover C.I. earth plate complete with digging of earth pit, construction of brick chamber and plastering of both inner & outer surface of wall as specified.	Each	
5	Extra for using salt (5K and Charcoal 64 K in pipe Earth Station pit to provide low impedance ground in location of high soil resistivity as and when required and specified.	Each	
6	Supply & laying of 6 SWG G.I. earth from Earth Electrode (below G.L.) to electrical switch gears or electrical machineries including making necessary connection as approved and specified	Metre	
7	Supply and laying of following size PVC/XLPE insulated and PVC sheathed 1.1 KV Solid Aluminium conductor up to 10 sq mm balance stranded conductor, XLPE Insulated, cores laid up, PVC tape inner sheathed, Armour (Aluminium for single core up to 70 sq. mm. balance Aluminium strip, Galvanised for cables up to 2X10 sq mm, 3X10 sq mm, 4X6 sq mm balance all galvanised steel strip), extruded PVC Type ST2 sheathed, 650/1100V grade as per IS 7908 (Part I) 1988 armoured U.G. cable. UG cable laid in ground/partially in air (as required for termination over ground including excavation of cable trench up to depth of 75cm, refilling, protective brick covering, sand cushioning etc. complete handling of surplus spoil, debris etc to proper place as specified 35/50/70 Sq. mm. 3 & ½ Core armoured U.G. cable	Metre	
8	Supplying, fitting and fixing pipes plain/bevel ended for casing, conforming to relevant IS codes of practice including supplying and fitting of tube well accessories, lowering of assembly pipes	P/Rm	

	concentrically in the borehole followed by supplying and packing of pea gravel free from dirt, dust and other foreign materials in the annular space between the borehole and assembly pipes complete with GI pipe (TATA/SAIL (Medium) socket should be welded to the pipes 80mm diameter		
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<b># Mention clearly in the column provided whether product quoted by you meets following specifications/criteria.</b>		Yes/ No
21	The <b>Engine Alternator</b> supplied should be directly coupled ready –to –use type (RTU), the BHP of Engine may be suitably enhanced as per site conditions in order to deliver the minimum required KVA at site, in case of water cooled engine it should be supplied with first filling of coolant and water mixture as per the manufacturer recommendation. The Engine shall be equipped with governor of <b>class A1</b> accuracy and all standard fittings, flexible pipe, 1no. 12 Volt <b>150AH(minimum)</b> low maintenance free lead acid automotive duty battery fixed between base frame, 200litres capacity fuel tank for 16 hours running of E/A set with steel wire braided fuel pipe, silencer, MS exhaust pipe of <b>B class</b> of suitable size and length as per site requirement covered with two layers of 6mm thick asbestos rope, instrument panel equipped with necessary instruments, directly coupled with Alternator of suitable capacity on a suitable length of common base frame, channel fixed on necessary AVM pads including required length not less than 70 sq.mm. Aluminium conductor armoured XLPE cable with end termination cable glands and lugs and for inter connection between alternator and control panel, providing tools for normal maintenance ,Acoustic Enclosure complete with all accessories as specified and directed confirming to IS comprising of Technical specification as per manufacturer. (RANGE FROM 5 KVA TO 625 KVA) Kirloskar green/bliss, Leyland, Volvo Penta, Perkinson, Mahindra, Greaves, Escort engine and Kirloskar, Stamford, Leroy somer alternator	
22	<b>OPERATING CONDITIONS:</b> The engine alternator shall be capable of working at any ambient temperature between 0°C to 50° C and relative humidity up to 95% and up to an altitude of 2500 meters condition.	
23	<b>PERFORMANCE REQUIREMENT:</b> <ul style="list-style-type: none"> <li>• The working KVA rating at site condition after accounting for de-rating shall be obtained at 0.8 (lag) power factors.</li> <li>• When there is an electrical main supply failure it will be required to work continuously for a period, which may even exceed 24hour at a time.</li> <li>• The set shall be capable of taking 10% overload for a period of one hour during every 12hours period while operating continuously at full load</li> </ul>	
24	<b>OUT PUT VOLTAGE, FREQUENCY AND WAVE FORM:</b> Nominal output voltage shall be 415 volt with + 1.5% manual adjustment at all conditions of the load. Frequency shall be 50 cycle per second + 1.5 Hz in	



