

**PEOPLES UNIVERSITY OF
MEDICAL & HEALTH SCIENCES FOR WOMEN
NAWABSHAH AT DISTT: SHAHEED
BENAZIRABAD**



Document for submission of Technical Proposal

**Information duly supported along with documentary evidence for
evaluation of eligibility criteria of firm to participate in bids based on
marks/score for evaluation**

"200 KVA D.G SET MANUAL/ AUTO WITH CANOPY"

Name of Department:	Project Director (Engineering Wing) PUMHSW, Nawabshah (S.B.A)
Name of Procuring Agency:	Peoples University of Medical & Health Sciences for Women Nawabshah.

Document issued to _____

1.0 Introduction

The basic aim of the submission of Technical Proposal is intended to eliminate, early in procurement proceedings, constructors that are not suitably qualified to perform the contract.

200 KVA D.G SET MANUAL/ AUTO WITH CANOPY

- Location:- Peoples University of Medical & Health Sciences for Women Nawabshah (Shaheed Benazirabad).

(i) **Scope: 200 KVA D.G SET MANUAL/ AUTO WITH CANOPY**

- **Eligibility:** Valid Registration with relevant tax authorities and Pakistan Engineering Council in relevant category and discipline is mandatory.
- Company must be certified from PEC in C3 category.
- Applicants will be informed, in due course, of the result of the evaluation of applications. The financial proposals of only technically qualified firms/bidders will be opened.

4.0 Section I. Instructions to Bidders/Applicants (ITB).

Clause 1 The firm/contactor shall enclose the (one original and one copy) of the documents in a sealed envelope which shall:-

- a) bear the name and address of the Applicant;
- b) be delivered by hand or through courier/registered mail to address mentioned in advertisement for pre-qualification or in document; and
- c) be clearly marked "Application for submission of Technical Proposal for;
200 KVA D.G SET MANUAL/ AUTO WITH CANOPY.

Clause 2 If the envelope is not sealed and marked as required, the procuring agency will assume no responsibility for the misplacement or pre-maturing opening of the document.

Clause 3 Document shall be prepared in the English language.

Clause 4 Firm/Contractor must respond to all questions and provide complete information as advised in this document. Any lapses to provide essential information may result in dis-qualification of the firm/contractor.

Clause 5 Clarification and Modification of Documents (SPP Rule 23).

Firm/Contractor, who has obtained documents, may request for clarification of contents of the bidding document in writing, and respond to such queries shall be made in writing within three calendar days, provided they are received at least five calendar days prior to the date of opening of bid.

Clause 6 Addendum: At any time prior to the deadline for submission of documents, the agency may amend the Document by issuing addenda. Any addendum issued shall be part of the Document and shall be communicated in writing to all who have obtained the prequalification document.

Clause 7 Deadline for submission of Documents (SPP Rule 22 & 24):

Documents shall be received by the agency at the address Office of the Project Director (Engineering Wing) Peoples University of Medical & Health Sciences for Women Shaheed Benazirabad & telephone 0244-9370427 not later than the **22th June, 2017 up to 12:00 p.m.** The procuring agency may, at its discretion, extend the deadline for the submission of documents by amending the Document, and in which case all rights and obligations of the Agency and the firm/contractors subject to the previous deadline shall thereafter be subject to the deadline as extended.

Clause 8 Evaluation (Rule 27 (2)): Firm's/Contractor's general and particular experience, personnel and equipment capabilities, and financial position, as demonstrated by the Applicant's responses in the prescribed forms will be evaluated as per evaluation criteria given in the document. The Procuring Agency reserves the right to waive minor deviations, if these don't materially affect the capability of an applicant to perform the contract. Sub-contractor's experience and resources shall not be taken into account in determining the firm/contractor compliance with the qualifying criteria. However, Joint Venture experience & resources shall be considered. Consortium or Association of firms will be considered for similar treatment as in case of Joint Venture.

Clause 9 Clarification of Prequalification Information (Rule 43): To assist in the evaluation of information, the agency may, at its discretion, ask any firm/contractor for a clarification of any information which shall be submitted within a stated reasonable period of time. Any request for clarification shall be in writing. If any firm/contractor does not provide clarifications of the information requested by the date and time set in the agency's request for clarification then application of the firm/contractor may be rejected.

