

**INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE**

**TENDER NOTICE [Advt. No. CE/HPC/02/2010 ]**

The Director, Indian Institute of Tropical Meteorology, Pune-411008 (India) invites Sealed tenders under **TWO BID SYSTEM**, i.e., separate sealed tenders (Part-I –Technical Bid, Part-II Commercial Bid) from reputed Indian/foreign manufacturers/ authorized dealers OR their authorized Indian agents for supply, installation, commissioning and Demonstration of following items:

Sl. No	Tender Reference No	Description of Items		EMD IN(Rs)	Cost of Tender in(Rs.)
1	CE/HPC/HTBP/01/2010/	22 kV HT Breaker Panels,	JOB	1,00,000	1,000
2	CE/HPC/TF/02/2010	22/0.433 kV, 1600 kVA Outdoor ONAN Transformer .	(2nos.)	90,000	1,000
3	CE/HPC/UPS/03/2010	1) 200kVA UPS (n+1) configuration	(4nos.)	3,50,000	2,000
		2) 200kVA UPS(n+1) configuration compatible with Existing UPS 2 No.	(2nos.)		
		3) 60kVA UPS	(1nos.)		
4	CE/HPC//DG/04/2010	Minimum rating 600 kVA DGSET	(3nos.)	3,30,000	2,000
		600 kVA Synchronizing Panel For 4 X 600 KVA DG set	(1 nos)		
		HSD Buffer Tank & Fuel Transfer system for 4 x 600 kVA DG sets & 1 x 250 kVA DG set	JOB		
5	CE/HPC/EE/05/2010	External Electrical Work	JOB	5,00,000	5,000

Last Date of Issue of Tender :22.04.2010,  
 Due Date for Receipt of Tender : 28/04/2010 up to 1500hrs,  
 Date of Opening of Technical Bid : 28/04/2010 16.00 hrs .  
 For details, please visit our website <http://www.tropmet.res.in>. Tender documents can be either obtained on payment in the form of Demand Draft from Nationalized Bank Drawn in favour of Director IITM payable at pune, from the Administrative Officer, or may be downloaded from our website. IITM will not be responsible for postal or any delay and reserves the right to reject any or all tenders without assigning any reasons.

**Administrative Officer**

**TENDER DOCUMENTS**

**FOR**

**(TECHNICAL SPECIFICATIONS- PART 1)**

**FOR**

**600 KVA D.G.SET AND FUEL SUPPLY SYSTEM**

**AT**

**INDIAN INSTITUTE OF TROPICAL  
METEOROLOGY,PASHAN,  
PUNE.**

## TENDER NOTICE

Name of Owner	:	INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE
Name of Work	:	SUPPLY AND INSTALLATION OF, 3 NOS OF 600 KVA (minimum rating ) D.G.SETS, HSD BUFFER TANK & FUEL SUPPLY STSTEM FOR 4 X 600 KVA D.G. SETS , 1 X 250 KVA D.G. SET. ONE SYNCHRONISING PANEL FOR 4 X 600 KVA D.G. SET.
Cost of Tender documents	:	Rs. 2000/- (Non Refundable) in the form of Demand Draft from Nationalized Bank drawn in favour of "Director Indian Institute Of Tropical Meteorology, Pune".
Earnest Money Deposit	:	Rs 3, 30,000 (Three Lakhs Thirty Thousand only) in the form Demand Draft/Bank Guarantee from Nationalized Bank drawn in favour of "Director Indian Institute Of Tropical Meteorology, Pune".

- 1 Sealed item rate quotations are invited from reputed D.G. Set & A. M. F. Panel Contractors.
- 2 The tender forms will be issued upto **22.04.2010** during office hrs on payment of cost of tender document in the form Demand Draft from Nationalized Bank at the address given below.  
  
Administrative Officer's Office  
Indian Institute of Tropical Meteorology,  
Dr Homi Bhabha Road,  
Pashan, Pune- 411 008.
- 3 Pre-Bid meeting on – **23.04.2010 (1100 hrs.)**
- 4 Duly completed tenders shall be submitted in sealed envelopes at the office of owner on address given below on **28/04/2010 (1500 hrs.)** and opened on **28/04/2010 (1600 hrs.)**

Indian Institute of Tropical Meteorology,  
Dr. Homi Bhabha Road,,Pashan,Pune-411 008  
**Tel No 020 –25904200**

Contact Person : A . K. Saxena  
Civil Engineer  
**Tel No – 020-25904335**

- 5 The owner reserves right to accept or reject any or all the quotations without assigning any reasons shall not be bound to accept lowest quotation.

## Instructions To Bidders

- 1 The Tender is to be filled properly and all relevant information asked for shall be provided for in due format.
- 2 **The schedule of Rates shall be given in two sets.**
- 3 **All total amounts shall be written in words as well as in figures.**
- 4 Bidders are requested to give deviations / comments / assumptions clearly in deviation pages based on the site observations.
- 5 **Bidders are requested to specify the makes of materials to be considered.**
- 6 Duly completed tender shall be submitted to following address given below in sealed envelopes

**INDIAN INSTITUTE OF TROPICAL METEOROLOGY**  
PASHAN, PUNE

- 7 **Due Date and Time: 28/04 /2010 – 1500 hrs**  
The soft copy of technical bid duly filled tenders shall be submitted to IITM in the form of CD

**PROJECT INFORMATION:**

<b>OWNER</b>	:	<b>INDIAN INSTITUTE OF TROPICAL METEOROLOGY, PUNE</b>
<b>PROJECT</b>	:	<b>HPC BUILDING.</b>
<b>AVG. RAIN FALL</b>	:	900mm.(Average)
<b>TEMPERATURES</b>	:	42°(Max)
<b>INCOMING SUPPLY</b>	:	22000V 3 Phase, 3 Wire.
<b>DISTRIBUTION</b>	:	415 Volts, 3 Phases, 4 Wire.

**SCOPE: SECTION A –**

**D.G Set**

**I D.G. SET SUPPLY: –Minimum Requirement of 600 KVA-3Nos.**

The scope of D.G. set supply shall include.

1. Diesel engine suitable to operate on HSD, Radiator cooled with necessary fan, electronic governor, control module (AMF) & 1000 Amp ACB for outgoing without power module.
2. Permanent Magnet, Brushless alternator coupled to diesel engine pre aligned in shop.
3. Common base frame.
4. Residential Silencer.
5. 990 Litres fuel tank. (Inside the canopy)
6. Battery & Battery leads.
7. Protection relays. Necessary CT's shall also be included.
8. Adaptor box suitable for connecting cables as required.
9. Acoustic canopy.

**II D.G. Set Installation, Testing, Commissioning**

The scope of D.G. Set installation shall include.

1. Unloading of D.G. Sets on site, storage if required shifting of D.G. Sets on foundation.

2. Complete mechanical installation of D.G. Set on AVM on the foundation, checking of alignment & coupling after installation.
3. Supply and installation of exhaust piping of required size with residential silencer above canopy with end cap or as required for pollution clearance/ norms with supports.
4. Installation of exhaust piping with glass wool with aluminium cladding for internal portion.
5. All control & Power cabling inside the canopy (i.e. DG set to local control panel from dg set to ACB etc.)
6. Charging of Batteries.
7. First fill of all oil and 990 lit. Diesel required for preliminary testing.
8. Installation of adaptor box for alternator.
9. Testing and commissioning of complete system.
10. Statutory approvals for the installation from pollution control board and electrical inspectors.
11. Supply, installation, testing of complete earthing system required for DG installation.
12. The items which are not covered under the scope given above but are necessary for the satisfactory operation of the system is to be covered in the scope of DG Vendor.

### **SECTION B: (Relocation)**

Relocation of existing 250kVA DG Set as per Layout provided herewith on ready plinth.

#### **Existing DG Set Details:**

Kirloskar make 250 kVA DG Set with Acoustic canopy & 990litres diesel day tank (Separate outside the canopy)

Necessary required accessories, glass wool, fabrication material required is covered under the scope of DG Vendor.

DG vendor should visit site before submitting tender.

Testing, commissioning & statutory approvals after relocation is also covered in scope of DG vendor

### **SECTION C:**

#### **HSD Buffer Tank & Supply system for 4 x 600 kVA DG sets & 1 x 250 kVA DG set existing.**

The scope of HSD Buffer and supply system shall include.

