

TENDER DOCUMENT

FOR SUPPLY DIESEL GENERATOR (STAND-BY POWER)

FOR DREAMS MALL, KOTTIYAM, KOLLAM

TENDER NO: DREAMS MALL/2022 DTD 02/03/2022

CLIENT

**M/s DESINGANADU RAPID DEVELOPMENT &
ASSISTANCE CO-OP SOCIETY LTD, Q – 1666,
KOTTIYAM P.O., KOLLAM, KERALA.**

ARCHITECTS

**M/s ABHILASH ARCHITECTS,
NEAR ART OF LIVING ASHRAMAM,
KOLLAM, KERALA, INDIA -691012**

Address: - DESINGANADU RAPID DEVELOPMENT & ASSISTANCE CO-OP SOCIETY LTD, Q – 1666,

KOTTIYAM P.O., KOLLAM, KERALA. 691571

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NOTE:

Vendor/Tenderer/Contractor - here means Approved Makers.

Architects - here means M/s Abhilash Architects

Client - M/s Desinganadu Rapid Development & Assistance Co-op Society Pvt. Ltd.

SECTION A

NOTICE INVITING TENDER

M/s Desinganadu Rapid Development & Assistance Co-op Society Pvt. Ltd. is inviting tender for "Supply for Diesel Generator (stand-By power) for DREAMS MALL, KOTTIYAM, and KOLLAM".

The Due date of Submission of Tender is 11/04/2022.

- i) The tenderers are required to submit their tender as per the information mentioned in the tender documents and if there is any deviation in tender specification, the same shall be submitted separately along with the tender documents. Tenderers are required to fill the tender technical specification sheets without fail.
- ii) The successful Tenderer will be required to enter into a formal agreement with Client after the issue of Letter of Intent.
- iii) The tender hard & soft copies should be sent to M/S Desinganadu Rapid Development & Assistance Co-op Society Pvt. Ltd. (dreamsmall.engineering@gmail.com) by 16 00Hrs on or before 11/04/2022.
- iv) Tenders shall be valid for days (ninety) from the date of opening of tender.
- v) Client reserves the right to accept or reject any tender and also shall modify the tender dates without assigning any reason depending upon the site conditions. Further, the client does not bind himself to accept the lowest tender.
- vi) The tender should be signed by an authorized official of the company. The tender should be handed over in a sealed cover.
- vii) Client reserves the right to increase or decrease the no. of units proposed before finalization of the order or reserves the right to nullify the tender if needed without assigning reasons.

SECTION B

Terms of Payment AND Taxes & Duties:

1. Terms of Payment:

- a. 10% of the Contract Value shall be payable as advance immediately upon signing the Contract and against the submission of Bank Guarantee.
- b. 70% of the Contract Value shall be payable against delivery of material at site/Letter of Credit as per rules
- c. 10% of the Contract Value shall be paid after completion of testing & commissioning and handing over of equipment.
- d. 10% of the Contract Value shall be payable as retention after warranty period. However, this amount can be released against the submission of retention Bank Guarantee.

2. Taxes & Duties:

- The prices are inclusive of all taxes, duties, levies prevailing on the date of this proposal. And transport charges etc.

SECTION C

GENERAL SPECIFICATIONS

CONFORMITY WITH STATUTORY ACTS, RULES, REGULATIONS, STANDARDS AND SAFETY CODES

Indian Electricity Act and Rules

All electrical works in connection with installation of electric sub-stations shall be carried out in accordance with the provisions of Indian Electricity Act, 2003 and the Indian Electricity Rules, 1956 amended up to date. Wherever I.E. rule numbers have been indicated, they are based on I.E. Rules, 1956 amended up to date.

Indian Standards

The transformers and their installation shall conform to relevant Indian standards amended up to date.

Safety Codes and Labour Regulations

In respect of all labour employed directly or indirectly on the work, the tenderer, at his own expense will arrange for the safety provision. In case of default, the client shall be at liberty to make arrangements and provide facilities as aforesaid and recover the cost from the tenderer. The tenderer shall provide necessary barriers warning signals and other safety measures to avoid accidents while installation, testing and commissioning.

Nothing in these specifications shall be construed to relieve the tenderer of his responsibility for the design, manufacture and installation of the equipment with all accessories in accordance with applicable statutory regulations and safety codes in force from the safety angle.

WORKS TO BE ARRANGED BY THE CLIENT

Unless otherwise mentioned in the tender specifications the following works shall be carried out by the client:

Construction of sub-station building. The tenderer should select such equipment for installation as can be properly installed in the spaces shown in specification drawings. While no guarantee can be given minor modification required by the tenderer if mentioned in the tender or intimated immediately after the receipt of tender shall be carried out if structurally possible.

Cable trench, entry pipe for cable, manholes for drawing of cables, manhole covers etc. as per requirements.

Provision of storage space at site.

WORKS TO BE DONE BY THE TENDERER

In addition to supply, installation, testing and commissioning of transformer as per specifications, the following work shall be deemed to be included within the scope of work, to be executed by the tenderer:

Provision of supports / clamps for equipments, cables etc. wherever required.

Small wiring, inter-connection etc. inclusive of all materials and accessories, necessary to comply with the regulations as well as proper and trouble free operation of the equipment.

Tools and tackles required for handling and installation.

Necessary testing equipments for commissioning.

Watch and Ward of materials and/or installation and equipments till their handing over to the client.

SITE CONDITIONS

All the equipments and their installation shall be suitable for the environmental conditions encountered at the location as indicated in Appendix II.

INSPECTION OF SITE AND COLLECTION OF DATA

The tenderer shall be deemed to have examined the tender documents, detailed specification, data etc. and to have visited the site or ascertained all relevant details for offering suitable equipments/ installation.

