Institute For Stem Cell Biology and Regenerative Medicine
Autonomous Institute of the Department of Biotechnology, Government Of India

inStem

Ref: INS/L-5392/2017-2018(Y) Date : 24/08/2017

ENQUIRY

Dear Sirs,
Please let us have your lowest Quotation for the following :

Sl.No	Cat.No	Item Description	Make/Model	Item Qty	UOM
1		Supply, installation, testing and commissioning of 2X80kva(parallel mode) True On-Line conventional type UPS with 15min back up at full load as per specification.	Socomec/Eaton/Emerson -Vertiv/APC	2.00	Nos.

Remarks : It Is 2 part tender: The technical and financial/price bids shall be submitted simultaneously in two (2) cover (sealed) system. The proposal shall be evaluated in two stages: (1) Technical and (2) Price/Financial.

Note :Quotation in USD, GBP, YEN, EURO, CND, SGD, ect will be acceptable.

1. The bids shall be enclosed in an envelope , and due date sealed duly marked "Tender for _____" Ref No : _____ . The bids should be addressed and to be mailed to **"THE HEAD-PURCHASE"**. The bids are liable to be rejected if the sealed envelope is not addressed to **"THE HEAD-PURCHASE"** with Tender Ref No and Item Description and due date. The bids delivered in person shall be dropped in Purchase Section. If the bids are sent through courier or mail , it should reach by submission Date and Time and inStem will not be responsible for the delay.

2. **DUE DATE FOR SUBMISSION OF QUOTATION AGAINST THIS ENQUIRY IS 11/09/2017 till 5.30 p.m.**

3. QUOTATIONS RECEIVED AFTER THE DUE DATE SHALL BE REJECTED.
4. The Validity of your quotation should be for 60 days from the date.
5.All duties,taxes,surcharge and cess as currently applicable must be sated in your quotation,seperately.Otherwise your quote is liable to be rejected.
6.Your quotation should indicate delivery period & Warranty period.
7.Delivery to be made to our Stores.Please indicate charges,if any extra.Transit Insurance should be done upto inStem Stores.
8.If you are unable to supply the quality,specifications or brand as mentioned in our enquiry,Please state so and then offer alternative to quality/Specifications.
9.Payment :within one month after delivery & acceptance/satisfactory installation.
10.Please ensure that the enquiry number and the due date is superscribed on the envelope failing which your quotation is liable to be rejected.
11.Since we are a public funded research institution,we are exempted from paying Customs Duty(Except advolerum duty of 5% + 2% cess and CVD @4% vide Notification No.51/96 with latest amendments) and excise duty vide Notification No.10/97 CENTRAL EXCISE dated 01-03-1997 for all scientific equipments,technical instruments,equipments(including computers),their accessories,spares,consumables and software.Hence,please offer your prices taking this option into consideration.

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12.**If the item is covered under DGS&D rate contract,please quote the rate as per the DGS&D rate contract with xerox copy of the DGS&D order.**

13.Any dispute or differences that may arise between the parties shall be referred to the sole arbitration of the Centre Director or his nominees.The decision of the arbitrator shall be final and binding on the parties.The venue for arbitration shall be Bangalore.The provisions of the Arbitration and Concillation Act,1996 as amended from time to time shall apply.The Courts in Bangalore shall have exclusive jurisdiction to deal with any or all disputes between the parties.

Yours faithfully
For and on behalf of Insitute For Stem Cell Biology and Regenerative Medicine

Yesu R

GKVK, Bellary Road, Bangalore-560065,INDIA
Phone No. : 91-80-23666343/344/345/346 Fax : 91-80-23636662
Email Id: purchase@ncbs.res.in Website : www.ncbs.res.in

Supply, Installation, Testing & Commissioning of 2x80 KVA (hot sync.mode/parallel mode) True ON line conventional type UPS for data center application in INSTEM-GKVK.