	sinusoidal output waveform.	
25	<b>DIESEL ENGINE:</b> Engine shall be reciprocating compression ignition engine as per manufacturer standard design and conforming to IS10001-1981 & BS5514.	
26	<b>LUBRICATION:</b> Lubrication shall be positive pressure type lubricating all moving parts. No moving parts shall require lubrication by hand either prior to the starting of the engine or while it is in operation. Temperature and pressure gauge shall be fitted to the lubricating system.	
27	<b>FUEL TANK:</b> Fuel tank with usable capacity of <b>200liters</b> , made up of <b>2mm</b> thickness MS sheet, shall be suitably installed inside the canopy and connected to the Engine through steel wire braided fuel pipe line for easy maintenance. The tank shall have a pipe level indicators marked in litres, filling inlet with removable screen, fuel out let located at minimum of 25mm above the bottom , drain plug, air vent and necessary piping, hand fuel pump etc. The outlet of the hand fuel pump supplied shall be provided with 3-meter long reinforced hosepipe.	
28	<b>FUEL PIPING:</b> Steel wire braided pipe with hydraulically compressed benzo of superior quality shall be provided for fuel piping.	
29	<b>SPEED AND GOVERNING 'A1':</b> The engine shall operate on 1500 RPM, and be able to meet site conditions with regard to Voltage, Speed, Frequency and regulation equipped with governor of suitable Class A1 accuracy.	
30	<b>ENGINE START:</b> Engine shall be cold and self-starting type. The starter battery shall have suitable copper connecting lead, sufficient to meet engine starting and control gear requirement as per manufacturer specification.	
31	<b>BATTERY CHARGING:</b> The battery charging shall be done through alternator and solid-state battery charger.	
32	<b>THE ENGINE SHALL HAVE FOLLOWING ACCESSORIES: -</b> <ul style="list-style-type: none"> <li>• Heavy duty fly wheel.</li> <li>• Coupling .</li> <li>• Fuel Pump.</li> <li>• Governor.</li> <li>• Pre filters.</li> <li>• Water separator Fuel Filter.</li> <li>• Pre-filter in lift pump/button filter.</li> <li>• Lubricating oil filter.</li> <li>• Residential exhaust silencer.</li> <li>• Self Starter.</li> <li>• Alternator.</li> <li>• Radiator with Blower Fan (In case of water-cooled).</li> </ul>	

33	<p><b>ENGINE INSTRUMENT PANEL: -</b> It shall comprise of the following: -</p> <ul style="list-style-type: none"> <li>• Starting switch with key/push button.</li> <li>• Lubricating Oil temperature gauge.</li> <li>• Lubricating Oil pressure gauge.</li> <li>• Battery charging ammeter.</li> <li>• Water temperature gauge (In case of Water-cooled)</li> </ul>	
34	<p><b>ALTERNATOR:</b></p> <p>(i) The alternator shall be copper wound and totally enclosed for screen protected class - F insulation, designed and constructed to withstand tropical condition. Voltage regulation shall be + 5%. And shall be conforming to IS 13364 (Part I):1992</p> <p>(ii) The winding shall be star connected and neutral shall be brought out to the terminal box for earth with two independent earths. The terminal of the alternator output shall be enclosed in the terminal box. The AC/DC wiring shall be separated from each other.</p> <p>(iv) Radio interference suppressor should be provided in case of slip ring type Alternator.</p>	
35	<p><b>ALTERNATOR CONTROL PANEL : -</b> Control panel shall be of compartmentalized cubicle type and made of minimum 16 gauge sheet steel with easy accessible to all components directly from front. Control wiring shall be with suitable size PVC insulated multi – strand copper conductor with plugs and ferrules for identification on both ends. AC and DC wiring shall be clearly separated. Panel shall have sufficient working space for making connection of cable setc. Aluminium busbars of adequate dimensions (current density not exceeding 130amps. Per sq. cm.) with superior quality epoxy insulators etc shall be provided. Earth studs shall be provided on both sides of the panel and shall be interconnected within copper earth bus of 25x3 mm. size minimum. HRC fuse/MCB for instruments and control circuits shall be provided. Necessary individual gland plates to receive power cables, control cables, and all suitable earthing arrangements shall be provided. The panel shall be provided with base channel and lifting hooks.</p> <p><b>The panel should consist of the following: -</b></p> <ol style="list-style-type: none"> <li>i. One no. four pole 415V, 125A, 35KA MCCB with suitable setting.</li> <li>ii. DG controller which will work as ESU &amp; also will indicate V, I, Hz, PF, KWH &amp; Run Hours, RPM.</li> <li>iii. 3Phase, Digital Multifunction meter 96MM X 96MM Sq.</li> <li>iv. 0–30A, DC Ammeter to indicate Battery charging current</li> <li>v. 0–15V, DC Voltmeter to indicate Battery charging voltage.</li> <li>vi. Digital, Three phase four wire Energy meter. (Tamper proof)</li> <li>vii. a) Lamp indication (RED) for set running and load OFF. b) Lamp indication (GREEN) for set running and load ON.</li> <li>viii. Audio – visual alarm with alarm acknowledgement and reset push buttons for :       <ol style="list-style-type: none"> <li>a) Engine stop</li> <li>b) Over speed;</li> <li>c) Low Lub. Oil pressure.</li> </ol> </li> </ol>	

