འབྲུག་མི་སེར་རྒྱུ་ནོར་གཞིས་བཟུང་ཚད།
DRUK HOLDING & INVESTMENTS LTD.

GROUP STANDARD BIDDING DOCUMENT

GOODS

འབྲུག་བརྩུད་འཕྲིན་ཚད།
BHUTAN TELECOM LIMITED
Registered Office: Drophen Lam 2/28, Post Box 134, Thimphu 11001, Bhutan.
Tel: (975)-2-343434 Fax: (975)-2-324312

Part I: NOTICE INVITING TENDER

NIT No: BT/Supply of DG Set/2022 dated 9th March 2022

1. Bhutan Telecom Ltd. invites eligible bidders to submit your e-bid for the supply of DG Sets.

2. Bhutan Telecom Limited would like to inform the interested firms to kindly visit the website www.tender.bt for vendor registration and to submit the proposal online.

3. The user manual for vendor registration and bidding process is available on the website www.tender.bt or else can be downloaded from following links:-User manual for vendor registration-User manual for Bidding process

4. SBD Timeline

NIT No.	**BT/Supply of DG sets/2022**
Bid Submission & EMD Submission Date & Time	On or before 21st March 2022 (17:00 hrs)
Bid Opening Date & Time	22nd March 2022 (14:00 hrs)
RFP shall be available at	www.tender.bt

Part II: Terms and Conditions

1. Scope of Supply

1.1. The bidder(s) may quote for any or all items as per the technical specification as attached at Annexure -IV

2. Clarification to the bidding document

2.1. Further information can be obtained in writing from procurement@bt.bt/sandeep.mongar@bt.bt/manager.power@bt.bt not later than 18th March 2022.

3. Documents comprising bid

3.1. The bid must be accompanied by the following document:

i. Bid Security
ii. Catalogue/datasheet
iii. Valid Trade license
iv. Tax clearance
v. Integrity Pact Document
vi. Any other relevant documents as required

4. Bid Price

4.1. All prices shall be quoted in BTN/INR. The quoted price shall be CIF, Thimphu including taxes, duties and other levies to the final place of delivery, if required.

4.2. The final place of delivery of Equipment is Central Stores, Thimphu

4.3. Each item shall be evaluated and contract awarded separately to the firm(s) offering the lowest evaluated price for each item.

Or

4.4. The bidder(s) must quote for all the items under this bid if in lot. Price bids will be evaluated for all the items together and contract awarded to the firm offering the lowest evaluated total cost of all the items.

4.5. All price quoted shall be on per unit basis and valid for 12 months from the date of bid opening. The selected bidders shall be contacted for additional supply of any in-listed item in the future or repeat order basis for the entire period.

5. Bid Validity

5.1. The bid shall be valid for 90 days from the date of submission of the bid. In exceptional circumstances, prior to the expiration of the bid validity period, the Purchaser may solicit the Bidder's consent to an extension of the bid validity period. The request and responses shall be made

in writing. A bid valid for a shorter period shall be considered non-responsive.

6. Bid Security

6.1. The bid shall be accompanied by the bid security of **2% of the bid value** in the form of Cash Warrant/ Unconditional Bank Guarantee/ Banker Cheque/ Demand draft in the name of the **Chief Executive Officer, Bhutan Telecom Ltd** issued by the Financial Institution enforceable in any Banks in Bhutan.

a) The Bid security shall be valid up to 3 months.
b) The Bid Security is to be submitted as a part of the Bid in a separate sealed envelope and be submitted to Finance & Accounts Division or to our nearest Branch Office within the specified time in SBD timeline.
c) Any Bid not accompanied by bid security of adequate value and validity shall be rejected by the Purchaser and considered as non-responsive.

OR

d) ***The bid security /EMD to be directly deposited using BTL BOB Account No: 100914942 (BTL Disbursement account) and the deposit details to be emailed to sonam.dema2203@bt.bt along with tender and vendor details.***

6.2. The bid security shall be forfeited in the following cases:

a) If the Bidder withdraws the bid after Bid opening during the period of Bid validity.
b) If the Bidder does not accept the correction of the Bid price;
c) In the case of a successful bidder, if the bidder fails within the specified time limit to sign the Contract or furnish Performance Security.