1. Design, drawing for complete storage systems.
2. Providing detail drawings for civil requirements to be done on site.
3. Supply of 1No.990 ltr HSD Buffer tank duly tested.
4. Installation of tank on site.
5. Supply, installation, testing & commissioning of fuel pumping system from Buffer tank to day tanks including pumps, piping between Buffer tank and day tanks.
6. Supply, installation, testing, commissioning of suitable pump and motor for HSD systems to be installed in D.G. Room & flame proof push button stations in the yard with auto level controls.(for switching off the pump only).
7. Supply, installation, testing commissioning of control and power cabling for entire systems including level control wiring.
8. Level indicator at buffer tank.
9. Complete piping & accessories for overflow piping etc. including valves.
10. Construction of the pits as per requirement.

**Exclusions from scope –**

- a) Cabling outside the canopy.
- b) Major Civil work required for the installation but details should be provided by vendor. AMF Panel - DG Set assembly (Enclosed in canopy) should accompany with standard AMF logic. Bidder should refer SLD attached herewith for the same.

**Instructions for Pricing –**

- 1. D.G. set supply BOQ is separate and taxes etc are indicated separately in BOQ.
- 2. Installation of D.G. set and supply and installation of support systems is in separate BOQ. The rates quoted here shall be all-inclusive including the applicable taxes like, works contract and service tax No separate taxes shall be payable on this part of BOQ.

**Selection Criteria –**

Selection of the vendors will be purely based on commercial ground. Vendors will be short listed after opening of the technical bid as per matching of the requirements and detail specifications given in the tender. Commercial bids of the short listed vendors only will be opened for price comparative.

**L1 will be considered by accounting the cost of ownership; fuel consumption cost based on 2 Hours per day, 365 days in year for three years. Diesel cost shall be considered at Rs. 42=00 per Litre**

**ANNUAL MAINTENANCE CONTRACT**

Annual maintenance cost for three years including spares, tools and tackles required shall be quoted separately by bidder. This being a critical installation, no shut downs are possible hence Vendor may have to arrange a standby DG set in case of extreme emergen

**1. SCOPE**

This specification covers the requirements of design assembly, testing, supply and commissioning of LT Diesel Generator Set with associated Switchgears and Control Panels.

**2. SITE CONDITION**

**Ambient temp.** : 40° C  
**Climate** : Tropical

**3. ELECTRICAL SYSTEM DETAILS**

D. G. Set shall be water/ coolant cooled with radiator and shall be continuous duty.

**4. STANDARDS**

The Diesel Generator sets, accessories and control panel shall comply with relevant BS/IS or other internationally accepted standards including the following.

- BS 649** : Diesel Engines for general purpose.
- BS 2613** : Rotating Electrical Machinery.
- IS 4722** : Electrical performance of rotating electrical machines.
- IS 4728** : Terminal marking for rotating electrical machines.
- IS 4729** : Measurement of vibrations of rotating electrical machines.

**5. GENERAL REQUIREMENTS**

Diesel Generator set shall comprise of main equipment's specified in this para. Vendor shall also include any other accessories, equipment's required for the satisfactory operation of the DG set.

**5.1 DIESEL ENGINE**

The water cooled diesel engine shall suitably rated such that Alternator shall give defined KVA output after applicable de-rating considering site conditions. It shall be possible to draw rated output continuously 24 hours each day. The engine shall be suitable for starting from cold at min. ambient temperature and necessary accessories like pre heater etc. shall be supplied, if4 required.

Engine shall be multicylinder turbocharged heavy-duty industrial type. The Diesel Engine shall be suitable for operation on HSD.

**5.2. GOVERNOR**

The Governor shall be Electronic type with synchronous to 0 to 5% droop externally adjustable both manually and with motor for speed control.

**5.3. FLYWHEEL**

Shall be solid disc type accurately balanced. Suitable guard shall be provided for flywheel



#### **5.4. STARTING**

The engine shall be suitable for 24V DC motor starting. Necessary batteries and battery charger shall be provided and charger shall have constant potential characteristics which maintains the battery in peak condition at all times without causing excessive gassing. The input voltage for the battery charge shall be 240v, 50 HZ. One set of the batteries with necessary cables and jumpers shall be located near the engine or housed in the panel as specified. Battery shall be either sealed maintenance free & dry type or tubular lead acid long life (Low maintenance).

If pneumatic starting is offered it shall be complete with Compressor, Air Bottle, and Electronics Solenoid Valve etc.

#### **5.5. FUEL SYSTEM**

Engine shall be suitable for HSD fuel operation. The fuel system shall be equipped with fuel filters. The fuel oil day tank shall be sized to house fuel for eight hours. But the size of tank shall not exceed 990 liters.

The day tank shall be equipped with fuel return connection, vent sight glass, fuel level indicator switch for transfer pump control, overflow line, and drain valve.

All necessary fuel line pipes valves and other misc., piping materials from day tank to engine is in vendors scope. Alarm shall be provided for fuel low level and fuel high level in Day Tank.

#### **5.6. LUBRICATION**

Pressure feed lubrication system by means of engine driven gear type lubricating oil pump shall be included for lubrication of main and piston bearings, camshaft bushing, valves trains, etc.

For cleaning and filtration both by-pass and fuel flow lubricating oil filters shall be included. A hand priming pump shall also be included for priming of lube oil in case of Engines rated more than 750 KVA.

#### **5.7. COOLING**

Engine shall be water / coolant / cooled with radiator unless otherwise specifically asked for water shall be circulated by engine driven centrifugal pump around cylinder liners, Cylinders heads and injector sleeves.

Engine coolant shall be cooled by engine mounted fan assisted radiator of tropical capacity, driven directly from the engine. Fresh water quantity required for topping up shall be indicated. In case of heat exchanger cooled option, the heat exchanger shall be mounted on Engine. The other accessories like FRP cooling Tower with fan, RW pump and associated piping shall be in DG vendor's scope. Also Ancillary panel shall be provided. Pump in cooling circuit shall be electric driven and heaters shall be provided, if required.

#### **5.8. VENTILATION**

Vendor shall plan well ventilated layout such that clean cool and dry air flows over the engine and generator and that temperature rise of the room / canopy with DG in operation is within permissible limits of 7°C above ambient temperature. Radiator Exhaust ducting is being planned separately

#### **5.9. EXHAUST**

Exhaust system shall consist of Expansion Bellows, insulated exhaust manifold, silencers and other misc. piping materials as required, supply of total exhaust system from engine exhaust outlet flange is in vendors scope.

The exhaust system shall be so designed to maintain backpressure within permissible

limits. The exhaust outlet shall be outside the building and at a height stipulated by pollution control board. Necessary information for pollution control board for exhaust outlet height shall be obtained by vendor. The exhaust piping approachable and seen lengths shall be provided with proper insulation and aluminum cladding.

#### **5.10. ENGINE CONTROL MONITORING & PROTECTION**

Engine shall be equipped with following control monitoring and protection system.

- a) Over speed device for automatic shut down of engine independent of governor at speed of 10% above rated speed. The shut-down shall be enunciated in control panel.
- b) Tachometer shall be provided on engine panel for engine speed indication.
- c) Pressure gauge for lubrication oil shall be provided on engine panel.
- d) Temperature gauge for jacket water shall be provided on engine panel.
- e) For following condition an alarm and trip indication shall be given on control panel.
  - Lube oil pressure low.
  - Water temperature high.
  - Over speed stop. The engine shall be equipped with electric shut down valves.

#### **5.11. COUPLING**

The engine and the alternator shall be coupled with a fully flexible power coupling with suitable coupling guard. Arrangements shall ensure constant alignment and ease of maintenance.

#### **5.12. MISC. EQUIPMENTS**

All necessary misc. material/ equipment comprising of bearing (base) Plates and shims for setting up the DG set foundation, foundation bolts, nuts, washers, brackets, piping supports and any other necessary materials shall be provided. The base frame shall be provided with lifting facility and predrilled foundation holes. Anti vibrating pads shall be provided on the base plates.

#### **5.13. ALTERNATOR**

- a) The alternator design shall meet the Rated out put minimum 600 KVA, at 415v rated voltage, 0.8 P.F. 3 Phase, 4 wire, 50HZ AC.
- b) The alternator shall be mounted on a common base frame together with the engine.
- c) The insulation shall be class-F, The windings and overhangs shall be suitably braced to withstand the short circuit forces.
- d) Alternators should be preferably permanent magnet generators with 2/3 pitch winding (PMG for better starting & 2/3 pitch winding to eliminate third Harmonics.)
- e) The line and neutral ends of the windings shall be connected to six terminals mounted on insulated base of non-hygroscopic and fire proof materials. Suitable clamping and terminating arrangements for cables shall be provided.  
Alternator shall be star connected and star point (Neutral) shall be brought out into a terminal box on alternator for connection to earth. All parts and accessories shall be suitable to withstand stresses due to over speed /over load/short circuit conditions specified.
- f) The alternator shall be complete with following:  
Suitable terminal boxes for connecting cable with necessary extenuation of box & busbar arrangement.
  - Space heaters if required only due to atmospheric conditions- These shall be wired up to separate terminal box.
  - Lifting hooks.
  - Earthing terminals - 2 Nos.
  - Rating plate.