EXTENT OF WORK

The scope of work shall consist of cost of all materials, labour i/c supervision, installation, calibration, adjustments as required for commissioning of the sub-station. The term complete installation shall mean, not only, major item of the plant and the equipments covered by these specifications, but also, incidental sundry components necessary for complete execution and satisfactory performance of installation with all labour charges, whether or not specifically mentioned in the tender documents, which shall be provided by the tenderer at no extra cost.

COMPLETENESS OF TENDER

All fittings, unit assemblies accessories, hardware foundation bolts, terminals blocks for connections, cable glands and miscellaneous materials and accessories of items of work which are useful and necessary for efficient assembly and working of the equipment shall be deemed to have been included within the scope of the work in the tender and within the overall details for complete item whether they have been specifically mentioned or not.

DATA MANUALS AND DRAWINGS TO BE FURNISHED BY TENDERER

After Award of Work:

The tenderer shall submit the following drawing within a fortnight of the award of the work or as specified in tender document which shall prevail, for approval by the consultant.

- General arrangement or location drawing of the equipment complete with dimensions and clearances.
- Schematics & wiring diagram including control wiring.
- Any other drawing or data that may be necessary for the job.

Before Commencement of Installation:

The tenderer shall also furnish 3 copies of detailed installation, operation and maintenance manuals of manufacturer for all items of equipment together with all relevant data sheet, spare parts catalogues, repairs, assembly and adjustment procedure etc. in triplicate.

QUALITY OF MATERIALS AND WORKMANSHIP

All parts of equipment shall be of such design, size and material so as to function satisfactorily under all rated conditions of loading and operation. All components of the equipment shall have adequate factors of safety. Materials/components which are not conforming to standards laid down by Bureau of Indian Standards (BIS) shall not be approved.

The entire work of fabrication, assembly and installation shall conform to sound engineering practice and on the basis of "fail safe" design. The mechanical parts subject to wear and tear shall be of easily replaceable type. The construction shall be such as to facilitate ease of operation, inspection, maintenance and repairs. All apparatus shall also be designed to ensure satisfactory operation under working conditions as specified.

INSPECTION, TESTING AT MANUFACTURERS WORKS

The tenderer will be required to furnish such facilities as will be necessary for inspection of the equipment before dispatch at the manufacturer's works and also for witnessing such tests, at the works, if so required by the client. The tenderer shall furnish information for this purpose and will also give sufficient notice regarding the dates proposed for such test to Inspection agency.

TEST CERTIFICATE

Copies of all documents for routine, acceptance and type test certificates of the equipment carried out at the manufacturers premise shall be furnished along with supply of the equipment.

DISPATCH OF MATERIALS AND STORAGE

The tenderer shall commence work as soon as the drawings submitted by him are approved. The tenderer should dispatch all materials to site in consultation with the client where suitable storage accommodation may be made available to him temporarily. For this purpose the programme of dispatches of materials shall be framed keeping in view the building progress so that suitable storage accommodation could be made available to the tenderer.

COORDINATION WITH OTHER AGENCIES

The tenderer shall coordinate his work and cooperate with other agencies by exchange of all technical information like details of foundation if required, weight, over all dimensions, clearance and other technical data required for successful and proper completion of his portion of the work in relation to the work of others without any reservation. No remuneration should be claimed from the client for such technical cooperation. Care shall be taken not to damage the water proofing done in the case of substations constructed below ground level. If any unreasonable hindrance is caused to other agencies and any completed portion of the works has to be dismantled and redone for want of the cooperation and coordination by the tenderer during the course of work, such expenditure incurred will be recovered from the tenderer during the course of work, if the restoration work to the original condition of specification of the dismantled portion of the work was not under taken by the tenderer.

CARE OF BUILDINGS

Care shall be taken, while handling/ installing the equipment to avoid damage to the building. On completion of the installation, the tenderer shall arrange to repair all damages to the building caused during plant installation so as to bring to the original condition. He shall also arrange to remove all unwanted waste materials from substation room and other areas used by him.

PAINTING AND PROTECTION

All damages to painting during transport and installation shall be set right to the satisfaction of the client before handing over. All structural frame work for support of various items of equipment shall be given the final coat of paint of approved shade at site after erection is complete. Additional protection measures against corrosion shall be provided when installed in special environment.

TRAINING OF CLIENT STAFF

The operation and maintenance staff of the client shall be associated with the manufacturer personnel during the installation, testing and commissioning of the equipments.

COMPLETION DRAWING

Three sets of completion drawings comprising the following shall be submitted by the tenderer while handing over the installation:

- Equipments layout drawing(s) giving complete details of the entire equipments.

- Electrical drawings for the entire electrical equipments showing cable sizes, equipment capacities, switch-gear's ratings, control components, control wiring etc.

FINAL INSPECTION AND TESTING

When the installation is complete, the tenderer shall arrange for inspection and testing of the installation. Test results obtained shall be recorded. The installation shall not be accepted until it complies with the requirement of these Specifications. The transformer installation shall be got inspected by the tenderer from local licensee and/or Electrical inspectorate and their clearance taken before energizing the Sub Station. All the observations/ deficiencies pointed out by the inspecting authorities shall be complied with by the tenderer on priority. The client shall render all help and pay mandatory charges to local licensee and/or Electrical inspectorate, if any, in this regard.

GUARANTEE

The tenderer shall guarantee the entire installation as per specifications. All equipments shall be guaranteed for **24 months** from the date of acceptance against unsatisfactory performance or break down due to defective design, manufacture and installation. The installation shall be covered by the conditions that whole installation or any part thereof found defective within **24 months** from the date of taking over shall be replaced or repaired by the tenderer free of charge as decided by the client. The warranty shall cover the following:-

- Quality, strength and performance of materials used.
- Safe mechanical and electrical stress on all parts under all specified conditions of operation.
- Satisfactory operation during the maintenance period.
- Performance figures and other particulars as specified by the tenderer under schedule of guaranteed technical particulars.