7. Purchaser's Right to Accept Any Bid, and Reject Any or All Bids

7.1. The Purchaser is not bound to accept the lowest bid and reserves the right to accept or reject any or all the bids without assigning any reason whatsoever.

8. Quantity Variation

8.1. Depending on the final requirement, at the time of the award of the Contract, the Purchaser may increase or decrease the quantities by twenty five percent (25%) of the indicated quantity.

9. Award of Contract

9.1. The Purchaser shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated Bid. The Purchaser shall issue Notification of Award/ Purchase Order to the successful Bidder. Until a formal Contract is prepared and executed, the Notification of Award/Purchase Order shall constitute a binding Contract.

10. Delivery Schedule

10.1. The supply of the Goods and related service shall be completed within **two months** from the date of issue of the Purchase Order/ signing of the contract.

11. Performance Security

11.1. The Supplier shall be required to furnish Performance Security of 10% of the quoted price in the form of cash warrant, demand draft or unconditional Bank Guarantee in the name of Chief Executive Officer, Bhutan Telecom issued by a financial institution enforceable in any Banks in Bhutan, which shall be furnished upon issuance of notification of the award. Performance Security shall be valid till the end of warranty period and will be returned after the end of warranty period.

12. Liquidated Damage

12.1. If the Supplier fails to deliver any or all of the Goods by the date(s) of delivery or fails to perform the Related Services within the period specified in the Contract/ Purchase Order, the Purchaser shall deduct Liquidated Damages at the rate of **0.1%** per day for each day to a maximum of 10% of the total PO value.

13. Payment Terms

13.1. Equipment: **100% payment** shall be released on receipt of full quantity of materials and no part payment shall be entertained during the execution of the supply order.

13.2. At the time of release of payment, Tax shall be deducted at Source [TDS] from the gross amount of bills as per the Income Tax Act of the Bhutan. The Purchaser shall furnish necessary TDS Certificate to the Bidders, issued by the Department of Revenue & Customs, RGoB.

14. Warranty Period

14.1. The Supplier shall provide the warranty for a period of **one year,** for the goods to be supplied and confirm that if any faults are detected within the warranty period in the supplied/installed Goods, the Supplier shall be bound to rectify the fault or replace the Goods as the case may be. The performance security shall be used to cover the cost of supplies not delivered or defective items not replaced or rectified.

14.2. Any goods found defective during the warranty period shall be replaced/ repaired by the supplier at his cost. If the supplier fails to rectify and or replace the defective goods, the Purchaser shall do it at the cost of the supplier.

14.3. Remote assistance to be provided by the supplier if required during the time of installation and commissioning of DG sets which is under BTs scope.

15. Submission of Bid

15.1. The Bidder shall submit the Bid Submission Form using the Form in the Annexure I if so required:

This form must be completed without any alterations to its format, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

15.2. As such a bid in which the Bid Submission Form not duly filled, signed and sealed by the bidder shall be rejected.

16. Termination

16.1. The Purchaser may, by written notice, terminate the Purchase Order or Contract in whole or in part at any time for its convenience:

16.1.1. If the Supplier fails to perform any other terms and conditions specified with the Purchase Order/ Contract, or exceeds the maximum amount of Liquidated Damages; and

16.1.2. If the Supplier fails to perform any other obligation(s) under the Purchase Order / Contract, and if the Supplier does not take any remedial action within a period of **one month** after receipt of a notice of default from the Purchaser specifying the nature of the default(s).

17. Governing Law

17.1. The Contract/ Purchase Order shall be governed by and interpreted in accordance with the Laws of Bhutan.

18. Dispute Resolution

18.1. Any settlement of dispute or arbitration of matter arising from the contract shall be settled as per the Alternative Dispute Resolution Act of Bhutan 2013 for Bhutanese Supplier and United Nations Commission on International Trade Law [UNCITRAL] Arbitration Rules of 1976 for International Supplier and will be binding for both parties.

Part III: Forms:

Annexure-I Bid Submission Form

[*The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.*]

Date : …….[*insert date of Bid submission*]
Tender No.: ……[*insert number*].