Clause 10 Verification of Prequalification Information (Rule 28 (1d)): Verification of the information provided by the pre-qualified/shortlisted/ firms/contractors in the submissions for prequalification may be made. In case the information is found to be wrong or incorrect in any material way or firm/contractor is found to be lacking in the capability or resources to successfully perform the contract, then it shall not be pre-qualified.

5.0 Section II: Evaluation/Qualification Criteria.

1. Criteria based on Marks/Score.

Mandatory Provisions/Eligibility: Firms/Contractors must possess (i) valid registration certificate from income tax authority (NTN); ii) Valid registration with General Sales Tax Department, Sindh Revenue Board and (iii) is not black listed. (*Attach all certificates and affidavit of not black listing*).

(A) Company Profile.

- i. Period since Firm/Contractor is in construction business **10 Marks**
- Up to 2 years 02 Marks
- Up to 03 years 05 Marks
- Above 03 years 10 Marks

(Attach PEC license for each year)

- ii. Office facilities
- In Sindh province
- In any other province/Islamabad 01 Marks
- Outside Country 01 Marks

(B) General Experience Record 40 Marks

- i. Projects of similar nature and complexity 25 Marks
- Completed over last 05 years
- (5 Marks for each project)

(Attach satisfactory completion certificates)

- i. Projects of similar nature and complexity in hand. 15 Marks
- (5 marks for each project having cost **Rs: 5.00 Million** or above).

(Attach copies of work orders)

(C) Personnel Capabilities required for this project 20 Marks

Requirement of persons will vary from Project to Project.

Following factors may be used as a guideline.

Sr. No.	Description/Position with qualification & experience	Number		Remarks
	<i>Supervisor.</i>			05 Marks.
	<i>Technician.</i>			05 Mark.

	<i>Skilled Worker (Mechanic).</i>			01 Marks/person max: 05
	<i>Welder.</i>			02 Marks.
	<i>Helper.</i>			02 Marks.
	<i>Fabricator.</i>			02 Marks.

(D) Equipment Capability 15 Marks

- (a) *Critical equipment and number required for the Project shall be specified by the Procuring Agency.*
- (b) High value equipment should be an option to own, lease or hire.
- (c) Total equipment available with the applicant is to be listed along with its current mobilization on on-going projects.
(Details are to be provided in the attachment form)

(E) Financial Soundness /Status 15 Marks

For Financial Status assessment, the Applicants may be required to submit Audited Financial Statements for the last five years or any other document which verifies their Financial Status.

Where necessary, the Procuring Agency will make enquiries with the firm's/contractor's bankers.

Working Capital in hand for this project/work

(Attach proof of Bank Statement/Credit Facilities)

- i. Less than 15% of Estimated Cost of this Work 02 Marks
- ii. Less than 25% of Estimated Cost of this Work 05 Marks
- iii. Less than 40% of Estimated Cost of this Work 08 Marks
- iv. More than 40% of Estimated Cost of this Work 10 Marks

Qualifying Score is 60% but it is mandatory to obtain 40% in each section.

(2) Based on Yes/No or Pass/Fail system.

Mandatory Provisions/Eligibility: Firms/Contractors must possess (i) valid registration certificate of PEC in the required category for the year 2017 (ii) valid registration certificate from income tax authority (NTN); and (iii) in not black listed.
(Attach all certificates and affidavit of not black listing)

Required Documents: It must include following information/documents:-

(A) Firm/Contractor have been in business of construction at least for 5years.

(B) Experience and past performance.

- (i) Have completed Two (2) similar assignments having cost of each at least 75% of the project in the last five (02) years.

- (ii) Have executed at least one (1) project in similar geographical condition in last five (05) years

(Attach performance certificates of completed projects).

(C) Key Personnel Qualification & Experience.

(Requirement will vary from assignment to assignment).

- (i) **Project Engineers.** Qualification: BE (Electrical), Number: ().
Experience: () similar assignments,
() years experience.
- (ii) **Mechanical Engineer:** Qualification: BE (Mechanical), Number: ().
Experience: () similar assignment,
() years experience.
- (iii) **Supervisor:**
Diploma in Mechanical/ Electrical/Certificate Course
in I.T, ()
Experience: () years

(Brief CVs of personnel be attached).

(D) Equipment:

- (a) *Critical equipment and number for the Project shall be specified by the Procuring Agency. N.A*
- (b) High value equipment should be an option to own, lease or hire.
- (c) Total equipment available with the applicant is to be listed along with its current mobilization on on-going projects.