- f) Necessary terminal box suitable for cable connection shall be provided with Alternator.

#### 5.14. EXCITATION SYSTEM

The alternator shall have brush less self exciter-mounted on the same shaft.

#### 5.15. VOLTAGE REGULATOR

- a) Automatic solid-state voltage regulator shall be provided.  
b) The voltage regulator shall be complete with cross current compensation, voltage setting device and all accessories required for successful operation.

### 6. LOCAL CONTROL PANEL

#### 1. LCP

The LCP shall be with power module for DG set Only for Local Isolation. LCP shall provide

- a) Start/ stop provisions  
b) D.G.Set indications  
c) KWH metering  
d) Protection / fault indication Necessary CT'S shall be provided in adapter box with proper mountings control cabling for this is to be considered in scope.

#### 2. CONSTRUCTION

The panels shall be free standing, floor mounting compartmentalized cubicle type panels with framed structure and bottom channel frame of suitable section. The frame structure shall be rolled/folded sheet section of 2.0 mm thick sheet. Partitions shall be 1.6mm thick. Doors and gland plates shall be 2.0 mm thick. The panel shall be dust and vermin proof with neoprene gasketing. All doors shall be provided with concealed hinges, necessary Earthing arrangement and shall be provided with bracings wherever required to avoid deformation. Easily openable door locks with common key shall be provided for all doors including alleys. Bolts should not be provided for fixing doors except for busbar chambers.

#### 3. CLEANING AND PAINTING:

The fabricated sections shall be thoroughly cleaned by 7-tank process, which include alkaline degreasing, cold water rinsing, acid pickling, water rinsing, phosphating and pacivation. Panels shall then be powder coated unless other wise specified including corrosion resistance treatment. **No alternative treatment or part treatment other than 7-tank process is acceptable.**

In case enamel painting is to be done corrosion resistance treatment shall be done under controlled conditions and then two coats of stoving enamel paint of approved shades shall be given. The paint / powder coating shade shall be RAL 7032 unless otherwise specified.

#### 4. MEASURING INSTRUMENTS AND INSTRUMENT TRANSFORMER:

All meters on panels unless other wise specified shall be digital meters either individual or combined with minimum class 1 accuracy and will be calibrated. These will be flush mounting type.

Direct reading instruments shall be in confirmation with IS 1248 and of accuracy class 1.0. All analog meters wherever used shall be flushed mounting type with minimum 96 x 96mm size and in dust proof enclosures. The meters shall have white dials with black scales. All meters shall have sealing arrangement and zero adjustment screw from outside. Voltmeters and ammeters shall be moving iron type with suitable selector switches and protective MCB's for potential circuits.

The current transformers shall be single pole wire wound resin cast accuracy class 1.0 for metering and 5p for protection. Separate CT's shall be provided for metering and protection. The polarities shall be prominently marked CT circuits shall be wired with 2.5 sq.mm. Multistoried copper wires. CT's shall not be kept open and terminal-shortening arrangement shall be provided.

PT's wherever specified shall be of appropriate voltage class and 100 VA Burden. All Main & DG incomers shall be provided with Digital LOAD MANAGERS unless otherwise specified instead of regular meters. LOAD MANAGERS shall provide minimum voltages, currents, KW, KVA, KWH, KVA Rh, frequency, Cos Ø % harmonics, Maximum demand KVA reading with scrolling. These will be with RS 485 port for down loading data. LOAD MANAGER should be able to store last 8 days data, which can be downloaded. Necessary software for Load Manager shall be provided.

#### **5 INDICATION AND CONTROL :**

The control switches shall be rotary type with suitable isolation transformer provided for control supply. Control supply bus shall be provided wherever necessary. Indicating lamps shall be LED Type only with translucent lamp covers. Push buttons shall be momentary contact type with suitable colour code and shall be fitted with integral marker plate. The control wiring shall be with 1.5 sq.mm. multistrand 1100V grade copper wire except CT Circuit which shall be with 2.5 sq.mm. wires. Identification ferules and colour coding shall be used for all wire. MCB's for protection shall be provided wherever required. The control wires shall be bunched and dressed properly and shall not be left hanging. Control MCB's shall be provided in all potential circuits.

#### **6 SYSTEM OPERATION**

The Diesel Generator set shall be either suitable for manual start or auto start. In manual mode started manually by an operator & in auto start the Diesel Generator shall start on receiving an impulse from certain relay, mostly it shall be under voltage relay. In either case the DG set may be required to work in isolation.

#### **7 MANUAL MODE**

In this mode of operator shall manually start the engine from local panel of engine after carrying out necessary initial steps, The operator shall close the outgoing circuit breaker after the voltage builds up to rated value.

#### **8 ENGINE PANEL**

On this panel annunciation for following unhealthy condition shall be provided.

- Lube oil pressure low.
- Water temperature high.
- Engine over speed.

In case of unhealthy condition both hooter and annunciator will get energized, Accept PB will silence the hooter and reset PB will reset the annunciator.

#### **9 ENGINE SPARES TOOLS & TACKLES**

Vendor shall furnish complete list of spare for three years of satisfactory operation along with unit price and suggested quantity.

Vendor shall quote for complete set of tools and tackles required for maintenance of engine and alternator.

## 10 DRAWING AND DATA

- 10.1 Following documents shall be furnished along with the offer without which offer without which offer will not be considered.
- a) Plan & Sectional Layout of DG Area showing various auxiliary and panels. Size of DG plinth shall be as specified.
  - b) GA of panels showing arrangement of various devices on panels.
  - c) P & I Diagram for the following :
    - I. Lube Oil System.
    - II. Fuel Oil System.
    - III. Cooling water System.
- 10.2 Following documents shall be furnished in triplicate for purchaser comments / approval within 3 weeks after placement of LOI Vendor shall incorporate Client/consultants comments on these drawings and furnish revised / final drawing in 3 sets for inspection final 6 sets of AS BULITS" drawings.
- a) Layout of DG Area with all accessories weight of equipment, maintenance space etc. clearly indicated.
  - b) Wiring and scheme diagrams for LT system and control system of D.G. set.
  - c) P & I Diagrams for the following system.
    - I. Lube oil system
    - II. Fuel oil system
    - III. Cooling water system.
  - d) Foundation drawing of a DG set with static and dynamic loading / center of gravity of loads and location of all loads.
  - e) Foundation requirement of all auxiliaries like compressors heat exchangers, tanks cooling tower etc.
  - f) Bill of material for DG Set, Fuel oil system cooling water system, lube oil system electrical system (including cables engine and alternator control system (including cables)
  - g) GA of panels showing arrangements of various devices on panel and foundation details.
  - h) Test Certificates
  - i) Installation. Operational & maintenance Manual.

## II. SPECIFICATIONS FOR HSD STORAGE SYSTEM

### SCOPE:

The scope of system includes design, supply & installation of Buffer tank, unloading system, outdoor type flame proof fuel pumps , outdoor ON/OFF flame proof starter, piping from Buffer tank to Day tanks with necessary, level switches complete as per general specification provided. The entire system shall meet petroleum act codes 1957 requirements.

### HSD TANK:

Buffer tank shall be 1 No. 990 ltr capacity fabricated from MS plates minimum 6 mm for body & 8 mm for sides. The tank shall be treated with anticorrosive treatment from inside and outside as per requirements. The tank shall be tested for leakages under 7.5 Kg/cm<sup>2</sup> water pressure. (Civil contractors will carry out necessary civil work but contractor shall provide civil requirements with drawings.)

### PUMPS:

1 No. pump with motor of appropriate ratings shall be provided for diesel pumping from barrels/ tankers to buffer tank at 3 meters height. Pump motor shall be flameproof outdoor duty (Zone2 EExd IIB T3 IP55) with necessary outdoor rain hood provided for protection.