To : *[insert complete name of the Purchaser]*

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda number: …….. *[insert the number and date of issue of each addendum]*;

(b) We offer to supply in conformity with the Bidding Documents and in accordance with the Schedule of Supply the following Goods and Related Services: [insert a brief description of the Goods and Related Services];

(c) The total price of our Bid, excluding any discounts offered in item is: [*insert the Bid Price in words and figures, indicating the various amounts and their respective currencies*];

(d) The discounts offered and the methodologies for their application are:

Discounts. If our Bid is accepted, the following discounts shall apply: [*Specify in detail each discount offered and the specific item of the Schedule of Supply to which it applies.*]

Methodology of Application of the Discounts. The discounts shall be applied using the following methodology: [*Specify in detail the methodology that shall be used to apply the discounts*];

(e) Our Bid shall be valid for a period of [*insert number*] from the date fixed for the Bid submission deadline and it shall remain binding upon us and may be accepted at any time before expiry of that period;

(f) If our Bid is accepted, we commit to provide a Performance Security in accordance with Clause 15 for the due performance of the Contract;

(h) We, including any subcontractors or suppliers for any part of the Contract, have nationality from eligible countries, viz: [insert the nationality of the Bidder, including that of all

parties that comprise the Bidder if the Bidder is a JV/C, and the nationality each subcontractor and supplier]

(i) We have no conflict of interest;

(j) Our firm, its affiliates or subsidiaries - including any subcontractors or suppliers for any part of the contract - has not been declared ineligible by the Purchaser under the laws or official regulations of Bhutan;

(k) We have read the terms and conditions carefully, understood and agree to comply with all the clauses which are mentioned therein. In case of any breach of any condition on our part, we shall be liable for actions as per terms and conditions of the Contract.

(l) We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.

(m) We understand that you are not bound to accept the lowest evaluated Bid or any other Bid that you may receive.

n) We accept the Vendor Performance Management System.

Signed: _____ [insert signature of person whose name and capacity are shown]

In the capacity of _____[*insert legal capacity of person signing the Bid Submission Form*]

Name: _____[*insert complete name of person signing the Bid Submission Form*]

Duly authorized to sign the bid for and on behalf of: _____ [*insert complete name of Bidder*]

Dated on _____day of _____[*insert date of signing*]

Annexure II- Performance Security Form

[The bank, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated] Date: *[insert date (as day, month, and year) of Bid submission]*

IFB No. and title*: [insert no. and title of bidding process]*

Bank's Branch or Office: *[insert complete name of Guarantor]*SEP**Beneficiary:** *[insert complete name of The company]*SEP**PERFORMANCE GUARANTEE No.:** *[insert Performance Guarantee number]*

We have been informed that *[insert complete name of Supplier]* (hereinafter called "the Supplier") has entered into Contract No. *[insert number]* dated *[insert day and month], [insert year]* with you, for the supply of *[description of Goods and related Services]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a Performance Guarantee is required.

At the request of the Supplier, we hereby irrevocably undertake to pay you any sum(s) not exceeding *[insert amount(s)*[1] *in figures and words]* upon receipt by us of your first demand in writing declaring the Supplier to be in default under the Contract, without cavil or argument, or you needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This Guarantee shall expire no later than the *[insert number]* day of *[insert month] [insert year]*,[2] and any demand for payment under it must be received by us at this office on or before that date. We agree to a one-time extension of this Guarantee for a period not to exceed *[six months] [one year]*, in response to The company's written request for such extension, such request to be presented to us before the expiry of the Guarantee.

[signatures of authorized representatives of the bank and the Supplier]

Annexure III- Contract Forms

[The successful Bidder shall fill in this form in accordance with the instructions indicated]

THIS CONTRACT AGREEMENT made the *[insert number]* day of *[insert month]*, *[insert year]*,

BETWEEN

1. (1) *[insert complete name of Purchaser]*, a *[insert description of type of legal entity, for example, an agency of the Ministry of .... of the Government of Bhutan, or corporation incorporated under the laws of Bhutan]* and having its principal place of business at *[insert address of Purchaser]* (hereinafter called "The company"), and

2. (2) *[insert name of Supplier]*, a corporation incorporated under the laws of *[insert country of Supplier]* and having its principal place of business at *[insert address of Supplier]* (hereinafter called "the Supplier").