(Details are to be provided in the attached form)

(E) Financial:

- (i) Documentary evidence of financial position, bank statement or audited accounts of the last Three (3) years.
- (ii) Average Annual turnover of the last three years should not less than Thrice the cost of work.

(F) Any other information:

- (i) Details of disputes/litigation or arbitration with client.
- (ii) Any other document/information desired by procuring agency.

6.0 Section III: Application Forms;

A-I Application Submission Form (*The covering letter is to be submitted by the interested firm/contract or partner responsible for joint venture, on appropriate company letterhead*)

Date: _____

To

*The Project Director (E.W)
(PUMHSW) Shaheed Benazirabad.*

Dear Sir,

Subject: TECHNICAL PROPOSAL FOR 200 KVA D.G SET MANUAL/ AUTO WITH CANOPY.

I the undersigned, being duly authorized to represent and act on behalf of..... applies to be prequalified for the project cited above and enclose one (1) original together with one copy of Technical Proposal documents and declare the following:

- (a) I have examined and have no reservations to the Document, including Addenda No(s)....., issued in accordance with ITB Clause 6.
- (b) I understand that Procuring Agency may cancel the qualification process at any time and that procuring Agency is not bound either to accept any application that it may receive or to open financial proposals of technically disqualified bidders, without incurring any liability to the Applicants.
- (c) Bids by technically qualified applicants will be subject to verification of all information submitted at the time of bidding;
- (d) Agency reserves the right to amend the scope and value of any contract under this project.

2. The Procuring Agency and its authorized representative(s) may contact the following person(s) for further information, if needed;

3. Person to be contacted: Telephone:

The undersigned declares that the statements and the information provided are complete, true, and correct in every detail.

Signed:

Name:

A-II

1. Company Profile

Date: _____

Contract: _____

All individual firms and each partner of a joint venture applying for submission of Technical Proposal are requested to complete the information in this form.

1.	Name of firm (legal): <i>(In case of Joint Venture (JV), legal name of each partner:</i>
2.	Nature of Business: <i>(Whether the firm is a Corporation, Partnership, Trust etc.) (In case of Consortium; whether Lead Consortium Member is a Corporation, Partnership, Trust etc.)</i>
3.	Head Office Address:
4.	Telephone Fax numbers: E-mail address:
5.	Place of Incorporation/Registration: Year of incorporation/registration:
6.	Applicant's authorized representative: Telephone Fax numbers: E-mail address:
7.	NATIONALITY OF OWNERS.
	Name: _____ Country: _____

A-III

2. General Experience Record

- (i) **Details of Contracts of Similar Nature and Complexity completed over last 05 years**

Sr. No.	1	2	3	4	5
Name of Contract:					
Country					
Name of Procuring Agency With Address, Tele, Fax					
Nature of works and special features relevant to the contract for which applied:					
Contact Role (Mention: Sole, Sub Contractor or Partner in a Joint Venture).					
Value of the total contract in Pak/Rs:					
Date of Award:					
Date of Completion					

(ii) Projects of similar nature and complexity in hand.

Firms/Contractor and each partner of the joint venture should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received,

or for contracts approaching completion, but for which substantial Completion Certificate has yet to be issued.

Name of Contract	Value of Contract	Name of Procuring Agency	Value of Outstanding work (Equivalent Pak Rs. Millions)	Estimated Completion Date
1.				
2.				
3.				

(iii) Projects executed in similar geographical conditions in last five (5) years.

Sr. No.	1	2	3	4	5
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Name of Contract:					
Country & location					
Name of Procuring Agency With Address, Tele, Fax					
Nature of works and special features relevant to the contract for which applied:					
Contact Role (Mention: Sole, Sub Contractor or Partner in a Joint Venture).					
Value of the total contract in Pak/Rs:					
Date of Award:					
Date of Completion					

A-IV

4(A) Personnel Capabilities

Firms/Contractor should provide the names of suitably qualified personnel to meet the specified requirements stated in Section 3;

(Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

Sr. No.	Title of Position	Name
1.		
2.		
3.		
4.		
5.		

A-V

4(B) Curriculum Vitae (CV) for Proposed International or National Experts

1. Proposed Position: _____

2. Name of Firm: _____

3. Name of Expert: _____

4. Current Residential Address: _____

Telephone No: _____ Fax No: _____

E-Mail Address: _____

5. **Date of Birth:** _____ **Citizenship:** _____

6. **Qualification:** _____

7. **Work Experience:** Summarize professional experience in reverse chronological order.