1. General specifications

1	UPS Type	: DSP control based ON-LINE Double Conversion Technology
2	Capacity	: 80 KVA/72 kW
3	Preferable Make	: Socomec/Eaton/Emerson-Vertiv/APC
4	Battery Backup	: 15 min at full load on each UPS
5	Supply	: 3-Phase Input, 3-Phase Output
6	Operation Mode	Normal (online): Emergency, Recharge, bypass, Maintenance bypass.
7	Rectifier / Inverter	: IGBT with PFC control technology only
8	Transformer	: Isolation transformer only on Input side
9	Total Efficiency AC/AC at 100% load: ≥ 93% (Online mode)	
10.	Parallel configuration	: ≥4 units
11.	Noise level at full load	: ≤ 66 dBA at 1 mtr from the unit

2. INPUT

1	Voltage configuration	: Three-phase, 3-wire
2	Rated Voltage	: 400V,
3	Voltage tolerance	: 320V to 480 V
4	Nominal Frequency	: 50 Hz
5	Max/Min frequency	: 50 Hz +/- 10%
6	Phase	: Three Phase
7	Current Limit	: 125% of nominal AC input current
8	Surge Protection	: As per IEC standard
9	THDi	: ≤ 3% at full load ≤ 5% from 30% to 75% of the full rated load
10	Power factor	: ≥0.98

3. OUTPUT

1	Voltage Configuration	: Three-phase, 4-wire plus ground (3P+N+E)
2	Voltage	: 400V/415 V
3	Voltage regulation	: a) ±1% three-phase RMS average for a balanced three-phase load for the combined variation effects of input voltage, connected load, battery voltage, ambient temperature, and load power factor. b) ±5% three-phase RMS average for a 100% unbalanced load for the combined variation effects of input voltage, connected load, battery voltage, ambient temperature, and load power factor.
4	Voltage Distortion	: ≤ 2% total harmonic distortion (THD) for linear loads. and ≤ 3% THD for 100% nonlinear loads.
5	Crest factor	: 3:1
6	Frequency	: 50 Hz and Pure sine wave
7	Frequency regulation	: 50 Hz +/- 1%
8	Output power factor	: ≥ 0.9
9	Overload Capacity	: 125% for ten minutes (without bypass source). : 150% for one minute (without bypass source).
10	Wave form	: Pure Sinusoidal

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11 Output Voltage adjustment : ±5% (Software Controlled adjustment)

4. Batteries:-

1	Make and model	: Rocket and ESC
2	Type	: SMF Batteries (maintenance free)-VRLA type
3	Rated battery life	: min 5 years
4.	Battery back up	: **15** mints with full load on each UPS For battery calculation, ECV should be consider as 1.75V at 20hrs rating.
5.	Battery stand	: Suitable battery stand MS fabricated with powder coated.
6.	Battery link and cabling	: suitable battery link and interconnecting copper cable from UPS to battery shall be supplied by vendor along with insulation mat. The approx. distance between UPS and battery stand will be 10mtr.

The accumulator bank must have an expected service life of five years with a capacity of 15 minutes at 100 % load. Detailed Battery backup calculation sheet and manufacturer charging/discharging characteristic chart shall be attached along with the technical bid also Battery type should be specified in the document.

5. On-Line Battery Test

The UPS shall be provided with Auto On-Line Battery Test feature. The test shall ensure the capability of the battery to supply power to the inverter while the load is supplied power in the normal mode/On-line mode.

6. Battery Charger:-

The battery charger shall recharge the battery to 90% of its fully charged condition preferably within six to eight (6-8) hours and at the same time supplying full load current to the system. The charger should have the Temperature Compensated Charging. The battery charger output voltage shall be automatically adjusted in proportion to the ambient temperature of the battery to avoid over-charging. The system must include one or more battery chargers:

- with IGBT technology;
- separate from the rectifier;
- with charging voltage independent from the DC bus voltage;
- dedicated and independent for each accumulator bank;

The battery charger must be able to operate with the following types of accumulator:

- Lead acid, hermetically sealed
- Lead acid, vented & SMF VRLA

Depending on the temperature, the battery charger shall be able to select the most suitable recharge method automatically, without operator intervention, alternating float mode in

combination with "intermittent" charge in such a way as to limit the effects of corrosion (plate sulphation) and significantly prolong battery life. The maintenance charge voltage must be automatically regulated in relation to the temperature of the battery compartment. The battery compartment must be equipped with a temperature sensor for this purpose.

The following parameters must be adjustable and configurable:

- maximum recharge current limit;
- constant float mode current and voltage;
- switching threshold from fast recharge mode to maintenance mode.