WHEREAS The company invited Bids for certain Goods and ancillary services, viz., *[insert brief description of Goods and Services]* and has accepted a Bid by the Supplier for the supply of those Goods and Services in the sum of *[insert Contract Price in words and figures, expressed in the Contract currency/ies]* (hereinafter called "the Contract Price").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

The following documents shall constitute the Contract between The company and the Supplier, and each shall be read and construed as an integral part of the Contract, viz.:

(a) This Contract Agreement;

(b) The Special Conditions of Contract;

(c) The General Conditions of Contract;

(d) Technical Requirements (including Schedule of Supply and Technical Specifications.)

(e) The Supplier's Bid and original Price Schedules;

(f) The company's Notification of Award of Contract;

(g) The form of Performance Security;

(h) The form of Bank Guarantee for Advance Payment;

(i) *[Insert here any other document(s) forming part of the Contract]*

This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.

In consideration of the payments to be made by The company to the Supplier as

3. hereinafter mentioned, the Supplier hereby covenants with The company to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The company hereby covenants to pay the Supplier in consideration of the provision of the Goods and Related Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

5. IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Bhutan on the day, month and year indicated above.

6. For and on behalf of The company Signed: *[insertsignature]*

7. in the capacity of *[insert title or other appropriate designation]*in the presence of *[insert signature] [insert identification of official witness]*

8. For and on behalf of the Supplier Signed: *[insert signature of authorized representative(s) of the Supplier]*

9. in the capacity of *[insert title or other appropriate designation]*in the presence of *[insert signature] [insert identification of official witness]*

Annexure IV- Technical Specifications

Technical Specification for Diesel Generators

1. **Scope of Work:**

   Supply, installation, testing and commissioning of diesel generator sets including all accessories as per the detailed specifications.

Make	Compliance
Cummins/ Eicher TMTL	

2. **General Requirement:**

Description	**Compliance**
The Diesel Engine shall be of 'Generator set' application type & shall generally confirm to ISO 3046 / BS 5514 / IS 4722/1992 with amendments respectively	
Prime power in accordance with ISO 8528 110% overload in accordance with ISO 3046/1, AS2789, DIN6271 and BS5514	
The engine shall have Cold starting kit, alternator heater and space heater capability up to -5 deg. C and shall have capability to start directly to RUN speed (1500 RPM) without any interim warm up speed (Idle speed).	
The Diesel – Generator set shall comprise of a Diesel Engine of specified capacity, directly coupled to an Alternator of specified capacity mounted over a common base frame with Anti-vibro-mounts (AVM pad as recommended by Engine Manufacturer) The diesel engine shall be 3 stroke cycle multi cylinder, air cooled developing required BHP @ 1500 rpm under NTP condition of BS 5514 with an over load capacity of 110% for one hour in any specified 12 hrs of continuous operation.	

3. **Acoustic Enclosure:**

Description	Compliance
The enclosure shall meet the stringent noise levels and are to be certified for noise levels of 75 dbA	
The acoustic is composite in construction & is a fully assembled integral unit. A tough glass is to be provided for viewing the set	
The enclosure should be a weather resistant	
The enclosure should have panel window having a tough glass for viewing the set	

The enclosure should have a lockdown doors on each side and also exterior emergency stop push button to be provided	

4. Auto Mains Failure (AMF) Panel with Manual and Auto Start Control Module for Grid & DG system: 20/30/45 kVA, 230/415V

The Diesel Generator is to be supplied with AMF panel having RS485 port for connecting of remote monitoring system to be able to monitor and control the DG remotely. Further, it shall have the facility like monitoring, metering and controlling of DG set with PC interface facility. The unit shall be environmentally sealed; solid state and microprocessor based and shall have following minimum features.

AMF Panel Capacity: 20/30/45kVA kVA, 230/415V) with the following features:

	mpliance
When the Mains (Grid Power) is healthy, the Mains contactor should be ON. When Mains is unhealthy, i.e. no voltage, undervoltage, overvoltage, the Mains contactor should trip. The DG should NOT start automatically. The station should run on the back up batteries and as and when the station batteries have been dropped below its threshold value (say 46V DC), the DG should START automatically, develop the voltage and connect the DG breaker to Load. When the Mains is restored, the relay should monitor the Mains for healthiness for 05 minutes. Disconnect the DG supply and connect the Mains contactor ON. The DG should stop after 1 Minute (cool off time) and should go on standby mode again.	
When the AC mains power has recovered from the failure or has been resorted to normal conditions, the load shall be transferred back to AC mains supply and the standby diesel generator shall stop automatically.	
The start/stop control and load change over shall be possible by manual operation also.	
When any of the following trouble occurs, the diesel generator shall stop immediately and shall generate the following alarms: - Abnormal output voltage - Excessive output current - Over/Under speed - Fire/Smoke - Low lubricant oil pressure - Low fuel - Failure of starting of generator after 3 consecutive attempts.	

