

**CENTRE FOR MATERIALS FOR ELECTRONICS TECHNOLOGY (C-MET)***(Scientific Society, Dept. of Information Technology, Govt. of India)*

IDA PHASE – III, CHERLAPALLY, HCL (PO), HYDERABAD – 500 051

Phone: +91-40-27262437, 27267309, 27267006 Fax: +91-40-27261658

**ENQUIRY LETTER**

ENQ. NO.: HD/PUR/SP-21/SiC/UPS/07/2011-12/4492

Date: 25.01.2012

**Subject: Procurement of '100 KVA UPS System'**

Due date for receipt of the quotations	<b>15</b>	<b>02</b>	<b>2012</b>	<b>TIME BY:15.00 hours</b>
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Sir,

Sealed quotations conforming to the specifications are invited for the following item(s). Quotation may please be submitted, keeping in view, the terms and conditions given below and overleaf, otherwise quotations will be rejected.

<b>S. No.</b>	<b>Description of the item</b>	<b>Quantity</b>	<b>Specifications</b>
01	100 KVA UPS System	1 no.	As per "Annexure – I" enclosed

**Terms & Conditions:**

- (a) Detailed information regarding previous experience of supply and installation of the similar equipment/systems to any Government Organizations as well as Private organizations and list of the clients with contact details. Copies of the supply orders received may also be enclosed with the technical bid, should not be more than three years old.
- (b) **PRICE REASONABILITY CERTIFICATE:** A certificate indicating that the rates quoted are not more than as charged to other Govt. /PSU's for similar supplies made in recent past should accompany the financial bid in support of its price reasonability (format enclosed).

**Note:**

- (i) The envelope super-scribed with [a] Quotation No. [b] Due Date & [c] Description of the Item and be sent to the undersigned before the due date.
- (ii) Firms or their authorized representatives are requested to attend the opening of ~~Combined~~/**Technical** bids after closing time i.e. **on 15.02.2012 at 15:45 hours**. If there is any delay in opening of technical bids will be intimated to all bidders.
- (iii) The Technical & Financial bids should be in separate sealed covers
- (iv) These details are also available in our website: <http://www.cmet.gov.in>

Thanking you,

To

Yours faithfully,

Sd/- xxx

**(G.K.VENKATESAN)**

Administrative Officer

[gkvenkatesh1966@gmail.com](mailto:gkvenkatesh1966@gmail.com)





**ANNEXURE – I**

**SPECIFICATIONS OF 100 KVA UPS**

SUPPLY, INSTALLATION AND COMMISSIONING OF 100 KVA ON-LINE UNINTERRUPTED POWER SUPPLY SYSTEM (UPS) WITH MICROPROCESSOR CONTROL ALONG WITH SEALED MAINTENANCE FREE GEL BATTERIES FOR PROVIDING ½ HOUR BACK-UP @ FULL LOAD, COMPLETE AS PER GIVEN BELOW TECHNICAL SPECIFICATIONS AND FEATURES.

- **Supply, installation and commissioning of 100 KVA, 3Φ microprocessor based Double conversion Online UPS system in parallel redundant configuration with SMF gel branded batteries for providing ½ hour back-up @ full load**
- The acoustic noise should be less than 75 dB at one meter distance.
- All system control parameters and monitoring of rectifier, battery charging and inverter functions should be carried out digitally by using microprocessor.
- The system should use High frequency IGBT based rectifier with PWM.
- The system should use High frequency IGBT inverter with PWM, VFI (voltage and frequency independent from mains) technology.
- The system should provide in-built static as well as manual by-pass.
- There must be an in-built Isolation Transformer.
- Programmable battery testing facility should be provided to know the battery status. By using battery test mode the system should disconnect input power supply at set time period and the battery should discharge through the load. Programmed battery testing should be user selectable through the front panel of the system.
- The system should provide "Event Recording" facility by storing at least last 100 events i.e. input voltage variation or out of tolerance at any time including the cause of the fault and give names of the faulty component in terms of rectifier control card, inverter control card, snubber circuit fault etc., All events should be readable from front panel LCD of the system and printable through RS 232 interface port.
- The system should provide battery monitoring facility. This system should check battery capacity in regular intervals during normal operation of the UPS. The front panel LCD panel should show the capacity of the battery and calculate for how long the load can be supplied.
- Front panel of the system should have LCD display for displaying of input voltage, input frequency, input voltage and frequency of the supply connected in by-pass line, battery remaining time, output voltage, out frequency and load connected to the system. It should also display events occurred by using event



recorder. It should also provide facility to switch UPS ON/OFF, emergency OFF and manual by-pass ON/OFF

- Mimic diagram should be provided to know the status of the rectifier, inverter, battery and output bus bar.
- Emergency switching OFF of the UPS system (Remotely).
- In case of Input supply phase reversal the system should not trip and should not go to battery. It should work on mains with alarm indication as a inbuilt feature of the system.
- Manufacturer should essentially have ISO 9000 certificate.