### **Push Button Station:**

Flameproof Push Button Station (Zone2 EExd IIB T3 IP55) shall be provided with suitable size incomer and busbars based on pump ratings. Pumps shall be provided with starters / or relays and semi automatic start stop operation based on the level switches (maximum) to be provided on Buffer tank. Overriding manual ON/OFF shall also be provided on Push Button Station

Each feeder will have O N, OFF, TRIP indications and shall also provide high fuel level indication.

### **PIPES:**

3/4" diameter class 'B' MS pipes or suitable diameter as required with necessary surface coating shall be used for transfer of HSD from Fuel transfer pump to the day tanks. The pipes shall be properly joined to avoid leakage. The line shall be tested for a pressure of 7.5 Kg / cm<sup>2</sup>. Necessary control valves, NRV's strainers, filters etc., shall be provided for proper controls and maintenance. Layout with locations of HSD system, D.G. set piping route are provided for reference. Bidders are required to submit entire details of system offered with bids with sizes, details, makes, ratings.

### **III. HSD pumping CONTROL & ALARM REQUIREMENTS**

HSD shall be pumped to buffer tank situated at 3 mtr height as shown in drawing(drawing no-0810/EL/01A).

The HSD shall be taken from HSD barrels through Flexible steel braided hose of suitable length via pump & delivered to the Buffer tank through MS piping.

The pump shall be started manually with remote ON/OFF push button station provided nearby the pump assembly.

The pump shall be started manually by remote push button station & the HSD shall be Sucked from HSD barrels through Flexible steel braided hose by pump. The pump shall transfer the fuel to buffer tank. As soon as the level in buffer tank reaches the HH level (High level sensor/ transducer) the pump will get stopped automatically.

However if pump does not stop buffer tank shall have an overflow pipe which will get opened in overflow tank to avoid spillage of HSD on ground in case of malfunction of system only.

The stored HSD from Buffer tank then fed to each Day tanks (i.e. DG 1 Day tank, DG 2 Day tank, DG 3 Day tank, DG 4 Day tank & DG 5 Day tank) by means of gravity.  
Each DG Day tank is filled manually with the help of ball valve provided near DG Day tanks.

## APPROVED LIST OF MATERIALS

CTS'	:	AE / Kappa / C & S
Indicating Lamps (LED only)	:	Altos / RASS / Teknik
Push Buttons	:	L & T / Rass / Teknik
Relays (Protections)	:	EE / AVKSEGC / ESSUN. / ABB / L & T
MCB	:	MDS (Lexic) / GROUP SCHNEIDER (MG) / L & T – Hager
Wires (HRFR)	:	Finolex / LAPP / RR
Meters (digital) / Load Manager	:	Wago Control / Connectwell / ELMEX
Connectors (Colour coded)	:	Enercon / Secure / Ducti / HPL
Timers	:	L & T / MDS / Minilec
Selector switches	:	Kaycee / Sulzer / Teknik
Insulators	:	Vinayak or equiv.
ACB	:	L&T/ Group Schneider/Siemens
AMF Relay	:	Own With Engine /Deepsea/Woodward

**DEVIATIONS FROM GENERAL  
CONDITIONS OF CONTRACT**

All deviations from general condition of contract shall be filled in hereby the bidder.

<b>SECTION</b>	<b>CLAUSE NO.</b>	<b>DEVIATION</b>
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The bidder hereby certifies that the above mentioned are only deviations from general conditions of contract of enquiry.

**DATE**

**Signature And Seal of Bidder**



**DEVIATIONS FROM TECHNICAL  
SPECIFICATIONS**

All deviations from specification shall be filled in hereby the bidder.

<b>SECTION</b>	<b>CLAUSE NO.</b>	<b>DEVIATION SPEC. NO.</b>
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The bidder hereby certifies that the above mentioned are only deviations from technical specifications of this enquiry.

**DATE**

**Signature And Seal of Bidder**

## TERMS & CONDITIONS

### ENQUIRY NO: CE/HPC/DG/2010/04

- 1) The Tenderers are requested to give detailed sealed tender in two Bids i.e.  
Part – I Technical Bid.  
Part - II Commercial Bid, both the bids addressed to the Director, Indian Institute of Tropical Meteorology, Dr. Homi Bhabha Road, NCL Post, Pashan, Pune – 411 008, INDIA.
- 2) This tender is not transferable.
- 3) If a request is made to IITM for Tender Documents a sum of Rs.2000 (Rs. Two Thousand only) (Non-refundable) has to be paid in the form of Demand Draft drawn from Nationalized Bank in favour of “The Director, Indian Institute of Tropical Meteorology, Pune”. In case the bidders download the Tender Documents from the website of the Institute, the document fee Rs.2000 (Rs. Two Thousand only) in the form of Demand Draft is required to be enclosed while submitting the tender. Otherwise tender will not be considered.
- 4) Tenders addressed to the Director, Indian Institute of Tropical Meteorology, Pune 411008 are to be submitted for each item in duplicate in two separate cover, under two bids system. Superscribed with Tender No. CE/HPC/DG/2010/04 for purchase of “**D. G. SET Qty 03 No., AMF cum Synchronization Panel Qty. 1 No. , HSD Buffer Tank for Fuel transfer system**” – due on **28/04/2010.(1500 hrs.)**
- 5) You have to submit two separate bids in two separate envelopes and you may keep both the bid envelopes in an envelope for sending to us.  
  
One envelope will contain only the TECHNICAL SPECIFICATIONS of the indented equipment.  
  
Another envelope will contain only the financial bid in which price and any other information, which has financial implications, will only be given.  
  
The main envelope, which will contain both the bids, should be super scribed with our tender enquiry No.**CE/HPC/DG/2010/04** due on **28/04 /2010.(1500 hrs.)**
- 6) Please indicate page nos. on your quotation ex. If the quotation is containing 25 Pages, please indicate as 1/25, 2/25, 3/25 ---- 25/25.
- 7) Cost of the items should be mentioned clearly in the Commercial Offer (Part-II) only. The optional and any other essential items / accessories required for the maintenance of the equipment for the next three years should also be specified in the offer separately.
- 8) Last date for the receipt of completed tender is up to **1500 hrs. on 28/04/2010**. Tenders will be opened at **1600 hrs. on 28/ 04 / 2010** in the presence of the representatives of the vendors present.
- 9) The tender must be valid for a period of at least 90 days from the date of opening.

- 10) The purpose of certain specific conditions is to get or procure best Equipment / service etc. for IITM. The opinion of Technical Committee shall be guiding factor for Technical short listing.
- 11) Supplier shall finally warrant that all the stores, equipment and components supplied under the SUPPLY ORDER shall be new and of the first Quality according to the specifications and shall be free from all the defects (even concealed fault, deficiency in the design material and workmanship).
- 12) Tender must clearly indicate the features offered, unit price, VAT tax, transport, transit-insurance, installation charges. Institute cannot furnish any certificate for exemption or reduction in VAT tax or any other duty/tax. The vendor should mention the price of the equipment and the duties/taxes to be paid such as customs duty/excise duty/VAT taxes etc. separately.
- 13) The complete equipment including operational manuals should be supplied within stipulated period mentioned in the supply order and the vendor should install and commission the equipment within **fifteen days** after the delivery of the equipment.
- 14) i) As this Institute is exempted from payment of Custom Duty and Excise Duty, exemption certificate will be issued on request.  
ii) The Institute is exempted from payment of Octroi Duty. Necessary certificate will be issued on request, if required.
- 15) The equipment must carry comprehensive on-site warranty for **One Year** from the date of commissioning of the equipment after the acceptance tests. Warranty period will stand extended for a period of total downtime of the DG System.  
  
Further, optional quotation should be quoted separately for extendable warranty by two more years i.e. 1+1 year.
- 16) The vendor has to furnish a Bank Guarantee to the extent of 10% of the order value from a nationalized bank in the prescribed format valid for the entire period of warranty including extension if any.
- 17) No advance will be paid.
- 18) The prices shall be quoted as per the annexure.
- 19) The payment terms shall be as follows:
  - i) 70% payment against delivery.
  - ii) 20% payment after satisfactory installation, commissioning and successful completion of acceptance tests and training.
  - iii) 10% payment after execution of Bank Guarantee from a Nationalized Bank and successful completion of acceptance test. The Bank Guarantee will remain valid until the expiry of warranty period including the extensions if any.