An emergency stop button shall be provisioned to shut down the generator. Upon operation all generator control functions shall be locked out so that it cannot be started until manually reset.	
An hour counter shall be provided to monitor the generator run hours. It shall be calibrated to read up to 99,999 hrs.	
The control panel shall have the facility to start/stop the generator manually in manual mode.	
On receipt of the stop signal the generator shall be allowed to run for a cooling down period. Once the engine has shut down, the panel should restore itself to a state of readiness to respond to any new start-up operation automatically without the necessity of any manual resetting	
AMF Panel should have the facility to activate cold start facility	
Metering shall be provided to monitor the voltage , current, frequency, power factor and output power (kW/kVA/kWH) of the mains and diesel generator output.	
Engine Protection: Mechanical protection of the engine: Low lubricating oil pressure (LLOP), High Engine Temperature (HCT), Low Fuel Level. Electrical Protection of Engine: Over voltage & Under voltage protection and over load	
Remote start/stop: AMF should have facility to start/stop the engine from central server.	

5. **Auto Mains Failure (AMF) Panel with Manual and Auto Start Control Module for Solar & DG system (Off Grid): 30kVA/230V**

The Diesel Generator is to be supplied with AMF panel having RS485 port for connecting of remote monitoring system to be able to monitor and control the DG remotely. Further, it shall have the facility like monitoring, metering and controlling of DG set with PC interface facility. The unit shall be environmentally sealed; solid state and microprocessor based and shall have following minimum features.

AMF Panel Capacity: 20 kVA, 230V) with the following features:

	mpliance
When the solar power is available, the system batteries and load should be operated through solar power. In absence of solar power (during night and bad weather condition), the DG should NOT start automatically. The station should run on the back up batteries and as and when the station batteries have been dropped below its threshold value (say 46V DC), the DG should START	

automatically, develop the voltage and connect the DG breaker to Load. Once the batteries are fully charged (say 55 V DC at 0 amps), the DG should stop automatically and again let the station run on batteries/solar. When the solar power is restored or when the batteries voltage reaches 55V, the relay should monitor the healthiness for 05 minutes., DG should be disconnected and stop after 1 Minute (cool off time) and should go on standby mode again.	
The start/stop control and load change over shall be possible by manual operation also.	
When any of the following trouble occurs, the diesel generator shall stop immediately and shall generate the following alarms: - Abnormal output voltage - Excessive output current - Over/Under speed - Fire/Smoke - Low lubricant oil pressure - Low fuel - Failure of starting of generator after 3 consecutive attempts.	
An emergency stop button shall be provisioned to shut down the generator. Upon operation all generator control functions shall be locked out so that it cannot be started until manually reset.	
An hour counter shall be provided to monitor the generator run hours. It shall be calibrated to read up to 99,999 hrs.	
The control panel shall have the facility to start/stop the generator manually in manual mode.	
On receipt of the stop signal the generator shall be allowed to run for a cooling down period. Once the engine has shut down, the panel should restore itself to a state of readiness to respond to any new start-up operation automatically without the necessity of any manual resetting	
AMF Panel should have the facility to activate cold start facility	
Metering shall be provided to monitor the voltage , current, frequency, power factor and output power (kW/kVA/kWH) of the mains and diesel generator output.	
Engine Protection: Mechanical protection of the engine: Low lubricating oil pressure (LLOP), High Engine Temperature (HCT), Low Fuel Level.	

Electrical Protection of Engine: Over voltage & Under voltage protection and over load	
Remote start/stop: AMF should have facility to start/stop the engine from central server.	