AFTER SALES SERVICES

The tenderer shall ensure adequate and prompt after sales services in the form of maintenance personnel and spares as and when required with a view to minimizing the break down period. Particular attention shall be given to ensure that all spares are easily available during the normal life of installation.

SECTION D

TECHNICAL SPECIFICATION

1. TENDER FOR SUPPLY OF 1 no's 415V, 82.5kVA DIESEL GENERATOR SET FOR DREAMS MALL @ KOTTIYAM.

DIESEL GENERATOR (STAND-BY POWER)

Power generated by 1 No. 250 kVA Diesel Generator. Residential type silencer shall be provided for each DG set. Independent exhaust pipe from DG set shall be provided.

- DG set supplied shall be complete with Alternator, Diesel Engine, Residential silencer, Diesel Tank, Mounting channel, lifting hooks, Anti vibration Mounting etc. and all standard accessories.
- D.G.set shall be water circulated radiator cooled without requirement of any external forced cooling arrangements. D.G.set shall comply with the requirements as per latest amendments in the relevant IS codes. Double earthing of the body of D.G.set shall be done.
- The D.G.set internal wiring shall be complete and pre-wired using heat resistant wires up to the marshalling box.

Applicable Standards:

- Kerala State Electrical Inspectorate requirements
- State Pollution Control Board requirements
- Central Pollution Control Board (CPCBII) requirements

Emission Norms followed should be as per Central Pollution Control Board requirements below:

Noise level of 75db at 1mtrs and Mass emission & smoke value as per GSR 371E dated 17th May 2002 issued by Ministry of Environments & Forest. Type test approval of Genset should be in the name of manufacture.

Diesel Engine

Engine designed to run continuously, conforming to BS: 5514/ DIN-6271/IS 10002/ ISO – 3046. Pollution compatibility: Engine Emission conforming to CPCB –II. The diesel engine shall be radiator

cooled type. The rating of the engine shall be continuous suitable for driving the alternator but shall develop a minimum of 310 BHP at 1500RPM. Battery charging arrangement shall be provided for the batteries.

Following original accessories / protective devices shall be supplied along with the engine.

SLNO	DESCRIPTION
[a]	24Volts battery with Battery Charger
[b]	Hour Meter for DG Set Operation
[c]	DG Set Start Counter for number of starts
[d]	Flexible Coupling with Gland
[e]	LLOP with N/O Contact
[f]	HWT with N/O Contact
[g]	Engine Over Speed Switch with N/O Contact
[h]	Engine Over Load Switch with N/O Contact
[i]	Engine Fail to start Switch with N/O Contact
[j]	Diesel level low Switch with Potential free Contact (N/O)
[k]	Stop Solenoid / Fuel Solenoid
[l]	Antivibration Mountings
[m]	Residential Silencer and Stainless Steel Bellows
[n]	Integrated Diesel Tank

Alternator

Alternator conforming to BS:5000/ IS:4722 with standard design with IP 23 Protection, suitably rated at 82.5kVA / 66 kW(Prime), Brush less type, at 0.8 pf, 415 Volts, 3 phase, 4 Wires, 50 Hz., 1500 RPM, self-excited (brushless excitation)and self-regulated, band of voltage regulation +/-1% of rated voltage (from no load to full load) and Class "H" insulation. Alternator should be mounted on a common single base frame and coupled directly to the engine.

Base Frame

Sturdy, fabricated / welded construction, made out of high quality Steel section suitable for mounting the engine and alternator. The base frame shall be suitably designed to simplify transportation, handling, slinging etc. and shall have provision for levelling adjustments, as required during installation.

Control Panel

Integrated inside the acoustic enclosure and fully accessible on opening the door of the acoustic enclosure, fabricated out of 16 SWG CRCA sheet with powder coating using seven tank process. Cubicle type, floor mounting Control Panel, with dust and vermin proof for accommodating the following:

- a) 125A 4 pole MCCB electronic with provision for terminating 1 runs 3.5c x 95 sq.mm armoured Aluminium cable.
- b) Multifunction Energy meter with displays of Voltage, Ampere, Frequency, power & PF.
- c) LED Indicators for 'DG ON', 'Load ON' & 'Auxiliary Trip'
- d) 3 no's Current Transformers for Alternator Output 125/5A, Class 0.5, 15VA
- e) Engine ON / OFF Key with lock (ON & OFF must be on the same key)
- f) Mechanical fuel gauge, charging and discharging ammeter, Hour meter and digital thermo meter.
- g) Indications for engine parameters like Low Lube Oil Pressure, High Water Temperature, High oil temperature, Low battery.
- h) Control wiring and power wiring up to MCCB with a laminated copy of wiring diagram fixed inside the control panel.

Installed inside the Acoustic Enclosure of the DG Set:

SL.NO	DESCRIPTION	QTY	MAKE
[a]	0-125A 3Phase Digital Ammeter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[b]	0-500V 3Phase Digital Voltmeter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[c]	Digital Frequency Meter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[d]	Control Fuses 2A with Toggle Switch	7	GE / L&T
[e]	Emergency Off Mushroom Push Button	1	RAAS / L&T / SIEMENS
[f]	Phase indicator LED lamps RYB	3	RAAS / L&T / SIEMENS

Fuel Tank

Fuel Tank should be inbuilt to the DG set enclosure.

Battery

Suitable Dry type Batteries of Standard Make with leads and Terminals shall be part of the equipment. The pack shall be suitably positioned and modular withdraw able to ease of servicing.