- 20) The prices quoted should be firm and irrevocable and not subject to any change whatsoever, even due to increase in cost of raw material components and fluctuation in the foreign exchange rates and excise duty.
- 21) Vendor should arrange appropriate training to the users free of charge.
- 22) Indicate the names of the Indian reputed Organizations where you have supplied the similar equipment and may attach the satisfactory performance report of the equipment from user Organization.
- 23)
  - a) If you have supplied identical or similar equipment to other Institutes under Ministry of Earth Sciences and Ministry of Science & Technology, the details of such supplies for the preceding three years should be given together with the prices eventually or finally paid.
  - b) Based on the above information IITM will have its option to obtain details of the equipment, their performance, after sales services etc. for evaluation of the tender, directly from the concerned Labs. /Scientists etc.
- 24) The Institute is autonomous scientific research organization under the Ministry of Earth Sciences and is a recognized center for studies leading to M.Sc. and Ph.D. of the University of Pune and various other Universities. As such, all possible concessions / discounts / rebates applicable for educational Institutions may be given.
- 25) The vendor should have appropriate facilities and trained personnel for supply, installation, commissioning and warranty-maintenance of the equipment to be supplied. Detailed information in this regard may be furnished.
- 26) Kindly attach a copy of your latest DGS&D, New Delhi registration Certificate under the compulsory Scheme of Ministry of Finance regarding the registration of Indian Agent of foreign supplier wherever it is applicable.
- 27) The Tenderer is required to furnish the Permanent Account Number (PAN) & Service Tax Number Allotted by the Income Tax Department.& other concern department. If registered with the National Small Industries Corporation, the registration number, purpose of registration and the validity period of registration' etc. should also be provided in Technical Bid for Indian Agents.
- 28) Vendor should clearly mention the following:
  - **Make and model of every item quoted.**
  - Delivery period.
  - Company profile with a list of those institutes/users should be attached where vendor has supplied the equipments in question in past.
  - A letter of AUTHORISED REPRESENTATIVE from the Principal should invariably be attached with quotation
  - A copy of latest Income Tax clearance Certificate from Income Tax Department (INDIA)

- 29) Discount offered should be mentioned clearly in the commercial bid only.
- 30) The Tenderers are requested to quote for Educational Institutional Price for Equipment and Software, since we are eligible for the same.
- 31) Acceptance tests to be prescribed later will be carried out after installation and the items will be taken over only after successful completion of the acceptance tests.
- 32) The Equipments are required to be installed at **IITM, Pune** and subsequently Training is to be provided to the concerned persons of the Institute.
- 33) The item should be supplied with manuals and the manuals including technical / Electronic drawings / circuit diagrams should be complete in all respects to operate the system without any problem.
- 34) The Tenderer has to state in detail the Electrical Power is needed to house the system and to run the tests. i.e. pre-installation facilities required for installation may please be intimated in the technical bid.
- 35) Goods should not be dispatched until the Vendor receives a firm order.
- 36) The Date and Time of opening for Part-II (Commercial Bid) will be intimated only to pre-qualified and technically acceptable Tenderers for the item at a later date.
- 37) **Earnest Money Deposit:**
  - a) The Earnest Money Deposit of Rs.3,30,000/- (Rs.Three Lakhs Thirty Thousand Only) must be paid / sent along with your technical bid in the form of a Demand Draft, Banker cheque or Bank Guarantee (from a Nationalized Bank only) drawn in favour of The Director, Indian Institute of Tropical Meteorology, Pune payable at Pune, otherwise your bids will not be considered.The Earnest Money of successful bidder will be returned only after installation, commissioning, satisfactory demonstration and on acceptance of the equipment by the user Scientist / HOD as per the terms of our purchase order. If the successful bidder fails to fulfill the contractual obligations before the due date, he will forfeit the EMD.  
The Earnest Money of the unsuccessful bidder whose technical bid has not been found suitable will be returned within 20 days after receipt of Technical Committee recommendations.
  - b) Those who are registered with Central Purchase Organization (e.g. DGS&D), National Small Industries Corporation or the concerned Ministry / Department need not to furnish EMD along with their bids.
- 38) Part and incomplete tenders are liable to be rejected.

- 39) Conditional Offers will not be considered.
- 40) The tenders must be clearly written or typed without any cancellations / corrections or overwriting.
- 41) **Fax /E-mail /Telegraphic /Telex tenders will not be considered.**
- 42) IITM will not be responsible:
- a) For delayed / late quotations submitted / sent by Post / Courier etc.
  - b) For submission / delivery of quotations at wrong places other than the Office of Director, IITM, Pune
- 43) If the supplier fails to Supply, Install and Commission the system as per specifications mentioned in the order within the due date, the Supplier is liable to pay liquidated damages of one percent value of the Purchase Order awarded, per every week delay subject to a maximum of 10% for every week beyond the due date and such money will be deducted from any money due or which may become due to the supplier.
- 44) In case of any dispute regarding part-shipment, non-compliance of any feature etc., the Director, Indian Institute of Tropical Meteorology, Pune will be the final authority to decide the appropriate action and it will be binding on the vendor.
- 45) Last Date and Time for receipt of Tenders: **Upto 1500 hrs. on28 /04/ 2010.**
- 46) Date and Time of opening of Tenders: **At 1600 hrs. on 28/04 /2010.** (Part - I Technical Bid only)
- 47) **ACCESS TO WORK :**  
Owner / Engineer or their authorized representative shall have access to works being carried out at all reasonable times. No person, not authorized by owner/engineer except representatives of public authorities shall be allowed at work site at any time.
- 48) **SUB-CONTRACT :**  
The complete work included in the contract shall be executed by the contractor and the contractor shall not sub-contract/sub-let work or part thereof without prior written consent from owner/engineer. However, contractor shall not be relieved from the responsibility of execution of works as per contract under any circumstances.
- 49) **COMPLETION CERTIFICATE:**  
  
The work shall be deemed to have been completed on written certificate by Engineer that they have been virtually completed. The "Defect Liability Period" shall commence from the date of such certificate.  
  
Contractor shall be responsible for injury to person animal or things for all damages caused to property from operations or neglect of himself or his employees / subcontractors. The contractor shall indemnify owner / Engineer and their employees and hold them harmless in respect of any and all expenses arising from such injury or damage and claims arising there of.

- 50) **INSURANCE & INDEMNITY**  
Contractor shall have valid PF, ESI registration. All laws related to Labour, PF, ESI, Medical insurance etc, shall be adhered to by contractor. No child Labour shall employ by contractor.
- 51) **EXTENSION OF TIME:**  
If in the opinion of owner/engineer the work is delayed (a) by force majored, (b) by reasons beyond control of contractor, extension of time for carrying out the works can be sanctioned by owner/engineer on written request from contractor with due reasoning / supporting.
- Force Majored shall mean & include compliance with statutory laws & regulation, Government order or change in orders, war & war like conditions acts of civil & military authorities, fires, floods, earthquakes and other acts of God, sabotage, revolt, Strikes & lockout of more than 2 weeks. However contractor & owner in such case should devise means of expediting the progress for performance as per contract.
- 52) **TECHNICAL SCRUTINY OF FINAL BILL:**  
The owner shall have right to get works and bills technically scrutinized at the time of payment of final bill. Owner shall be entitled to recover any money found to be over paid or over certified during such scrutiny.
- 53) **PERFORMANCE GUARANTEE:**  
The contractor shall guarantee performance of plant and equipment and workmanship against fault for a period of 12 months called as "Defect Liability Period".
- 54) Director reserves the right to reject any or all tenders without assigning any reason.

(Venkatachalam.G )  
Administrative Officer  
For Director  
Email: [venkat@tropmet.res.in](mailto:venkat@tropmet.res.in)  
Tel: 020-25904203

## ANNEXURE –'A'

### BID SECURITY FORM

Whereas 1 (hereinafter called " the Bidder") has submitted its bid dated (date of submission of bid) for the supply of \_\_\_\_\_ (name and/or description of the goods)(hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that WE \_\_\_\_\_ (name of bank) of (name of the country), having our registered office at (address of bank)(hereinafter called "the Bank"), are bound unto (name of Purchaser) (hereinafter called "the Purchaser") in the sum of \_\_\_\_\_ for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this \_\_\_ day of 20\_\_ THE CONDITIONS of this obligation are:

1. If the Bidder withdraws it's bid during the period of bid validity specified by the Bidder on the Bid Form; or
2. If the Bidder, having been notified of the acceptance of it's bid by the Purchaser during the period of bid validity:
  - a) fails or refuses to execute the; Contract Form if required; or
  - b) fails or refuses to furnish the performance security, in accordance with the Instruction to Bidders.

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, Without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee shall remain in force up to one year after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the Bank) Name of Bidder.