6. Remote Monitoring System should have the following Modbus data on RS485 for Mains and DG parameters with DG alarms for monitoring from central server.

atures	**odbus Address**	**mpliance**
ntroller Make: Deep Sea Controller Model No. DSE 4522 MKII or equivalent with RS485 Modbus Data for remote monitoring and controlling having the following parameters:		
Mains Voltage: Range- 0 to 720 V AC	1061	
Mains Frequency: Range – 0 to 70	1065	
DG Voltage: Range: 0 to 720 V AC	1033	
DG Frequency: Range – 0 to 70	1031	
DG Power Factor: Range -1 to +1	1555	
Load Current: Range- 0 to 99999	1046	
DG Battery Voltage: Range – 0 to 40	1029	
DG Fuel Level: Range- 0 to 130	1027	
Engine Temperature: Range- -50 to 200	1025	
Engine Oil Pressure: Range – 0 to 10000	1024	
Engine Speed: Range- 0 to 6000	1030	
DG Run Hour: Range – 0 4.29 X 10^9 Sec	1799	
DG Maintenance Due: Range- -2.14 X 10^9 to + 2.14 X 10^9 sec	1837	
G Alarms:		
nergency Stop	39426	
Low Oil Pressure	39426	
High Engine Temperature	39426	
Engine under speed	39427	
Engine over speed	39427	

DG low frequency	39427	
DG high frequency	39427	
DG low voltage	39428	
DG high voltage	39428	
DG low battery	39428	
DG high battery	39428	
DG fail to start	39429	
DG fail to stop	39429	
DG high current	39431	
Low fuel level	39431	

7. Starting System:

rting	mpliance
DG Cranking unit: 12V for 20 kVA/30 kVA, 230V DG set	
DG Cranking unit: 24V for 30 kVA/45 kVA, 415 V DG set	

8. Fuel System:

External Fuel Tank: 300 ltrs	Compliance
Tank shall have inlet & outlet pipe connections with inlet and outlet ball valves, filling cap drain plug, level indication & floor mounting stand (height of stand 600 mm above the floor) with safety interlocking system to avoid theft or loss of fuel Tank shall be painted with matching color of the Engine. The fuel tank shall be graduated and calibrated vertically to the capacity of 300 ltrs along the transparent level indicating glass/ polythene tube. Minimum of 40 graduations shall be done by clearly marking the level. The fuel line should be of GI pipe connected between DG and Fuel Tank through ball valve. Diesel tank size: 600 x 900 x 600 (WxDxH)	

9. Specification of Diesel Generator

No	scription	ecification	mpliance

	of Phase	gle Phase/Three Phase, 230V/415 V	
	ting at 0.8 p.f. 50 Hz	kVA, 20 KVA, 30 KVA, 45 KVA	
	gine RPM at rated Power	00 rpm	
	oss Engine BHP.	prox.: 25.7 (20KVA) 48.2 (30 KVA), 60 (45KVA)	
	pe of cooling	diator air cooled for 20 kVA, 1 phase. diator water cooled 30/45 kVA, 3 phase	

10. Acceptance Test at Site:

Acceptance Test at Site	Compliance
Deliverables: Factory test Certificates supporting spec. will be verified Type test / Heat run test: Certificate will be verified Heat run test for continuous 8 hrs will be conducted on available system loads at Delivery center, i.e. either in Pling or Thimphu. All consumables such as fuel, coolant and lube oil will be provided by supplier at the time of testing of the engine. Supplier has to arrange for sufficient manpower for round the clock operation & conducting performance tests at delivery centre, i.e. Pling or Thimphu.	
After successful test at site, the Generator will have to be installed, tested and commissioned by the supplier.	
Standard UAT/ commissioning test format to be provided by the supplier.	
The supplier must train our field engineers the basic O&M of the unit by a qualified engineer.	

11. Earthing System:

rthing System	mpliance
pper Electrode Maintenance Free Earthing system for neutral and body as per IS: 2 sets per site • Copper bonded earth electrode tri rod– 5ft long, 16 mm dia (2 nos per site) • Ground enhancement material (Carbon chemical) – 2X20 kg per site • Earth pit cover – 2 nos per site • 35 sq.mm, 1C, PVC insulated multistrand copper cable (green or green & yellow mixed)- 2 x 10 mtrs per site Note: - All the connections and joints should be connected and insulated properly with weather proof tape.	

- Earth pits should be connected with DG body/canopy and DG neutral using 35 sq.mm cable	

12. Submittals (after issuance of PO)

Submittals (after issuance of PO)	Complaince
Operation and Maintenance Manual (hard +soft copy)	
All the list of spares including engine model/sl. No and part nos with price with validity upto min 12 months	
Troubleshooting/Fault finding manual (hard +soft copy)	
Basic Tools (socket wrench set, hammer, pliers, filter remover, screw driver, safety googles, 11 kV insulated gloves – 1 pair, etc) per site.	