Noise Level outside the Enclosure

75 DB at a distance of 1 metre under free field condition and adhere to the guide lines of CPCB (Central Pollution and Control Board) norms. The Silencer shall be mounted inside/outside the canopy. Externally accessible emergency stop button shall be provided to stop DG Sets as and when needed. The exhaust gases need to be taken out through suitable stainless steel flexible pipe to prevent back pressure on the engine. Removable lifting hooks shall be provided so as that the former can be removed after completion of installation. Rope catchers shall also be provided

on the rooftop so that there is no damage to canopy while loading /unloading. Roof shall be designed so as to give good rigidity and with slopes so that no water accumulation is not there on the rooftop. Ducting shall be provided for hot air ventilation from radiator if required as per the site condition. Cable entry provision shall be bottom.

Inspection and testing

D.G.set shall be dispatched only after completing all the tests as per requirements in the Indian Standards specifications. DG Set shall be tested for noise level and temperature rise after installation in the acoustic enclosure. No charges on account of tests conducted shall be payable to the supplier. All the tests shall be conducted in the presence of the Engineer in Charge / Consultant and to the entire satisfaction of the Engineer in Charge / Consultant. Any additional tests indicated by the Engineer in Charge / Consultant if any of the tests results he may think as unsatisfactory, shall be done by the supplier without extra charges.

Warranty

The equipment shall be warranted for replacement and repair for a minimum period of 25 months from the date of supply or 24 months from the date of commissioning whichever is earlier.

Drawings

The complete set of dimensional drawings and foundation drawings with erection details shall be submitted for approval.

Transportation to the site.

The site is located at kottiyam The supplier shall make all arrangements for Transportation of the equipment from their works up to the owner's premises and lead the same to the site of erection. The supplier should arrange for insurance of equipment during Transportation up to the site of erection. Should have exclusive authorized service centre at Kollam. (Details to be attached).Supplier shall arrange labour force to lift DG set to the location if required. Supplier shall assist the client to provide the labour force to execute ducting and exhaust piping if necessary.

2. TENDER FOR SUPPLY OF 2 no's 415V, 250kVA DIESEL GENERATOR SET FOR DREAMS MALL @ KOTTIYAM.

DIESEL GENERATOR (STAND-BY POWER)

Power generated by 1 No. 250 kVA Diesel Generator. Residential type silencer shall be provided for each DG set. Independent exhaust pipe from DG set shall be provided.

- DG set supplied shall be complete with Alternator, Diesel Engine, Residential silencer, Diesel Tank, Mounting channel, lifting hooks, Anti vibration Mounting etc. and all standard accessories.
- D.G.set shall be water circulated radiator cooled without requirement of any external forced cooling arrangements. D.G.set shall comply with the requirements as per latest amendments in the relevant IS codes. Double earthing of the body of D.G.set shall be done.
- The D.G.set internal wiring shall be complete and pre-wired using heat resistant wires up to the marshalling box.
- **The D.G set shall be compatible for synchronisation with D.G sets.**

Applicable Standards:

- Kerala State Electrical Inspectorate requirements
- State Pollution Control Board requirements
- Central Pollution Control Board (CPCBII) requirements

Emission Norms followed should be as per Central Pollution Control Board requirements below:

Noise level of 75db at 1mtrs and Mass emission & smoke value as per GSR 371E dated 17th May 2002 issued by Ministry of Environments & Forest. Type test approval of Genset should be in the name of manufacture.

Diesel Engine

Engine designed to run continuously, conforming to BS: 5514/ DIN-6271/IS 10002/ ISO – 3046. Pollution compatibility: Engine Emission conforming to CPCB –II. The diesel engine shall be radiator cooled type. The rating of the engine shall be continuous suitable for driving the alternator but shall develop a minimum of 310 BHP at 1500RPM. Battery charging arrangement shall be provided for the batteries.

Following original accessories / protective devices shall be supplied along with the engine.

SLNO	DESCRIPTION
[a]	24Volts battery with Battery Charger
[b]	Hour Meter for DG Set Operation
[c]	DG Set Start Counter for number of starts
[d]	Flexible Coupling with Gland
[e]	LLOP with N/O Contact
[f]	HWT with N/O Contact
[g]	Engine Over Speed Switch with N/O Contact
[h]	Engine Over Load Switch with N/O Contact
[i]	Engine Fail to start Switch with N/O Contact
[j]	Diesel level low Switch with Potential free Contact (N/O)
[k]	Stop Solenoid / Fuel Solenoid
[l]	Antivibration Mountings
[m]	Residential Silencer and Stainless Steel Bellows
[n]	Integrated Diesel Tank

Alternator

Alternator conforming to BS:5000/ IS:4722 with standard design with IP 23 Protection, suitably rated at 250 kVA / 200 kW(Prime), Brush less type, at 0.8 pf, 415 Volts, 3 phase, 4 Wires, 50 Hz., 1500 RPM, self-excited (brushless excitation)and self-regulated, band of voltage regulation +/-1% of rated voltage (from no load to full load) and Class "H" insulation. Alternator should be mounted on a common single base frame and coupled directly to the engine.

Base Frame

Sturdy, fabricated / welded construction, made out of high quality Steel section suitable for mounting the engine and alternator. The base frame shall be suitably designed to simplify transportation, handling, slinging etc. and shall have provision for levelling adjustments, as required during installation.

Control Panel

Integrated inside the acoustic enclosure and fully accessible on opening the door of the acoustic enclosure, fabricated out of 16 SWG CRCA sheet with powder coating using seven tank process. Cubicle type, floor mounting Control Panel, with dust and vermin proof for accommodating the following:

- a) 400A 4 pole MCCB electronic with provision for terminating 2 runs 3.5c x 185 sq.mm armoured Aluminium cable.
- b) Multifunction Energy meter with displays of Voltage, Ampere, Frequency, power & PF.