## BILL OF QUANTITY

**Project** : -HPC Building.

**Client** : -Indian Institute of Tropical Meteorology, Pune.

**Work** : -Supply of 600 KVA DG SET And Synchronizing Panel.

### Supply

Sr. No.	Description	Unit	Qty.	Rate	Amount
1.0	Supply of following capacity of DG Set as per scope enclosed and the specifications.				
1.1	600 KVA with acoustic canopy, water Cooled D.G. Set with battery starting, AVM, Electronic control panel providing AMF logic and synchronizing functions, Engine / DG set protection complete and with antivibration pad etc as required with 1No 990 ltr Capacity HSD tank, with supporting structure, & hand charging pump and flexible hose and hose clamp etc. complete as required.	Set	3		
1.2	Supply of power AMF Synchronizing cum load sharing, monitoring, control panel suitable for 3X600 kVA + 1X600 kVA existing D.G set with necessary metering, indication protection complete as per SLD & Specification.	Set	1		
	<b>Total Rs.</b>				
	Excise Duty( not Applicable)				
	VAT				
	Insurance.				
	Freight & Forwarding.				
	Octroi.Not Applicable				
	<b>Final Cost of Package.</b>				
	Delivery period				
	Payment Terms				
	Inspection				
	Validity				
	Warranty				
	Makes Considered				

## BILL OF QUANTITY

**Project** : -HPC UPGRADATION AT IITM

**Client** : -Indian Institute of Tropical Meteorology, Pune.

**Work** : -Installation of 3 No. 600 kVA minimum rating D.G. Set.and relocation of 250 kVA DG set

### Installation

Sr. No.	Description	Unit	Qty.	Rate	Amount
1.0	Installation, testing & commissioning of following DG sets as per detail scope of work and specifications including supply of all necessary material for installation like tools tackels etc. and equipment required for proper operation of D.G. Set complete.				
	<b>Scope of Work:</b>				
1.1	Unloading shifting, placing, grouting with foundation bolts and leveling of pre - aligned 1 No., 600 kVA D.G. Set on the existing foundation and anti-vibration pad complete as required.	Job	3.00		
1.2	Supply, installation, testing and commissioning of Exhaust pipe class B suitable to carry exhaust of 600 KVA DG set with necessary flanges gaskets nut bolts etc. including silencers. <b>Exhaust pipes heights to be taken as per MPCB rules</b> , exhaust pipe to be painted with Heat resistant paint. (Removing & Dismantling of existing cable connections & fuel piping is included in scope)	Job	3.00		
1.3	Supply and fixing of rock wool / Mineral wool to the exhaust gas pipe line binding with chicken mesh and cladding with 24 guage Al. sheet etc up to entire height of exhaust pipe for silencer.	Job	4.00		
1.4	Supply and installation of structural support for exhaust piping, and 990 Ltrs diesel tank, fuel pipe line etc fabricated from M.S. section etc complete including painting with red oxide and black enamel paint and heat resistant paint wherever required in the room and duct.	Job	4.00		
1.5	Fuel piping for the D.G. sets from day tank using 1" MS Black class B pipe & flexible hose connection complete with necessary valves, filters, etc. and drain lines to the tank I.	Job	4.00		

**Installation**

Sr. No.	Description	Unit	Qty.	Rate	Amount
1.6	Installation of fuel tank 990 liter capacity tank on existing structure.	Nos.	4		
1.7	Shifting, placing, grouting with foundation bolts and leveling of pre - aligned 1 No., 250 kVA D.G. Set on the existing foundation and anti-vibration pad complete as required.	Job	1		
1.8	Installation, testing and commissioning of Exhaust pipe class B suitable to carry exhaust of 250 KVA DG set with necessary flanges gaskets nut bolts etc. including silencers. <b>Exhaust pipes heights to be taken as per MPCB rules</b> , exhaust pipe to be painted with Heat resistant paint.	Job	1		
1.9	First charging of dry batteries for DG SETS 3 No.	Job	3		
2.0	Installation of AMF cum Synchronizing pannel	Job	1		
3.0	Supply and making following earthing station as per IS 3043 by using GI plate / Cu. plate / pipe earthing as electrode complete with watering pipe, 50 x 6mm. connecting GI strip up to chamber, soil treatment with charcoal and salt / bentonite powder brick inspection chamber of size 400 x 400 mm,				
3.1	Earthing station as above but using 600mm x 600mm x 6mm GI. plate as electrode complete.	Nos.	UR		
3.2	As above but bore earthing with 6.5 mtr. long 80 mm dia GI pipe earth electrode treatment with	Nos.	14		
3.2.1	50 x 6 mm. GI strip.	Meters	200		
	<b>Total Rs.</b>				
	Customs / Excise Duty. Not Applicable	1			
	VAT Composite				
	Service Tax				
	Insurance.				
	Freight & Forwarding.				
	Octroi. Not applicable				
	Cost of Packages.				
	<b>Final Cost of Package.</b>				
	Delivery period				
	Payment Terms				
	Inspection				
	Validity				
	Warranty				
	Makes Considered				