13. Warranty:

rranty	mpliance
System supplied shall be covered under a warranty period of not less than 12 months from the date of commissioning of the unit at site.	
ring the warranty period, any problem being encountered in the unit must be attended within 24 hours by a qualified engineer	
e supplier must have its dedicated engineers within Bhutan with adequate spares to attend any emergency calls and rectify within 24 hours. Supplier to provide the contact details of the engineers	

14. Safety:

In the course of the work, personnel working in the system at site should take utmost care for their safety and work purely at individual's/ party's risk. BT will not be responsible for any untoward accidents for the party's working personnel.	mpliance

15. Work Instructions:

rk Instructions	mpliance
Supply & Installation and Commissioning, termination of Power cable from DG to Power Control Panel is in scope of supplier:	
wer Cable having 25 sq.mm, PVC insulated aluminum 2 core armored UG to be supplied – Qty 25 mtrs per site	
Only the qualified electricians should do the other Electrical works.	

The supplier shall bring all the necessary tools and instruments required for erection, installation, commissioning and testing.	
the piping works for the fuel line must be done by the supplier	
gging of earth pits (2 sets per site), installation, testing, commissioning, etc to be carried out by the supplier	
For all electrical works such as crimping, terminal connections, ning… etc to be done with right size of lugs, etc and proper tools should be used.	
All the installation materials such as lugs, insulation tapes, etc to be provided by the supplier	
Wherever required, the DGs should be dismantled and assemble at site is in scope of the supplier	
All other works should be done strictly as per standard code of practice.	

A. Bill of Materials

A. Supply of DG Sets		y	it	te	nount
No	scription				
	kVA, 230V, 50Hz Diesel Generator Set including the following: i. Auto Mains Failure (AMF) Panel with Manual and Auto Start Control Module ii. Earthing System (2 sets per site) iii. Acoustic Enclosure iv. DG cranking Unit, 12VDC v. Cold starting kit vi. Power cables And other standard accessories as mentioned in detailed specifications(Pipes, fitting etc)				
	External Fuel Tank (300 ltrs), base tank optional with complete accessories such as pipes, fittings, etc		s		
	Fuel pipe, fittings and accessories for the existing fuel tanks		s		
	kVA, 1 ph, 50Hz air cooled Diesel Generator Set including the following:				

	i. Auto Mains Failure (AMF) Panel with Manual and Auto Start Control Module for Off-Grid Solar & DG system ii. Earthing System iii. Acoustic Enclosure iv. DG Cranking unit (12v DC) v. Cold starting kit, space/air heater for alternator d other standard accessories as mentioned in detailed specifications (Pipes, fitting etc)				
	kVA, 415 V, 50 Hz water cooled Diesel Generator Set including the following: 1. Auto Mains Failure (AMF) Panel with Manual and Auto Start Control Module 2. DG Cranking unit (24 V DC) 3. Cold starting kit, 4. Powercables–2core, copper multistarnd, PVC insulated- 100 mtrs with drum 5. Acoustic Enclosure 6. And other standard accessories as mentioned in detailed specifications(Pipes, fitting etc)				
	kVA, 415 V, 50 Hz water cooled Diesel Generator Set including the following: 1. Auto Mains Failure (AMF) Panel with Manual and Auto Start Control Module 2. DG Cranking unit (24 V DC) 3. Cold starting kit, 4. Powercables–2core, copper multistarnd, PVC insulated- 100 mtrs with drum 5. Acoustic Enclosure 6. And other standard accessories as mentioned in detailed specifications(Pipes, fitting etc)				
	kVA, 230V, 50 Hz – Portable Generator cooled petrol/diesel engine. ted output kVA: 5.5 kVA x output kVA: 7 kVA ted current: 25 Amps el Tank: min 19 ltrs				

	ight: less than 120 kgs rting system: Recoil and electric start heel: Hard plastic wheel ke: Yamaha/Honda/Kubota				
B.	Installation , Testing & Commissioning Charges for 20 kVA, (1 Ph), 30 KVA (1 Ph), 30 KVA (3 Ph) and 45 KVA (3 Ph)				