- c) LED Indicators for 'DG ON', 'Load ON' & 'Auxiliary Trip'
- d) 3 no's Current Transformers for Alternator Output 400/5A, Class 0.5, 15VA
- e) Engine ON / OFF Key with lock (ON & OFF must be on the same key)
- f) Mechanical fuel gauge, charging and discharging ammeter, Hour meter and digital thermo meter.
- g) Indications for engine parameters like Low Lube Oil Pressure, High Water Temperature, High oil temperature, Low battery.
- h) Control wiring and power wiring up to MCCB with a laminated copy of wiring diagram fixed inside the control panel.

Installed inside the Acoustic Enclosure of the DG Set:

SL.NO	DESCRIPTION	QTY	MAKE
[a]	0-400A 3Phase Digital Ammeter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[b]	0-500V 3Phase Digital Voltmeter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[c]	Digital Frequency Meter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[d]	Control Fuses 2A with Toggle Switch	7	GE / L&T
[e]	Emergency Off Mushroom Push Button	1	RAAS / L&T / SIEMENS
[f]	Phase indicator LED lamps RYB	3	RAAS / L&T / SIEMENS

Fuel Tank

Fuel Tank should be inbuilt to the DG set enclosure.

Battery

Suitable Dry type Batteries of Standard Make with leads and Terminals shall be part of the equipment. The pack shall be suitably positioned and modular withdraw able to ease of servicing.

Noise Level outside the Enclosure

75 DB at a distance of 1 metre under free field condition and adhere to the guide lines of CPCB (Central Pollution and Control Board) norms. The Silencer shall be mounted inside/outside the canopy. Externally accessible emergency stop button shall be provided to stop DG Sets as and when needed. The exhaust gases need to be taken out through suitable stainless steel flexible pipe to prevent back pressure on the engine. Removable lifting hooks shall be provided so as that the former can be removed after completion of installation. Rope catchers shall also be provided on the rooftop so that there is no damage to canopy while loading /unloading. Roof shall be designed so as to give good rigidity and with slopes so that no water accumulation is not there

on the rooftop. Ducting shall be provided for hot air ventilation from radiator if required as per the site condition. Cable entry provision shall be bottom.

Inspection and testing

D.G.set shall be dispatched only after completing all the tests as per requirements in the Indian Standards specifications. DG Set shall be tested for noise level and temperature rise after installation in the acoustic enclosure. No charges on account of tests conducted shall be payable to the supplier. All the tests shall be conducted in the presence of the Engineer in Charge / Consultant and to the entire satisfaction of the Engineer in Charge / Consultant. Any additional tests indicated by the Engineer in Charge / Consultant if any of the tests results he may think as unsatisfactory, shall be done by the supplier without extra charges.

Warranty

The equipment shall be warrantied for replacement and repair for a minimum period of 25 months from the date of supply or 24 months from the date of commissioning whichever is earlier.

Drawings

The complete set of dimensional drawings and foundation drawings with erection details shall be submitted for approval.

Transportation to the site.

The site is located at Kottiyam. The supplier shall make all arrangements for Transportation of the equipment from their works up to the owner's premises and lead the same to the site of erection. The supplier should arrange for insurance of equipment during Transportation up to the site of erection. Should have exclusive authorized service centre at Kollam. (Details to be attached).Supplier shall arrange labour force to lift DG set to the location if required. Supplier shall assist the client to provide the labour force to execute ducting and exhaust piping if necessary.

3. TENDER FOR SUPPLY OF 2 no's 415V, 625kVA DIESEL GENERATOR SET FOR DREAMS MALL @ KOTTIYAM.

DIESEL GENERATOR (STAND-BY POWER)

Power generated by 1 No. 250 kVA Diesel Generator. Residential type silencer shall be provided for each DG set. Independent exhaust pipe from DG set shall be provided.

- DG set supplied shall be complete with Alternator, Diesel Engine, Residential silencer, Diesel Tank, Mounting channel, lifting hooks, Anti vibration Mounting etc. and all standard accessories.
- D.G.set shall be water circulated radiator cooled without requirement of any external forced cooling arrangements. D.G.set shall comply with the requirements as per latest amendments in the relevant IS codes. Double earthing of the body of D.G.set shall be done.
- The D.G.set internal wiring shall be complete and pre-wired using heat resistant wires up to the marshalling box.
- **The D.G set shall be compatible for synchronisation with D.G sets.**

Applicable Standards:

- Kerala State Electrical Inspectorate requirements
- State Pollution Control Board requirements
- Central Pollution Control Board (CPCBII) requirements

Emission Norms followed should be as per Central Pollution Control Board requirements below:

Noise level of 75db at 1mtrs and Mass emission & smoke value as per GSR 371E dated 17th May 2002 issued by Ministry of Environments & Forest. Type test approval of Genset should be in the name of manufacture.

Diesel Engine

Engine designed to run continuously, conforming to BS: 5514/ DIN-6271/IS 10002/ ISO – 3046. Pollution compatibility: Engine Emission conforming to CPCB –II. The diesel engine shall be radiator cooled type. The rating of the engine shall be continuous suitable for driving the alternator but shall develop a minimum of 310 BHP at 1500RPM. Battery charging arrangement shall be provided for the batteries.

Following original accessories / protective devices shall be supplied along with the engine.