**PROJECT : -HPC UPGRADATION AT PASHAN, PUNE**

**CLIENT : INDIAN INSTITUTE OF TROPICAL METEOROLOGY,PUNE**

**WORK : -Supply & Installation of HSD Tank & Fuel transfer system.**

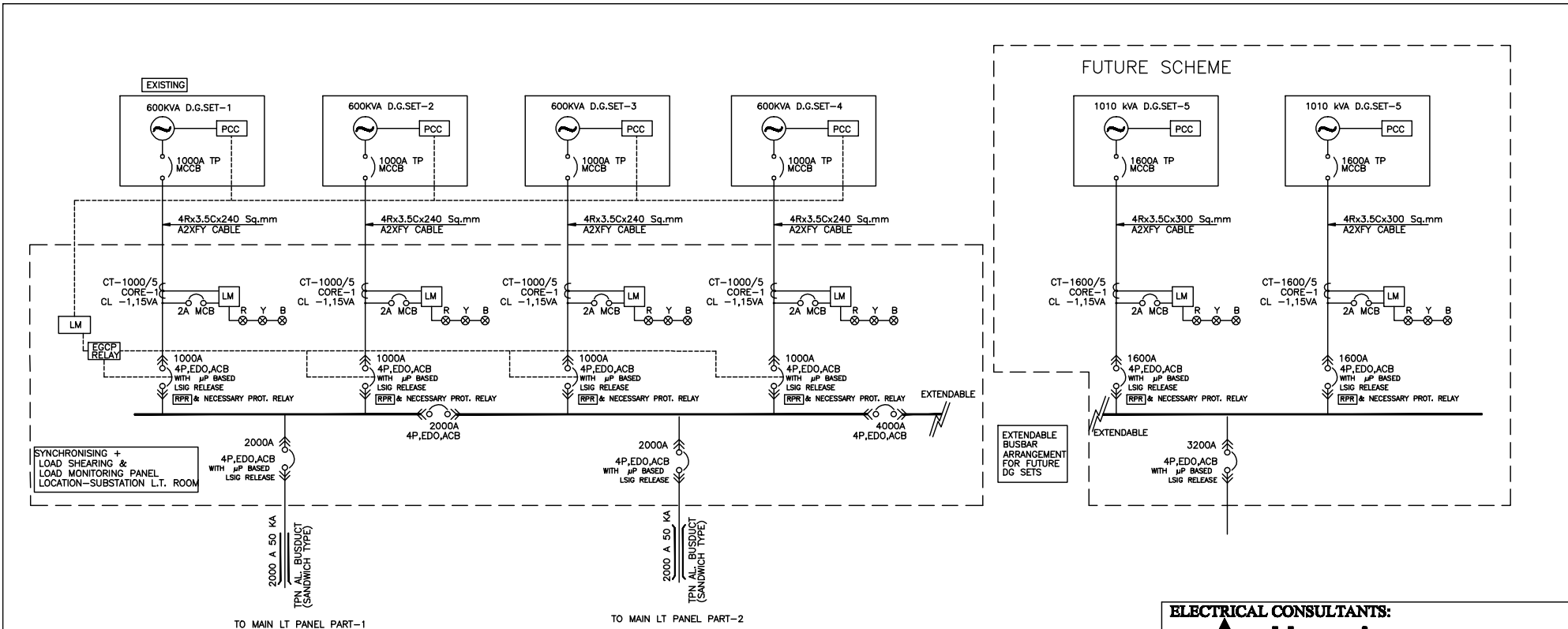
**Bill of Quantity**

Item. No.	Description	Unit	Qty.	Supply		Installation	
				Rate	Amount Rs. Ps	Rate	Amount Rs. Ps
1.0	Supply, unloading, Installation, testing and commissioning of 990 Ltrs capacity Buffer tank with float level indicator with scale and glass cover & level switthes & accessories as per P& ID diagram.	No.	1				
2.0	Supply, installation, testing and commissioning of Gear Pump having flame proof motor, with flame proof combined local control panel for starting and stopping of pump, and interlocking arrangement for the operation of pump with Power & control cabling with flame proof cables to pump motors and control panel and switches etc. as required complete. (Scope includes desining of control system). (as per drawing)						
2.1	Gear Pump with flame proof motor having suitable HP & LPM discharge capacity ,duly assembled and aligned on base frame with foundation bolts.	No.	1				
3.0	Supply, erection / laying, testing and commissioning of HSD GI pipeline (Class - C) with bends, Tees, flanges, Valves, Pressure guages etc Complete as required as detailed below.						
3.1	GI pipe of 3/4 inches.	Rmtr.	80				
3.2	GI pipe of 1/2 inches.	Rmtr.	UR				
4.0	Supply, erection / laying, testing and commissioning of Steel braided hose piping from Supply Point to machine including all fittings like bends, elbows, tee with necessary colour code etc. complete as required						
4.1	16 mm hose pipe	Rmtr.	10				
5.0	Supply, Installation, testing & commissioning of CI Valves, meters, strainers with all accessories etc						
5.1	3/4 inches Y Strainer	Nos	1				
5.2	3/4 inches Ball valves.	Nos	7				

5.3	3/4 inches Ball float valves .	Nos	UR				
5.4	3/4 inches Socket weld Ball valve.	Nos	1				
5.5	3/4 inches Non Return Valve.	Nos	1				
5.6	3/4 inches Air Vent for Buffer Tank	Nos	1				
5.7	Pressure Guage: 6 inch dial type pressure guage 0-100 PSIG stroke 0-7.5 Kg/cm <sup>2</sup>	Nos	1				

6.0	Supply , fabrication and erection of supporting structure for above buffer tank with cat ladder to buffer tank including two coats of red oxide primer and two coats of gray enamelled paint etc. compleye as required.	Kg	500				
7.0	Combined control panel with selector switches, power and control cabling.	Nos	1				
<b>Total Basic Cost</b>							
Customs / Excise Duty.							
VAT							
Insurance.							
Freight & Forwarding.							
Octroi.							
<b>Final Cost</b>							
Delivery period							
Payment Terms							
Inspection							
Validily							
Warranty							
Makes Considered							





LEGEND			
	TRANSFORMER		VOLTMETER SELECTOR SWITCH
	VACUUM CIRCUIT BREAKER		FREQUENCY METER
	AIR CIRCUIT BREAKER		VOLT METER
	MCCB/MCB		LOAD MANAGER WITH RS485 PORT
	CURRENT TRANSFORMER		KILO WATT HOUR METER
	VOLTAGE TRANSFORMER		AMMETER SELECTOR SWITCH
	STATUS INDICATING LAMP ON OFF TRIP SC TSH R G A G A		AMMETER
	PHASE INDICATING LAMP R Y B		MULTI FUNCTION METER

**ELECTRICAL CONSULTANTS:**

**abhyantra**  
ELECTRICAL CONSULTANTS & ENGINEERS  
AN ISO 9001:2008 Company

Shree Swami Krupa, Plot No.-6, Neelkamal Housing Society,  
Karve nagar. Pune - 411052. Tel/ Fax. - 25462173, 25410691.  
design@abhyantraconsultants.com,  
www.abhyantraconsultants.com

**CLIENT**  
INDIAN INSTITUTE OF TROPICAL METEOROLOGY,

**PROJECT**  
IITM HPC UPGRADATION

**TITLE**  
DG SYNCHRONISING PANEL DRAWING

<b>SCALE :</b> NTS	<b>DATE :</b> 25/03/2010	<b>DRAWN</b> NILESHH
<b>DWG.NO.</b> 810A/EL/02	<b>SUFFIX</b> 0	<b>CHECKED</b> MUKUND <b>APPROVED</b> VAV

**TENDER DOCUMENTS**

**FOR**

**( PRICE BID –PART 2)**

**FOR**

**600 KVA D.G. SET AND FUEL SUPPLY SYSTEM**

**AT**

**INDIAN INSTITUTE OF TROPICAL  
METEOROLOGY, PASHAN,  
PUNE.**



**PROJECT : -HPC UPGRADATION AT PASHAN, PUNE**

**CLIENT : INDIAN INSTITUTE OF TROPICAL METEOROLOGY,PUNE**

**WORK : -Supply & Installation of HSD Tank & Fuel transfer system.**

**Bill of Quantity**

Item. No.	Description	Unit	Qty.	Supply		Installation	
				Rate	Amount Rs. Ps	Rate	Amount Rs Ps
1.0	Supply, unloading, Installation, testing and commissioning of 990 Ltrs capacity Buffer tank with float level indicator with scale and glass cover & level switthes & accessories as per P& ID diagram.	No.	1				
2.0	Supply, installation, testing and commissioning of Gear Pump having flame proof motor, with flame proof combined local control panel for starting and stopping of pump, and interlocking arrangement for the operation of pump with Power & control cabling with flame proof cables to pump motors and control panel and switches etc. as required complete. (Scope includes desining of control system). (as per drawing)						
2.1	Gear Pump with flame proof motor having suitable HP & LPM discharge capacity ,duly assembled and aligned on base frame with foundation bolts.	No.	1				
3.0	Supply, erection / laying, testing and commissioning of HSD GI pipeline (Class - C) with bends, Tees, flanges, Valves, Pressure guages etc Complete as required as detailed below.						
3.1	GI pipe of 3/4 inches.	Rmtr.	80				
3.2	GI pipe of 1/2 inches.	Rmtr.	UR				
4.0	Supply, erection / laying, testing and commissioning of Steel braided hose piping from Supply Point to machine including all fittings like bends, elbows, tee with necessary colour code etc. complete as required						
4.1	16 mm hose pipe	Rmtr.	10				
5.0	Supply, Installation, testing & commissioning of CI Valves, meters, strainers with all accessories etc						
5.1	3/4 inches Y Strainer	Nos	1				
5.2	3/4 inches Ball valves.	Nos	7				

5.3	3/4 inches Ball float valves .	Nos	UR				
5.4	3/4 inches Socket weld Ball valve.	Nos	1				
5.5	3/4 inches Non Return Valve.	Nos	1				
5.6	3/4 inches Air Vent for Buffer Tank	Nos	1				
5.7	Pressure Guage: 6 inch dial type pressure guage 0-100 PSIG stroke 0-7.5 Kg/cm <sup>2</sup>	Nos	1				

6.0	Supply , fabrication and erection of supporting structure for above buffer tank with cat ladder to buffer tank including two coats of red oxide primer and two coats of gray enamelled paint etc. compleye as required.	Kg	500				
7.0	Combined control panel with selector switches, power and control cabling.	Nos	1				
<b>Total Basic Cost</b>							
Customs / Excise Duty.							
VAT							
Insurance.							
Freight & Forwarding.							
Octroi.							
<b>Final Cost</b>							
Delivery period							
Payment Terms							
Inspection							
Validily							
Warranty							
Makes Considered							

## BILL OF QUANTITY

**Project** : –HPC UPGRADATION AT IITM

**Client** : –Indian Institute of Tropical Meteorology, Pune.

**Work** : –Installation of 3 No. 600 kVA minimum rating D.G. Set.and relocation of 250 kVA DG set

### Installation

Sr. No.	Description	Unit	Qty.	Rate	Amount
1.0	Installation, testing & commissioning of following DG sets as per detail scope of work and specifications including supply of all necessary material for installation like tools tacksels etc. and equipment required for proper operation of D.G. Set complete.				
	<b>Scope of Work:</b>				
1.1	Unloading shifting, placing, grouting with foundation bolts and leveling of pre - aligned 1 No., 600 kVA D.G. Set on the existing foundation and anti-vibration pad complete as required.	Job	3.00		
1.2	Supply, installation, testing and commissioning of Exhaust pipe class B suitable to carry exhaust of 600 KVA DG set with necessary flanges gaskets nut bolts etc. including silencers. <b>Exhaust pipes heights to be taken as per MPCB rules</b> , exhaust pipe to be painted with Heat resistant paint. (Removing & Dismantling of existing cable connections & fuel piping is included in scope)	Job	3.00		
1.3	Supply and fixing of rock wool / Mineral wool to the exhaust gas pipe line binding with chicken mesh and cladding with 24 guage Al. sheet etc up to entire height of exhaust pipe for silencer.	Job	4.00		
1.4	Supply and installation of structural support for exhaust piping, and 990 Ltrs diesel tank, fuel pipe line etc fabricated from M.S. section etc complete including painting with red oxide and black enamel paint and heat resistant paint wherever required in the room and duct.	Job	4.00		
1.5	Fuel piping for the D.G. sets from day tank using 1" MS Black class B pipe & flexible hose connection complete with necessary valves, filters, etc. and drain lines to the tank I.	Job	4.00		