Indicate particular technical and managerial experience relevant to the project.

From	To	Company / Project / Position / Relevant technical and management experience

A-VI

5. Equipment Capabilities

Firm/Contractor shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section 3 (Evaluation and Qualification Criteria). A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Sr. No.	Name of Equipment	Nos:	Marks	Total Marks	
1	Drill Machine.		02		
2	Air Compressor		02		
3	ECM ports		02		

4	Spanner Set		01	
5	Pipe Wrench		02	
6	Spindle Machine		02	
7	Star Set		02	
8	Hand Tools		02	

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Following information shall be provided if equipment is not owned by the Bidder.

Sr. No.	Name of Equipment	Name of owner	Address of owner	Contact name and title with Telephone Fax & E Mail	Agreements Details of rental / lease / manufacture agreements specific to the project
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

A-VIII

6. Financial Resources.

A. Banker's Information:

Sr. No.	Name & Address of Bank	Contact name and title with Telephone, Fax & E Mail	

B. Financial Status: *(Summarize actual assets and liabilities in Pak Rupees (Equivalent at the current rate of exchange at the end of each year. for the previous three years). A copy of the audited balance sheets should be attached..*

Information from Balance Sheet/ Income Statement	Year 1:	Year 2:	Year 3:
1. Total Assets (TA)			
2. Total Liabilities (TL)			
3. Current Assets (CA)			
4. Current Liabilities (CL)			
5. Total Revenues (TR)			
6. Profits Before Taxes (PBT)			
7. Profits After Taxes (PAT)			

C. Source of Financing: Specific proposed sources of financing to meet the cash flow of the project, net of current commitments.

No.	Source of financing	Amount
1		
2		
3		

Following formula will be used for evaluation:

Min Cash Flow = (10xworking capital) - (30% of current commitment) + (credit limit).

D. Annual turnover data (construction only)*

Year Amount and Currency Rupees in million

- 1
- 2
- 3
- 4

* Average annual construction turnover calculated as total certified payments received for work in progress or completed, divided by the number of years specified in Section III, Qualification Criteria. Normally not be less than $2 \times V/T$, the estimated annual turnover or cash flow in the subject contract based on a straight-line projection of the Employer's estimated cost (V), including contingencies, over the contract duration (T).The multiplier of two may be reduced for very large contracts but should not A-IX

7. Litigation History

Applicants, including each of the partners of a joint venture, should provide information on any history of litigation or arbitration resulting from contracts executed in the last five years or currently under execute). A separate sheet should be used for each partner of joint venture.

(A) Decided Litigation

Year	Award FOR or AGAINST Applicant	Name of client, cause of litigation, and matter in dispute	Disputed amount (current value Pak Rs. or equivalent)

(B) Pending Litigation

Year	Matter in Dispute	Value of Pending Claim in US\$ Equivalent	Value of Pending Claim as a percentage of Net Worth

**PUMHSW, SHAHEED BENAZIRABAD
LV POWER DISTRIBUTION**

**TECHNICAL SPECIFICATIONS
DIESEL GENERATOR**



1.1 SCOPE OF WORK

The work under this Section consists of the following.

Supply, installation, testing and commissioning and transportation of 200 KVA D.G Set manual/ auto with canopy

- a. , relevant material and all the allied accessories as specified herein or as given and in the Bill of Quantities.
- b. The generators are Prime rating, shall be placed as located in drawing on a 6" raised RCC pad or as required by generator supplier.
- c. The contractor shall discuss the electrical layout with the Consultant and coordinate at site with other services for the exact route, location and position of control/power cable and equipment.

The supplier shall prepare the complete shop Drawings based upon the installation manual of manufacturer and Bill of Quantities for showing the installation layout along with material / accessories to be used for the following.

- a) Installation, mounting and fixing details of the generators on the foundation pad
- b) Fabrication and Installation of Diesel Tank (Buried in ground)
- c) Layout drawings for relevant pipes of Diesel supply system.
- d) Fabrication and Installation of Cable Trays (where ever required)
- e) Fabrication details of supply fans, ventilation Fans and filters.
- f) Installation of ventilation Fans and Allied ducts.
- g) The Contractors shall perform test of leakage.
- h) The Installation contractor shall provide all coordination & supports to the Supplier to the commissioning of the Generators. (In case, of third party contractor)
- i) Fabrication and installation details / layout for lube oil Tanks.
- j) Fabrication and Installation details / layout for Diesel Day Tank.
- k) Layout drawings for relevant pipes of Flue Gas system.