### **TECHNICAL DATA:**

#### **INPUT:**

1. Three Phase Voltage : 400 V  $\pm$  20% (Operating Range: 320 – 480 V)
2. Supply Frequency : 45 to 55 Hz.
3. Input Power Factor : > 0.99
4. Input current distortion/Harmonics : < 3%
5. Rectifier Technology : IGBT with PWM technology.
6. Automatic Phase Reversal Correction.

#### **BY-PASS LINE:**

1. Three Phase Voltage : 400 V  $\pm$  15%.
2. Over load capacity for 1 min. : 200%
3. Over load capacity for 10 min. : 125%

#### **OUTPUT:**

- 1. Inverter Technology : IGBT with PWM, VFI Technology**
- 2. Voltage Three Phase : 415 V and should be selectable to 380 or 400 V.**
- 3. Voltage Stability :  $\pm$  1% Static,  $\pm$  3% dynamic**
- 4. Wave Form : Sinusoidal with 2% total harmonic distortion**
- 5. Frequency : 50 Hz.**
- 6. Frequency Stability :  $\pm$  0.05%**
- 7. Crest factor : 3:1**

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**8. Accepted over load : 125% for 10 min., 150% for 1 min.****9. Galvanic Isolation Transformer : In-built****10. Rating of UPS @0.9 pf : 100 KVA****SYSTEM:**

1. Total Efficiency of the UPS : more than 94% at 50% to 100% of load
2. Standard RS 232 interface facility should be provided.
3. Battery AH calculation should be enclosed along with the bid.

**SCOPE OF SUPPLY:**

<b>S. No.</b>	<b>DESCRIPTION</b>	<b>Qty.</b>
1.	100 KVA UPS	1
2.	SMF Gel Type Batteries (Exide make Sonnenschine brand, Sonnen / ADVA or equivalent) for providing ½ hr. battery back up @ 100 KVA	1 Set
3.	Battery Rack fitting to C-MET available space, interconnecting links, cable between UPS to Battery Bank, Battery backer	1 Set
4.	Automatic Phase Reversal Correction	1 Set
5.	Temperature compensation Battery Charging Facility	1 Set
6.	In-built Isolation Transformer	1 Set



**GUARANTEED TECHNICAL PARTICULARS FOR UPS & BATTERIES**  
**(TO BE FILLED IN BY THE VENDOR WITH DOCUMENTARY**  
**EVIDENCE)**

<b>S. No.</b>	<b>DESCRIPTION</b>	<b>DESIRED</b>	<b>OFFERED BY VENDOR</b>
1.	<b>Make</b>	-	
2.	<b>Model</b>	-	
3.	Rated output Power in KVA @0.9 pf.	100 KVA	
4.	Rated output Power in KW	90 KW	
5.	Input Voltage	400 ± 20% (320V-480V)	
6.	Input Frequency	45-55 Hz	
7.	Rectifier Type	IGBT Based with PWM controlled	
8.	Inverter Type	IGBT Based with PWM, VFI Control	
9..	Input Power Factor	> 0.99	
10.	<b>Total Harmonic Content</b>		
	Input Current Harmonic Distortion (%) <ul style="list-style-type: none"><li>• Full Load</li><li>• 75%</li><li>• 25-50%</li></ul>	<3% <4% <6%	
	Output Voltage Distortion (%) with linear Load	<1%	
	Output Voltage Distortion(%) with nonlinear Load	<3%	
11.	Power Walk-in	0-120 Sec(settable)	
12.	Output Voltage	380/400/415 V (Selectable in steps )	
13.	Output Voltage Stability (Linear Load)	± 1%	
14.	Output Voltage Stability(Dynamic Load)	± 5%	
15.	Output Frequency	50 Hz	
16.	Output Frequency Stability	± 0.05Hz	
17.	Frequency Slew Rate	1 Hz/sec	
18.	Voltage Recovery time with in ± 1%	20 msec	
19.	<b>Overload capability</b>		
	110% for	60 min.	

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<b>S. No.</b>	<b>DESCRIPTION</b>	<b>DESIRED</b>	<b>OFFERED BY VENDOR</b>
	125% for	10 min.	
	150% for	1 min.	
20.	<b>Short circuit Current</b>		
	Phase to Phase	180% for 1 Sec	
	Phase to neutral	300% for 1 Sec	
21.	Overall efficiency		
	100% Load	Specify	
	75% Load	Specify	
	50% Load	Specify	
	25% Load	Specify	
22.	<b>Heat Dissipation</b>		
	100% Load	Specify	
	75% Load	Specify	
	50% Load	Specify	
	30% Load	Specify	
23.	Static Bypass	Inbuilt	
24.	Manual Bypass	Inbuilt	
25.	Galvanic Isolation Transformer	Inbuilt	
26.	Event Recording Facility	Inbuilt	
27.	Battery Type	Gel Type	
28.	Designed Life of Battery	~ 10 years	
29.	Battery Backup time	½ hour.	
30.	Battery AH calculation sheet along with number of branded batteries	Should attach with the offer	
31.	Phase Reversal Correction	Inbuilt	
32.	UPS Dimension	Specify	
33.	Battery Bank Dimension	Specify	
34.	<b>Protections</b>		
	Over Load	Should available	
	Short Circuit	Should available	
	Input Low Voltage	Should available	
	Input High Voltage	Should available	
	Output Over Voltage	Should available	
	Output Low Voltage	Should available	
	Battery Over Charging	Should available	
	Battery over discharging	Should available	
35.	<b>Control &amp; Indications</b>		
	Alarm:		
	Mains Failure	Should available	
	UPS Fault	Should available	