**Installation**

Sr. No.	Description	Unit	Qty.	Rate	Amount
1.6	Installation of fuel tank 990 liter capacity tank on existing structure.	Nos.	4		
1.7	Shifting, placing, grouting with foundation bolts and leveling of pre - aligned 1 No., 250 kVA D.G. Set on the existing foundation and anti-vibration pad complete as required.	Job	1		
1.8	Installation, testing and commissioning of Exhaust pipe class B suitable to carry exhaust of 250 KVA DG set with necessary flanges gaskets nut bolts etc. including silencers. <b>Exhaust pipes heights to be taken as per MPCB rules</b> , exhaust pipe to be painted with Heat resistant paint.	Job	1		
1.9	First charging of dry batteries for DG SETS 3 No.	Job	3		
2.0	Installation of AMF cum Synchronizing pannel	Job	1		
3.0	Supply and making following earthing station as per IS 3043 by using GI plate / Cu. plate / pipe earthing as electrode complete with watering pipe, 50 x 6mm. connecting GI strip up to chamber, soil treatment with charcoal and salt / bentonite powder brick inspection chamber of size 400 x 400 mm,				
3.1	Earthing station as above but using 600mm x 600mm x 6mm GI. plate as electrode complete.	Nos.	UR		
3.2	As above but bore earthing with 6.5 mtr. long 80 mm dia GI pipe earth electrode treatment with	Nos.	14		
3.2.1	50 x 6 mm. GI strip.	Meters	200		
	<b>Total Rs.</b>				
	Customs / Excise Duty. Not Applicable	1			
	VAT Composite				
	Service Tax				
	Insurance.				
	Freight & Forwarding.				
	Octroi. Not applicable				
	Cost of Packages.				
	<b>Final Cost of Package.</b>				
	Delivery period				
	Payment Terms				
	Inspection				
	Validity				
	Warranty				
	Makes Considered				

## BILL OF QUANTITY

**Project** : -HPC Building.

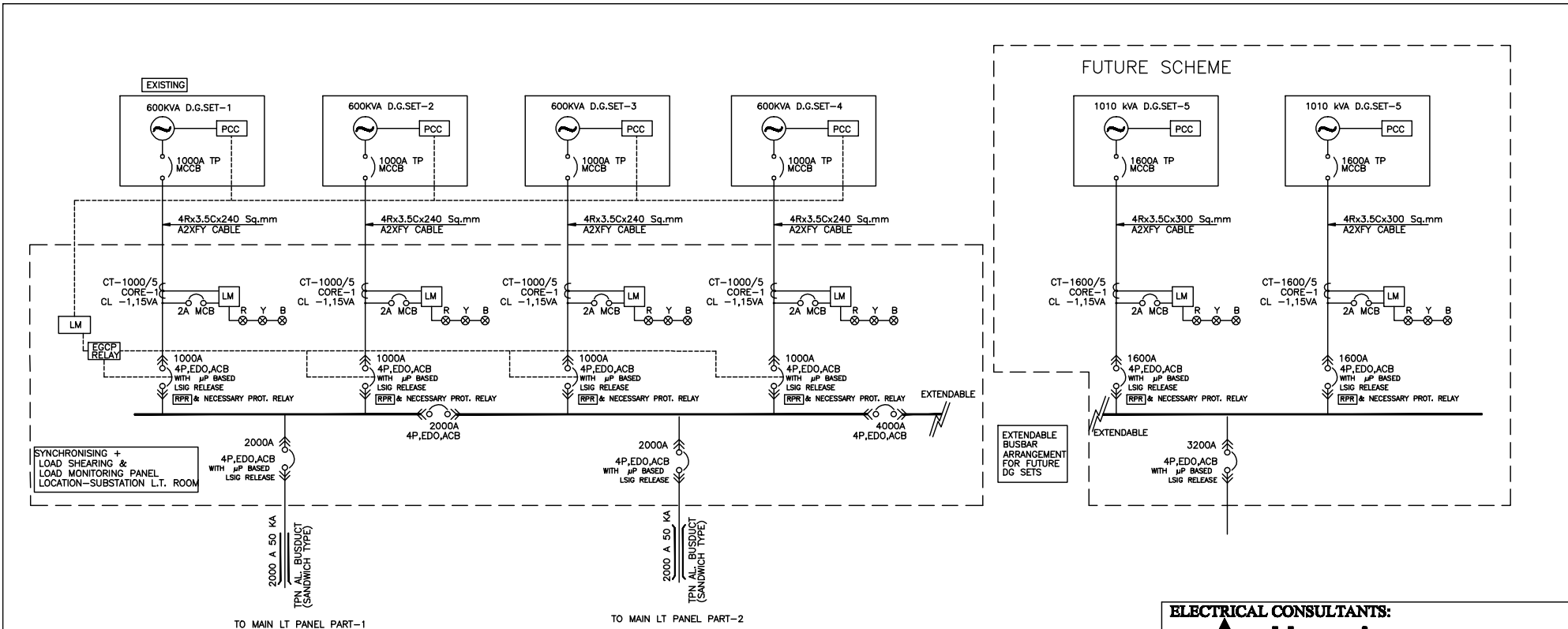
**Client** : -Indian Institute of Tropical Meteorology, Pune.

**Work** : -Supply of 600 KVA DG SET And Synchronizing Panel.

### Supply

Sr. No.	Description	Unit	Qty.	Rate	Amount
1.0	Supply of following capacity of DG Set as per scope enclosed and the specifications.				
1.1	600 KVA with acoustic canopy, water Cooled D.G. Set with battery starting, AVM, Electronic control panel providing AMF logic and synchronizing functions, Engine / DG set protection complete and with antivibration pad etc as required with 1No 990 ltr Capacity HSD tank, with supporting structure, & hand charging pump and flexible hose and hose clamp etc. complete as required.	Set	3		
1.2	Supply of power AMF Synchronizing cum load sharing, monitoring, control panel suitable for 3X600 kVA + 1X600 kVA existing D.G set with necessary metering, indication protection complete as per SLD & Specification.	Set	1		
	<b>Total Rs.</b>				
	Excise Duty( not Applicable)				
	VAT				
	Insurance.				
	Freight & Forwarding.				
	Octroi.Not Applicable				
	<b>Final Cost of Package.</b>				
	Delivery period				
	Payment Terms				
	Inspection				
	Validity				
	Warranty				
	Makes Considered				





LEGEND			
	TRANSFORMER		VOLTMETER SELECTOR SWITCH
	VACUUM CIRCUIT BREAKER		FREQUENCY METER
	AIR CIRCUIT BREAKER		VOLT METER
	MCCB/MCB		LOAD MANAGER WITH RS485 PORT
	CURRENT TRANSFORMER		KILO WATT HOUR METER
	VOLTAGE TRANSFORMER		AMMETER SELECTOR SWITCH
	STATUS INDICATING LAMP ON OFF TRIP SC TSH R G A G A		AMMETER
	PHASE INDICATING LAMP R Y B		MULTI FUNCTION METER

**ELECTRICAL CONSULTANTS:**

**abhyantra**  
ELECTRICAL CONSULTANTS & ENGINEERS  
AN ISO 9001:2008 Company

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Karve nagar. Pune - 411052. Tel/ Fax.- 25462173, 25410691.  
design@abhyantraconsultants.com,  
www.abhyantraconsultants.com

**CLIENT**

INDIAN INSTITUTE OF TROPICAL METEOROLOGY,

**PROJECT**

IITM HPC UPGRADATION

**TITLE**

DG SYNCHRONISING PANEL DRAWING

<b>SCALE :</b> NTS	<b>DATE :</b> 25/03/2010	<b>DRAWN</b> NILESH
<b>DWG.NO.</b>	<b>SUFFIX</b>	<b>CHECKED</b> MUKUND
810A/EL/02	0	<b>APPROVED</b> VAV