SLNO	DESCRIPTION
[a]	24Volts battery with Battery Charger
[b]	Hour Meter for DG Set Operation
[c]	DG Set Start Counter for number of starts
[d]	Flexible Coupling with Gland
[e]	LLOP with N/O Contact
[f]	HWT with N/O Contact
[g]	Engine Over Speed Switch with N/O Contact
[h]	Engine Over Load Switch with N/O Contact
[i]	Engine Fail to start Switch with N/O Contact
[j]	Diesel level low Switch with Potential free Contact (N/O)
[k]	Stop Solenoid / Fuel Solenoid
[l]	Antivibration Mountings
[m]	Residential Silencer and Stainless Steel Bellows
[n]	Integrated Diesel Tank

Alternator

Alternator conforming to BS:5000/ IS:4722 with standard design with IP 23 Protection, suitably rated at 625 kVA / 500 kW(Prime), Brush less type, at 0.8 pf, 415 Volts, 3 phase, 4 Wires, 50 Hz., 1500 RPM, self-excited (brushless excitation)and self-regulated, band of voltage regulation +/-1% of rated voltage (from no load to full load) and Class "H" insulation. Alternator should be mounted on a common single base frame and coupled directly to the engine.

Base Frame

Sturdy, fabricated / welded construction, made out of high quality Steel section suitable for mounting the engine and alternator. The base frame shall be suitably designed to simplify transportation, handling, slinging etc. and shall have provision for levelling adjustments, as required during installation.

Control Panel

Integrated inside the acoustic enclosure and fully accessible on opening the door of the acoustic enclosure, fabricated out of 16 SWG CRCA sheet with powder coating using seven tank process. Cubicle type, floor mounting Control Panel, with dust and vermin proof for accommodating the following:

- a) 1000A 4 pole ACB electronic with provision for terminating 4 runs 3.5c x 400 sq.mm armoured Aluminium cable.
- b) Multifunction Energy meter with displays of Voltage, Ampere, Frequency, power & PF.

- c) LED Indicators for 'DG ON', 'Load ON' & 'Auxiliary Trip'
- d) 3 no's Current Transformers for Alternator Output 1000/5A, Class 0.5, 15VA
- e) Engine ON / OFF Key with lock (ON & OFF must be on the same key)
- f) Mechanical fuel gauge, charging and discharging ammeter, Hour meter and digital thermo meter.
- g) Indications for engine parameters like Low Lube Oil Pressure, High Water Temperature, High oil temperature, Low battery.
- h) Control wiring and power wiring up to MCCB with a laminated copy of wiring diagram fixed inside the control panel.

Installed inside the Acoustic Enclosure of the DG Set:

SL.NO	DESCRIPTION	QTY	MAKE
[a]	0-1000A 3Phase Digital Ammeter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[b]	0-500V 3Phase Digital Voltmeter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[c]	Digital Frequency Meter	1	CONZERV/L&T/ELMEASURE/SOCOMECE
[d]	Control Fuses 2A with Toggle Switch	7	GE / L&T
[e]	Emergency Off Mushroom Push Button	1	RAAS / L&T / SIEMENS
[f]	Phase indicator LED lamps RYB	3	RAAS / L&T / SIEMENS

Fuel Tank

Fuel Tank should be inbuilt to the DG set enclosure.

Battery

Suitable Dry type Batteries of Standard Make with leads and Terminals shall be part of the equipment. The pack shall be suitably positioned and modular withdraw able to ease of servicing.

Noise Level outside the Enclosure

75 DB at a distance of 1 metre under free field condition and adhere to the guide lines of CPCB (Central Pollution and Control Board) norms. The Silencer shall be mounted inside/outside the canopy. Externally accessible emergency stop button shall be provided to stop DG Sets as and when needed. The exhaust gases need to be taken out through suitable stainless steel flexible pipe to prevent back pressure on the engine. Removable lifting hooks shall be provided so as that the former can be removed after completion of installation. Rope catchers shall also be provided on the rooftop so that there is no damage to canopy while loading /unloading. Roof shall be designed so as to give good rigidity and with slopes so that no water accumulation is not there

on the rooftop. Ducting shall be provided for hot air ventilation from radiator if required as per the site condition. Cable entry provision shall be bottom.

Inspection and testing

D.G.set shall be dispatched only after completing all the tests as per requirements in the Indian Standards specifications. DG Set shall be tested for noise level and temperature rise after installation in the acoustic enclosure. No charges on account of tests conducted shall be payable to the supplier. All the tests shall be conducted in the presence of the Engineer in Charge / Consultant and to the entire satisfaction of the Engineer in Charge / Consultant. Any additional tests indicated by the Engineer in Charge / Consultant if any of the tests results he may think as unsatisfactory, shall be done by the supplier without extra charges.

Warranty

The equipment shall be warrantied for replacement and repair for a minimum period of 25 months from the date of supply or 24 months from the date of commissioning whichever is earlier.

Drawings

The complete set of dimensional drawings and foundation drawings with erection details shall be submitted for approval.

Transportation to the site.

The site is located at Kottiyam. The supplier shall make all arrangements for Transportation of the equipment from their works up to the owner's premises and lead the same to the site of erection. The supplier should arrange for insurance of equipment during Transportation up to the site of erection. Should have exclusive authorized service centre at Kollam. (Details to be attached).Supplier shall arrange labour force to lift DG set to the location if required. Supplier shall assist the client to provide the labour force to execute ducting and exhaust piping if necessary.

SECTION E

BILL OF QUANTITIES AND SPECIFICATION / REQUIREMENTS**1. SUPPLY OF 1 no's 415V, 82.5kVA DIESEL GENERATOR SET**

SL NO:	DESCRIPTION	QTY	BASIC PRICE	TAXES & DUTIES	TOTAL PRICE
1	Cost of DG Set 82.5 kVA	1			
2	Transportation	1			
3	AMC Charges for 5 years after Warranty	1			
TOTAL COST:					

2. SUPPLY OF 2 no's 415V, 250kVA DIESEL GENERATOR SET

SL NO:	DESCRIPTION	QTY	BASIC PRICE	TAXES & DUTIES	TOTAL PRICE
1	Cost of DG Set 250 kVA	1			
2	Transportation	1			
3	AMC Charges for 5 years after Warranty	1			
TOTAL COST:					

3. SUPPLY OF 2 no's 415V, 625kVA DIESEL GENERATOR SET

SL NO:	DESCRIPTION	QTY	BASIC PRICE	TAXES & DUTIES	TOTAL PRICE
1	Cost of DG Set 625 kVA	2			
2	Transportation	2			
3	AMC Charges for 5 years after Warranty	2			
TOTAL COST:					

Prices, Taxes and Duties

Prices quoted shall be for at site inclusive of all taxes, duties and statutory levies. Prices shall be firm and escalation of prices on no account is permissible. Prices quoted should indicate the percentage of taxes.