1.2 TECHNICAL SPECIFICATIONS

1.2.1 General Performance Requirements

1.2.1.1 The generating sets shall be of standard design of reputed manufacturer as described in approved manufacturer list and other control to be of the generator manufacturer's, who shall have similar units in operations under similar applications & field conditions. The generator set shall comply with IEC 60034-1.

1.2.1.2 The generator set shall be specially designed for low ambient noise level, suitable for indoor use with a maximum noise level (dB) as mentioned in the summarized specifications attached here with. The bidder shall state with his bid the value of noise during operation.

1.2.1.3 Each generating set shall after reducing the power absorbed by the auxiliaries deliver continuous specified power output at 400 volts and 0.8 power factor, 3-phase, 50 Hz under full load condition, should have capability of voltage variation from 380-440V.

All auxiliaries, accessories and connection systems along-with all necessary cables, fittings, hardware etc. for complete vibration proof installation of prime-mover, generator, control panel including starting, inlet, exhaust, cooling system, etc. are to be included in the scope of supply.

1.2.1.4 The engine shall be directly coupled to the generator with a maximum r.p.m speed as shown in summarized specifications attached here with.

1.2.1.5 The engine-generator package shall be mounted on vibration proof spring / rubber pads. Heavy duty lifting eyes and jacking screws shall be provided on the skids. Supplier shall provide foundation design and shall supply foundation bolts and any other material / hardware for complete installation of the package. Any excessive torsional vibration shall be avoided for both engine and alternator.

1.2.2 Specifications for Diesel Fuel Engine Prime Mover

1.2.2.1 Engine shall be four strokes, compression ignition engine (preferably manual ignition).

1.2.2.2 Starting shall be done by the electric starter motor operated from 24V D.C lead acid batteries mounted on the skid. Batteries shall be provided by the supplier. The engine shall be equipped with an alternator type automatic charging system to charge the batteries during normal engine operation. The charger and batteries shall be adequate to satisfy the following requirements.

a. Crank the engine at firing speed for at least 15 second.

- b. Crank the engine three times for the above duration.
- c. Fully charged the discharged batteries within eight hours.

1.2.2.3 Overload Capabilities

Engine shall be of continuous rating with overload capability of at least 10% above the normal rating for up-to 1 hour continuously in any 12-hour period. The rating of gen-set shall be in accordance to ISO 8528 and overload capability shall be in accordance to the ISO 3046.

1.2.2.4 Air Intake

Air intake shall be naturally aspirated, equipped with suitable filter.

1.2.2.5 Engine Cooling

Engine shall be fan cooled, water radiator type supplied with guard. Cooling system shall have an engine centrifugal pump for cooling water circulation.

1.2.2.6 Exhaust System

Exhaust system shall be equipped with double residential type silencer complete with muffler exhaust manifold, flexible connector, exhaust elbow, rain cap, and associated fittings. The exhaust line shall be taken outside the building in the shortest possible way and not to include too many bends. The exhaust line should be insulated along its way from the engine to the termination point at the wall.

At the termination, protection shall be provided form rain, etc. All the piping should be insulated with the glass wool wrap and then steel jacket.

1.2.2.7 Speed Governor

Electronic governor (to be mentioned clearly along with the bids) shall regulate engine speed so as to maintain the generator frequency within + 2 % of the specified output frequency. Stable engine speed shall be restored within 10 second after the engine has been started shall be restored within 8 second of any sudden load change from no load to full load. During the change of load surging period, the speed shall not vary by more than rated speed.

1.2.2.8 Instruments

Skid mounted panel shall have calibrated gauge / meters to measure the following

Engine speed.

Lube oil pressure.

Engine oil temperature.

Engine water temperature.

Engine running hours.

Diesel level meter / indicator (For Diesel Generator)

Pressure Gauge meter

Battery charging current.

1.2.3 Fuel System

For Diesel Engine:

Engine shall be operated on commercial high speed diesel oil. A fuel oil strainer / filter shall be provided in the fuel line. Fuel system for diesel shall not require any priming.

Contractor shall also include complete fuel storage and transfer system. The tank shall have level gauge and pump to facilitate the pumping of diesel from drums / reservoir.