	<p>ix. Temperature control relay which continuously indicates the inside temperature of the canopy with variable setting for tripping the generator.</p> <p>x.. <b>Battery Charger:</b> The charger shall be of SCR or SMPS type with automatic trickle and boost charging facility, current and voltage limiting circuits to avoid over charging, short circuit, reverse polarity protection and auto cut off facility when gen set is "ON". DC voltmeter and ammeter of approved make, HRC fuse on DC side &amp; DP MCB on AC side. It shall be provided in addition to Dynamo along with the engine. The tenderer shall include AC input cord with 3 pin top and DC wiring of the battery charger with 2.5 mm<sup>2</sup> copper conductor in recess / surface metal conduit / armoured cable.</p> <p>(xi) <b>SAFETY CONTROL TRIP:</b></p> <p>(1) Low lubricating oil pressure.</p> <p>(2) High cylinder head (in case of Air cooled ) / water temperature in case of water cooled ..</p> <p>(3) Lack of fuel.</p> <p>(4) Over speed.</p> <p><b>NOTE:</b></p> <p>a) The MCCB shall be fitted with under voltage relay and overload protection device. The terminal shall be extended for ease of cable connections and in such a manner that minimum required air gap is maintained between the phases. It shall be provided with requisite number of NO/NC auxiliary interlocking. The minimum breaking capacity of MCCB shall be 35 KA set with suitable release range to take care of 10% overload of the E/A set rating. The short circuit current rating and ultimate current rating shall be same.</p> <p>b) MCCB trip push button for the MCCB.</p> <p>c) Engine Start push button for DG.</p> <p>d) Engine Stop push button for DG.</p> <p>(ix) Canopy Accessories : (a) Emergency stop push button (b) Fuel gauge electrically operated (c) D.C Emergency light operated with switch.</p>	
36	<p><b>CONTROL WIRING:</b></p> <p>i) The control wiring shall be done with PVC insulated copper wires of minimum 1.5 sq.mm. size.</p> <p>ii) The control wiring shall be provided with identification ferrules at each end.</p> <p>iii) More than two wires shall not be terminated at any one terminal.</p> <p>iv) The wires shall be arranged and supported in such a manner that they shall be separately bunched.</p> <p>v) Runs of wires shall be neatly bunched and suitably supported and clamped. A.C and D.C wiring shall be separately bunched</p> <p>vi) All control wiring meant for external connections are to be brought out on a terminal board.</p>	
37	<p><b>SOUND PROOF ENCLOSURE:</b></p> <p>(i) The canopy should be sound proof, weather proof &amp; environment friendly.</p> <p>(ii) The sound proof canopy shall meet the requirements of environment (protection) Rules 1986 as laid down by Ministry of Environment and forests read with GSR-371(E) dated 17.05.2002, GSR520(E) dated 01.07.2003 and GSR(E) dated 12.07.2004 in respect of noise level for the E/A sets or as amended and applicable at the time of supply.</p> <p>(iii) The canopy shall be designed for maximum permissible sound pressure level for D.G. sets shall be 75db(A) at one meter from the enclosure(canopy) surface. The D.G. set shall be provided with proper exhaust muffler with insertion loss of minimum 25db(A).</p>	