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<b>S. No.</b>	<b>DESCRIPTION</b>	<b>DESIRED</b>	<b>OFFERED BY VENDOR</b>
	Battery Discharged	Should available	
	Inverter OFF/Failed	Should available	
	Rectifier OFF/Failed	Should available	
	Over Temperature	Should available	
	Overload	Should available	
	Emergency Stop	Should available	
36.	<b>INDICATION / DISPLAY</b>		
	Input Voltage	Should available	
	Input Current per Phase	Should available	
	Input Frequency	Should available	
	Bypass input Voltage	Should available	
	Bypass Input Frequency	Should available	
	Inverter Output Voltage	Should available	
	Inverter output Current per phase	Should available	
	Inverter output in KVA and KW	Should available	
	Battery Voltage	Should available	
	Battery Charging Voltage	Should available	
	Battery Discharging Voltage	Should available	
	Battery back up remaining time	Should available	
	Overall System temperature	Should available	
	Inverter temperature	Should available	
	Rectifier Temperature	Should available	



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**GENERAL TERMS AND CONDITION**

**Description: 100 KVA Three Phase Online UPS**

1. Validity of quotation : 90 days from the last date of opening technical bid.
2. Delivery : Within 1 month from date of receipt of purchase order.
3. Packing & Forwarding : Free of Cost upto C-MET, Hyderabad (on supplier's account).
4. Freight Charges : Free delivery to C-MET, Hyderabad (on supplier's account).
5. Installation : Installation shall be done by supplier with no extra cost and should provide all necessary items like MS rack for SMF batteries, I/P and O/P Cables, DB's, MCB's etc.
6. Efficiency of UPS : Backup time should be tested with actual load during commissioning of UPS, failing of which 30% payment will be deducted.
7. Payment : 100% of total cost after inspection at manufacturer site, delivery and installation of the UPS at C-MET. **No advance / part payment will be effected.**
8. Guarantee / Warranty : 12 months minimum from the date of installation.
9. Annual Maintenance Contract (AMC) : Party should quote for Annual Maintenance Contract (non-comprehensive) for 5 years. It shall be taken for price comparison purpose (format enclosed).



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**PRICE SCHEDULE FOR ANNUAL MAINTENANCE CONTRACT AFTER WARRANTY PERIOD**

(FOR \_\_\_\_\_)

1	2	3	4					5
Item Sl. No.	Name of the equipment	Quantity	Annual Maintenance Contract Cost for Each Unit year wise*.					Total Annual Maintenance Contract Cost for 5 (or as specified) Years [3 x (4a+4b+4c+4d+4e)]
			1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
			a	b	c	d	e	
		1						

\* After completion of Warranty period

**NOTE:-**

1. In case of discrepancy between unit price and total prices, THE UNIT PRICE shall prevail.
2. The cost of Annual Maintenance Contract (AMC) which includes preventive maintenance including testing & calibration as per technical/ service /operational manual and labour, after satisfactory completion of one year (12 months) Warranty period may be quoted for next 5 (or as specified) years on yearly basis for complete equipment and Turnkey (if any).
3. The cost of AMC may be quoted along with taxes applicable on the date of Tender Opening. The taxes to be paid extra, to be specifically stated. In the absence of any such stipulation the price will be taken inclusive of such taxes and no claim for the same will be entertained later.
4. Cost of AMC will be added for price evaluation purpose.
5. The uptime warranty will be 98 % on 24 (hrs) x 7 (days) x 365 (days) basis or as stated in Technical Specification of the TE document.
6. The supplier shall keep sufficient stock of spares required during Annual Maintenance Contract period

Signature of Tenderer \_\_\_\_\_

Name \_\_\_\_\_

Business Address \_\_\_\_\_

Seal of the tenderer \_\_\_\_\_



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**(in the company letter head)**

**PRICE REASONABILITY CERTIFICATE**

It is certified that the rates quoted \_\_\_\_\_ (model/make) are not more than as charged to other Govt. /PSU's for similar supplies made in recent past. Copies of the supply orders received from other Govt/PSU's are enclosed alongwith the technical bid.

Signature of Tenderer\_\_\_\_\_

Name\_\_\_\_\_

Business Address\_\_\_\_\_

Seal of the Tenderer\_\_\_\_\_