Contractor shall submit with the bid, details of fuel system and estimated fuel consumption at half, three quarter and full load operation. It shall have a vernier throttle control for speed adjustments.

1.2.4 Specification for Generator

1.2.4.1 Type generator shall be synchronous.

1.2.4.2 Excitation.

Excitation shall be brush less rotating diodes for 3-phase full wave rectification on mounted on the main shaft.

1.2.4.3 Windings

Alternator winding shall have class-H insulation with anti condensate heater for winding and shall be impregnated for tropical use.

1.2.4.4 Voltage Regulation

Voltage Regulator shall be solid state with provision for manual setting. Regulator shall be so designed as to protect the exciter when the generator is running at reduced

speed during starting or idling of the Prime-mover. Voltage regulation shall be $\pm 1\%$ from no-load to full load.

1.2.4.5 Over Load Capability

The generator shall be capable of carrying 1-hour overload of 100% of nominal rated current with field set for normal rated load excitation for any 12-hour period. The rating of gen-set shall be in accordance to ISO 8528 and overload capability shall be in accordance to the ISO 3046.

1.2.4.6 Short Circuit Protection

Generator shall be capable of withstanding a minimum time as specified in IEC 60034-1, without injury for a three phase short circuit at its terminal when operating at rated kVA and power factor.

1.2.4.7 Over Speed

Synchronous generator shall be so constructed that in case of emergency they will withstand an over speed of 25% without mechanical injury.

1.2.4.8 Deviation Factor

The deviation factor of the open-circuit line to line terminal voltage shall not exceed

1.2.4.9 Specifications for Control Panel

Control panel shall be skid mounted front access part of the engine-generator package. Removable bolt-on glands shall be provision to suit bottom entry. Panel shall be complete with all control wiring, pressure clamped terminal and lugs. Control panel shall be wired by flexible PVC insulated cable. All cables shall be suitable color coded and numbered for circuit identifications. Contractor shall submit with the bill all electrical and mechanical details and installation drawings. Panel shall be provided with connection for remote shut off operation.

1.2.5 Unit Control Section

This shall incorporate measuring instruments, instrument transformers, circuit breakers, voltage regulator, governor, voltage adjusting rheostat, battery charger, enunciators, indicating lamps etc.

1.2.5.1 Instruments

Following measuring instruments shall be provided.

- a. Ammeter with selector switch.
- b. Voltmeter with selector switch.
- c. Frequency meter (dial type).
- d. Kilowatt hour meter.

- e. Ammeter (charging current).

1.2.5.2 Safety Devices

Following alarm/shutdown enunciators and safety device shall be provided.

- a. Alarm and shutdown for.
 - High crank case low oil level.
- b. Alarm and lockout.
 - Over crank.
- c. Alarm and shutdown
 - Engine Over speed.
- d. Alarm for battery charging
- e. Winding temperature light alarm and shut down.

After shut down this set shall lock out and it shall not be possible to restart unless the fault has been removed and manually reset.

1.2.5.3 Circuit Breaker

All circuit breaker shall be triple-pole electromagnetic type with over-current under voltage, and short circuit protections.

1.2.5.4 Battery Charger

Battery charger shall be static type and shall supply a float charge to the batteries when the engine is not in operation. Work also includes the wiring from DB (HESCO) to charger.

1.3 TOOLS

A complete set of tools for routine operating and maintenance of engine and generator shall be furnished without additional cost. A detailed and comprehensive list of tools is to be provided by supplier along with the technical and commercial bid.

1.4 TECHNICAL DATA

Details to be provided with this quotation.

1.5 ENERGY METER / HOUR METER

An energy meter of suitable rating and to meet the requirement of electrical inspector to record the total operating hours of the generator an HOUR-OPERATION-METER shall also be provided.

1.6 VIBRATION ISOLATORS:

The generators should be securely fixed & mounted on rubber pad foundation to avoid transfer of vibrations to earth, foundation of building, walls etc.

1.7 FACTORY ASSESSMENT TEST:

Pre-delivery factory assessment test shall be performed in the presence of Consultant's representative. Refer annexure B for complete list of tests to be performed.

1.8 SPECIAL INSTRUCTIONS FOR THE BIDDERS

The supplier shall prepare the complete shop Drawings based upon the installation manual of manufacturer and Bill of Quantities for showing the installation layout along with material / accessories to be used for the following.