	<p>(iv) Suitable see through window made of transparent polymer sheet/heat resistant glass of suitable thickness for visibility of meters/indications etc. on control panel shall be provided.</p> <p>(v) The doors shall be open-able for easy access to virtually every part of E/A set for comfortable maintenance.</p> <p>(vi) Suitable G.I. Bus bar shall be provided in the canopy for neutral and body earthing separately. All the equipments in the canopy shall be connected together with suitable G.I. strip and in turn to the Bus bars for body earthing.</p> <p>(vii) The sound proof canopy design shall have adequate ventilation with heat removal arrangement and shall meet the requirements as per MOEF/CPCB norms. The difference of temperature inside the canopy than outside ambient temperature should not increase beyond 70C as per CPCB norms.</p> <p>(viii) The enclosure (canopy) housing with base frame shall be provided with sufficient structural strength for vibration etc.</p> <p>(ix) The enclosure shall have enough space for housing of the control panel &amp; fuel tank and also shall have arrangement for lifting, fuel filling, fuel &amp; oil drains, air breathing, and emergency stop push button.</p>	
38	<p><b>EARTH BUS PROVISION:</b> Provision shall be made for earthing all non current carrying metal parts of the equipment. Earth lugs of suitable size shall be provided wherever earth connections to the apparatus are necessary. Earthing work shall be carried as per IE Rules/IS specifications amended up to date.</p> <p>Suitable GI bus bars shall be provided on the canopy for neutral/body earthing separately. The neutral bus bar shall be connected to the neutral of the Alternator with flexible copper wire braided strip. All the equipment inside the canopy shall be connected together with suitable GI strip and then connected to the Body Earthing bus bars.</p>	
39	<p><b>SAFETY PROVISION:</b> All exposed moving parts like fan blades, couplings etc. shall be provided with suitable wire mesh/guards/covering to avoid the chances of accidents.</p>	
40	<p><b>FINISHING:</b> All exposed metal parts i/c base channel, radiator cover, air filter, oil filter, dynamo, starter etc. shall preferably be in single colour suitably finished to prohibit corrosion under climatic conditions prevailing at site and the colour shall be preferably of light GREY colour or as per engine manufacturer.</p>	
41	<p><b>NAME PLATE MARKING AND INSTRUCTION MANUALS:</b> A nameplate showing rating, connection diagram, year of manufacture etc. shall be provided on engine and alternator. All the important major parts should bear the catalogue number, name of the parts etc. All the control wiring shall be provided with letter/number ferrules at both ends. Three sets of manuals giving the details about design specifications, special features of the equipment, schematic and wiring diagram, instructions regarding installation, maintenance/operation etc. should be supplied. The Electrical control wiring diagram, operation and maintenance instructions shall be framed and displayed in the enclosure. The important name plate details of Engine &amp; Alternator, date of commissioning etc. shall be displayed in the enclosure.</p>	

42	<p><b>GENERAL REQUIREMENT:</b></p> <p>(i) The set shall have minimum vibration and noise under all conditions of load. The set shall be properly dynamically balanced. Anti vibration mounting shall be provided for supporting the set.</p> <p>(ii) The set shall be fitted with radio interference suppressors in case of slip ring type alternator.</p> <p>(iii) The size of EA set base frame channels shall be <b>100MMX50MM</b>(minimum) and not less than <b>3MM</b> thick. Each channel shall be provided with minimum 3ribs in between the ends and also holes for earth connections</p> <p>(iv) Control wiring shall be done with suitable <b>1.5sq.mm.</b> multi strand PVC insulated copper conductor cable.</p> <p>(v) One set of Tools as per the list mentioned below shall be supplied along with the Gen set.</p> <p><b>List of the tools to be supplied by the contractor free of cost</b></p> <p><b>Sl. No. Description of Tools Quantity</b></p> <ol style="list-style-type: none"> <li>1. Combination set (one end ring and other end open) spanner set 3/0" to X 1 ¼ " 14 pieces per set - 1set</li> <li>2. Socket set ½" square drive 3/8 "to 1 "(set of 11 nos.) - 1 set</li> <li>3. Reducer ½" male X 3/8 "female - 1 no</li> <li>4. Filler Gauge 6 "long- 1 no.</li> <li>5. Nose pliers- 1 no.</li> <li>6. Adjustable Wrench 250 mm chromo plated- 1 no.</li> <li>7. Ball point Hammer (2 lbs.) - 1 no.</li> <li>8. Allen Key set 1/16" to 3/8" - 1 set.</li> </ol>	
42	<p><b>TESTING AND COMMISSIONING:</b></p> <p>The firm shall test run and commission the set itself before handing over to the agency/department. Diesel and lubricant oil shall be supplied by the contractor at the time of testing of the set. The necessary artificial load and any other necessary manpower, material, consumables etc will be provided free of cost by the contractor at the time of testing.</p>	
43	<p><b>GUARANTEE ETC.:</b></p> <p>(i) The entire installation system shall be guaranteed against any inherent defect of faulty workmanship and for its perfect functioning for a period of 1(one) year from the date of handing over of entire system.</p> <p>(ii) Free services as per manufacturer's standard practice and norms will be provided free of cost.</p> <p>(iii) The contractor shall impart training to the operator deputed by the agency/department for operation and attending the minor fault free of cost.</p> <p>(iv) The contractor shall ensure adequate and prompt after sales service free of cost during guarantee period and against payment after the guarantee period is over, in the form of maintenance, spares and personnel as and when required during normal life span of the equipment and shall minimize the breakdown period. In case of equipment supplied by other manufacturers the firm shall furnish a guarantee from the manufacturer for the same before the DG Set installation is taken over.</p> <p>(v) All work will be executed as per specification, relevant IE Rules, etc.</p>	

**Important note:**

**If the DG Set offered by you differs in any of the specifications given in the Technical Specification table above, please mention these clearly and specifically against the relevant specification. (You may also use extra sheet, if required)**

**\*Note: Please add more details if required.**