All Insurances, taxes and duties payable for the Transportation of the same shall be borne by the supplier.

<u>SPECIFICATION / REQUIREMENTS OF 82.5 kVA DG</u>		
SL.NO	ITEM DESCRIPTION	COMPLIANCE BY VENDOR
1	Engine.	
1.a.	Engine Capacity 100 BHP Min.	
	<i>(Please specify)</i>	
1.b.	Diesel fuelled, Water Cooled, 1500 rpm	
1.c.	Fuel Consumption per hour at various loads.	
	<i>(Please specify)</i>	
	50%	
	75%	
	100%	
1.d.	Governor Type.	
	<i>(Please specify)</i>	
1.e.	Engine Make & Model conforming to the above specifications.	
	<i>(Please specify)</i>	
1.f.	Protection for;	
	(i) Over speed	
	(ii) Low Lube Oil Pressure	
	(iii) High Water Temperature.	
2	Alternator.	

2.a.	82.5 kVA / 66 kW(Prime), Brush less type, 3 Phase, 415V (Voltage),50 Hz (Frequency) , 0.8 (Power factor)	
	Voltage regulation:+/-1%, Insulation Class: H, Ingress protection class: IP 23	
2.b.	Alternator Make & Model conforming to the above specifications.	
	<i>(Please specify)</i>	
3	Control Panel.	
3.a.	Integrated inside the acoustic enclosure and fully accessible on opening the door of the acoustic enclosure, fabricated out of 16 SWG CRCA sheet with powder coating using seven tank process.	
3. b.	Engine ON / OFF Key with lock (ON & OFF must be on the same key)	
3.c.	CT 's -3 nos. 125/5A, CI:0.5S,15VA	
	<i>(please specify make)</i>	
3.d.	Multifunction Digital Meter with displays of Voltage, Current, Frequency, Power & Power Factor	
3.e.	LED Indicators for 'DG ON', 'Load ON' & 'Auxiliary Trip'	
3.f.	Mechanical fuel gauge, charging and discharging ammeter, Hour meter and digital thermo meter.	
3.g.	125A 4 pole MCCB electronic with provision for terminating 1 run 3.5C 95 sq.mm cable	
3.h.	Indications for engine parameters like Low Lube Oil Pressure, High Water Temperature, High oil temperature, Low battery.	
3.i.	Control wiring and power wiring up to MCCB with a laminated copy of wiring diagram fixed inside the control panel.	

5	Battery	
	<i>(Please specify with make)</i>	
6	Battery charger	
7	Type of acoustic enclosure :	
	Weather proof, acid proof, heat resistant outdoor duty type with integrated residential type silencer, built by original engine manufacturer and factory integrated.	
8	Acoustic enclosure:	
	Made out of 1.6 / 2mm thick CRCA sheet with powder coating using seven tank processes. The whole wall surface should be insulated with fire retardant foam.	
9	Sound level with acoustic enclosure 75 dB within 1 metre.	
10	The whole set with acoustic enclosure should be CPCB II compliant.	
11	Whether ARAI / NAL / FCRI certified <i>(Attach proof)</i>	
12	Fuel tank capacity <i>(Specify)</i>	
13	Block loading capacity <i>(Specify)</i>	
14	Overall Dimension of the DG set	
	Foundation details to be attached	
15	Dimension of exhaust silencer pipe	
16	Accessories included <i>(List to be attached)</i>	
17	Method of cooling <i>(Specify)</i>	Water circulated radiator cooled/Water circulated Heat exchanger cooled/Air cooled

18	Should have exclusive authorized service facility at Kollam <i>(Details to be attached)</i>	
19	Warranty :	
	24 Months Minimum for the whole set. <i>(Specify)</i>	

<u>SPECIFICATION / REQUIREMENTS OF 250 kVA DG</u>		
SL.NO	ITEM DESCRIPTION	COMPLIANCE BY VENDOR
1	Engine.	
1.a.	Engine Capacity 310 BHP Min.	
	<i>(Please specify)</i>	
1.b.	Diesel fuelled, Water Cooled, 1500 rpm	
1.c.	Fuel Consumption per hour at various loads.	
	<i>(Please specify)</i>	
	50%	
	75%	
	100%	
1.d.	Governor Type.	
	<i>(Please specify)</i>	
1.e.	Engine Make & Model conforming to the above specifications.	
	<i>(Please specify)</i>	
1.f.	Protection for;	
	(i) Over speed	
	(ii) Low Lube Oil Pressure	
	(iii) High Water Temperature.	