2.0 SUMMARIZED TECHNICAL REQUIREMENT:

DIESEL GENERATOR:

- Entire generator (i.e. Engine, Alternator and Coupling of Generator must be of European Origin or equivalent).

- Imported Canopy must be provided by genset manufacturer.

- Genset must comply with Declaration of Conformity and CE Certificate must be provided in Technical Submittal.
- Company must be certified from PEC in C3 category.
- Spare parts availability must be witnessed by the client / consultant

Power Rating (Stand By)	220 kVA
Power Rating (Prime)	200 kVA
Output Voltage	400 / 240V
Frequency	50 Hz
Efficiency	95%
Power Factor	0.8 (Lagging)
No. of phases	3
R.P.M	1500
Voltage regulation	<u>1%</u>
Excitation	Self-Excited
Insulation Class	Class H
Ingress Protection	IP 23 (with canopy)
Sound Level (without canopy)	<80 dBA @ 1 meter
Governor	Electronic
AMF	With Controller
Total Harmonic content (No Load)	< 2%
lubrication Oil Capacity	16-19 Liters
Generator Working Temperature (Ambient)	48-52 C° (Summer)
Fuel Consumption 110% 50 Hz	45-50 Liters/Hour
Fuel Consumption 100% 50 Hz	40-45 Liters/Hour
Fuel Consumption 75% 50 Hz	30-35 Liters/Hour
Fuel Consumption 50% 50 Hz	20-25 Liters/Hour

**PUMHSW
LV POWER DISTRIBUTION**

DIESEL GENERATOR

PART - BILL OF QUANTITIES
ELECTRICAL & ALLIED SYSTEMS

S.NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	DIESEL GENERATOR				
1	<p>Supply, installation, testing and commissioning of following Diesel Generator Set operating on 3-phase, 400V, 50Hz, 1500 rpm Prime Rated, Water Cooled Diesel generating set, suitable for operation at 50°C inside power house with control panel, AMF (with ATS) and 90% relative humidity assembled in accordance with their provided drawings / manuals and consisting of painted welded steel bed plate frame work to accommodate engine alternator complete with manual governor to give regulation to BS:5514 class A1, balanced flywheel, water jacket heaters energized by the incoming main supply, heavy duty starting batteries, battery charger, hour runs meter, KWH meter, emergency stop push button, radiator, with water level switch, fuel tank, piping works, consisting of black steel pipe schedule 40, fuel pump, exhaust system residential type silencer, 400/230 V, 50 Cycles/second, at 1500 RPM, for 3 phase 4 wire system.</p> <p>The work also includes but not limited to</p> <ul style="list-style-type: none"> - Transportation up to site, inside PUMHSW room. - 1/2 thick neuprene Sheet and - placement on foundation pads - Vibration Isolators, leveling and grouting <p>The work also includes all allied mechanical and electrical works including material, labor, tools, accessories etc.</p> <p>Genset shall be with built-in radiator and including all other accessories essential for transportation and installation of gen set.</p>				
A	200 kVA D.G Set , electronic governor with canopy, output prime rating 200 kVA, 160 kW, output standby rating 220 kVA, 180 kW (Unlimited Hours).	1	Job		
2	Providing and installation of remote AUTO/OFF/MAN selector switch . Complete with wiring in PVC conduit, Panel with all required facilities.	1	Job.		
3	On load testing of DG sets with material required for 12 hours operation inclusive of fuel, engine oil etc. Load should be provided by the client at site.	1	Job.		
4	Obtaining of NOC and Fitness Certificate for above Generators and Diesel Storage Tank form Concerned Authorities.	1	Job.		
5	The Rate of Manual 200kVA DG Set (Complete Set)	1	Job		
	<p>Note:</p> <p>1, Contractor have to provide all the accessories/device required for completion of system.</p> <p>2, Mention all owner supplied material/work along with the bid which are not included in the scope of work but required for completion of work.</p> <p>3. Preference will be given to such bidders who would quote Manual DG Set.</p>				
Total Amount (Rs.)					
Total Amount (Rs.) in words					

**PUMHSW
LV POWER DISTRIBUTION**

**LIST OF APPROVED MANUFACTURERS
FOR DIESEL GENERATOR**

S.No.	Manufacturers/Vendors
1	Diesel Generator
	Cummins
	Caterpillar
	F.G Wilson
	or Equivalent