2	Alternator.	
2.a.	250 kVA / 200 kW(Prime), Brush less type, 3 Phase, 415V (Voltage),50 Hz (Frequency) , 0.8 (Power factor)	
	Voltage regulation:+/-1%, Insulation Class: H, Ingress protection class: IP 23	
2.b.	Alternator Make & Model conforming to the above specifications.	
	<i>(Please specify)</i>	
3	Control Panel.	
3.a.	Integrated inside the acoustic enclosure and fully accessible on opening the door of the acoustic enclosure, fabricated out of 16 SWG CRCA sheet with powder coating using seven tank process.	
3. b.	Engine ON / OFF Key with lock (ON & OFF must be on the same key)	
3.c.	CT 's -3 nos. 400/5A, CI:0.5S,15VA	
	<i>(please specify make)</i>	
3.d.	Multifunction Digital Meter with displays of Voltage, Current, Frequency, Power & Power Factor	
3.e.	LED Indicators for 'DG ON', 'Load ON' & 'Auxiliary Trip'	
3.f.	Mechanical fuel gauge, charging and discharging ammeter, Hour meter and digital thermo meter.	
3.g.	400A 4 pole MCCB electronic with provision for terminating 1 run 3.5C 95 sq.mm cable	
3.h.	Indications for engine parameters like Low Lube Oil Pressure, High Water Temperature, High oil temperature, Low battery.	
3.i.	Control wiring and power wiring up to MCCB with a laminated copy of wiring diagram fixed inside the control panel.	

4	Provision in the DG set for interfacing Auto synchronisation, AMF with start, stop facility and engine protections.	
5	Battery	
	<i>(Please specify with make)</i>	
6	Battery charger	
7	Type of acoustic enclosure :	
	Weather proof, acid proof, heat resistant outdoor duty type with integrated residential type silencer, built by original engine manufacturer and factory integrated.	
8	Acoustic enclosure:	
	Made out of 1.6 / 2mm thick CRCA sheet with powder coating using seven tank processes. The whole wall surface should be insulated with fire retardant foam.	
9	Sound level with acoustic enclosure 75 dB within 1 metre.	
10	The whole set with acoustic enclosure should be CPCB II compliant.	
11	Whether ARAI / NAL / FCRI certified <i>(Attach proof)</i>	
12	Fuel tank capacity <i>(Specify)</i>	
13	Block loading capacity <i>(Specify)</i>	
14	Overall Dimension of the DG set	
	Foundation details to be attached	
15	Dimension of exhaust silencer pipe	
16	Accessories included <i>(List to be attached)</i>	

SPECIFICATION / REQUIREMENTS OF 625 kVA DG		Water circulated radiator cooled/Water circulated Heat exchanger cooled/Air cooled
SL.NO	ITEM DESCRIPTION	COMPLIANCE BY VENDOR
17	Method of cooling <i>(Specify)</i>	
18	Should have exclusive authorized service facility at Kollam <i>(Details to be attached)</i>	
	Engine Capacity 760 BHP Min.	
1.a. 19	Warranty <i>(Please specify)</i>	
1.b.	24 Months Minimum for the whole set <i>(Specify)</i> Diesel fuelled, Water Cooled, 1500 rpm	
1.c	Fuel Consumption per hour at various loads.	
	<i>(Please specify)</i>	
	50%	
	75%	
1.d.	100%	
	Governor Type.	
1.e.	<i>(Please specify)</i>	
	Engine Make & Model conforming to the above specifications.	
1.f.	Protection for;	
	(i) Over speed	
	(ii) Low Lube Oil Pressure	
	(iii) High Water Temperature.	
2	Alternator.	
2.a.	625 kVA / 500 kW(Prime), Brush less type, 3 Phase, 415V (Voltage),50 Hz (Frequency) , 0.8 (Power factor)	
	Voltage regulation:+/-1%, Insulation Class: H, Ingress protection class: IP 23	
2.b.	Alternator Make & Model conforming to the above specifications.	

	<i>(Please specify)</i>	
3	Control Panel.	
3.a.	Integrated inside the acoustic enclosure and fully accessible on opening the door of the acoustic enclosure, fabricated out of 16 SWG CRCA sheet with powder coating using seven tank process.	
3. b.	Engine ON / OFF Key with lock (ON & OFF must be on the same key)	
3.c.	CT 's -3 nos. 1000/5A, CI:0.5S,15VA	
	<i>(please specify make)</i>	
3.d.	Multifunction Digital Meter with displays of Voltage, Current, Frequency, Power & Power Factor	
3.e.	LED Indicators for 'DG ON', 'Load ON' & 'Auxiliary Trip'	
3.f.	Mechanical fuel gauge, charging and discharging ammeter, Hour meter and digital thermo meter.	
3.g.	1000A 4 pole ACB electronic with provision for terminating 4 run 3.5C 400 sq.mm cable	
3.h.	Indications for engine parameters like Low Lube Oil Pressure, High Water Temperature, High oil temperature, Low battery.	
3.i.	Control wiring and power wiring up to MCCB with a laminated copy of wiring diagram fixed inside the control panel.	
4	Provision in the DG set for interfacing Auto synchronisation, AMF with start, stop facility and engine protections.	
5	Battery	
	<i>(Please specify with make)</i>	
6	Battery charger	
7	Type of acoustic enclosure :	

	Weather proof, acid proof, heat resistant outdoor duty type with integrated residential type silencer, built by original engine manufacturer and factory integrated.	
8	Acoustic enclosure:	
	Made out of 1.6 / 2mm thick CRCA sheet with powder coating using seven tank processes. The whole wall surface should be insulated with fire retardant foam.	
9	Sound level with acoustic enclosure 75 dB within 1 metre.	
10	The whole set with acoustic enclosure should be CPCB II compliant.	
11	Whether ARAI / NAL / FCRI certified (<i>Attach proof</i>)	
12	Fuel tank capacity(<i>Specify</i>)	
13	Block loading capacity(<i>Specify</i>)	
14	Overall Dimension of the DG set	
	Foundation details to be attached	
15	Dimension of exhaust silencer pipe	
16	Accessories included(<i>List to be attached</i>)	
17	Method of cooling(<i>Specify</i>)	Water circulated radiator cooled/Water circulated Heat exchanger cooled/Air cooled
18	Should have exclusive authorized service facility at Kollam(<i>Details to be attached</i>)	
19	Warranty :	
	24 Months Minimum for the whole set. (<i>Specify</i>)	