The battery charge regulation and control circuit shall also provide the following functions:

- Continuous monitoring of the battery circuit (battery interrupted) with visual alerts on the local user interface;
- Monitoring of battery efficiency, via partial discharge at settable intervals; the check consists in continuously monitoring the discharge current and comparing it with the ideal discharge curve;
- Continuous monitoring of the battery charger's output voltage to ensure it remains within the limits required to optimize battery life. Recharging voltage anomaly alerts followed by deactivation of the charger;
- Residual battery capacity display.

7. Paralleling Kit

Equipment shall be equipped with paralleling kits by this way, 2x80kVA are in parallel mode and also it shall be compatible for ≥4 units.

8. Isolation Transformer

Suitable rating isolation transformer with copper winding shall be supplied and installed along with each UPS on Input side and test reports (Efficiency and losses) of the isolation transformer shall be enclosed along with the technical bid. The cooling of Isolation transformer shall be by forced cooling with inbuilt cooling fans. Supplier shall specify the Isolation transformer make and other specification along with technical bid for evaluation purpose.

9. Operating Ambient Temperature:-

UPS Module :	(0°C to 40°C).
Battery:	30°C ±5°C.

10. Cooling

Cooling of the UPS shall be by forced air and there should be redundant fans.

11. Grounding

The AC output neutral shall be electrically isolated from the UPS chassis. The UPS chassis shall have an equipment ground terminal. Provisions for local bonding shall be provided.

12. Wiring

Installation and required accessories like cables, lugs etc will be in the scope of supplier and Wiring practices, materials and coding shall be in accordance with the requirements of the National Electrical Code (NFPA 70). All bolted connections of bus bars, lugs, and cables shall be in accordance with requirements of the National Electrical Code and other applicable standards.

Conformity to standards

The system must conform to the following standards: Necessary certificate from IEC shall be submitted wherever required.

- Safety: EN62040-1.
- EMC emissions: EN62040-2.
- EMC immunity: EN62040-2 class C2 and C3.

Certification:

Necessary Type test/third party certificate from CPRI/govt. authorized certificate agency should be enclosed along with technical bids. Third party certificate is essential for 80kVA UPS (same model proposed by vendor).

13. Monitoring and Control

The UPS shall be provided with a DSP based unit status display and controls section designed for convenient and reliable user operation. All of the operator controls and monitors shall be located on the front of the UPS cabinet. The monitoring functions such as metering, status and alarms shall be displayed on the graphical LCD display. Additional features of the monitoring system shall include:

Menu-driven display with pushbutton navigation
Real time clock (time and date)
Alarm history with time and date stamp
Battery backed-up memory
System should be BMS compactable for monitoring.

- System should be equipped with inbuilt TCP/IP enabled SNMP card for remote monitoring and control. It should generate alert for events. The SNMP card should be programmable to send email, SMS's over a GSM modem to report particularly important alerts and events.

14. Display & Metering:

- Input AC voltage line-to-line/ line-to-neutral for each phase
- Input AC current for each phase
- Input frequency
- Battery voltage and DC bus voltage
- Battery charge/discharge current

- Output AC voltage line-to-line and line-to-neutral for each phase
- Output AC current for each phase
- Output frequency
- I/P & O/P Apparent power for each phase
- I/P & O/P Active power for each phase
- I/P & O/P kWh meter
- Battery time left during battery operation
- The total operating time of the UPS

15. Alarm Messages

The interface must be able to display at least the following status or event information and UPS monitoring should be web based and user friendly.

- Input power out of tolerance
- Battery charger problem
- Battery test failed
- Low battery warning
- Low battery shutdown
- DC bus overvoltage
- Bypass frequency out of range
- Load transferred to bypass
- Excessive retransfers attempted
- Static switch failure
- UPS output not synchronized to bypass power
- Output under voltage
- Output overvoltage
- Output over current
- System output overloaded
- Load transferred to bypass due to overload
- Overload shutdown
- Control error
- Critical power supply failure
- Load transferred due to internal protection
- External shutdown (remote EPO activated)
- Fan failure
- Over temperature shutdown
- UPS is on battery operation
- UPS is on bypass operation
- Battery mode with mains supply / no mains supply
- battery low charge warning
- battery on fast charge
- abnormal battery recharge voltage
- minimum battery voltage
- battery fault
- battery charge circuit broken
- battery charger system fault

- overload alert
- ventilation fault alert
- out of range temperature/humidity alert
- standby power supply out of tolerance

A predictive/statistical algorithm and interpretation of logged data (number, duration and type of events) regarding:

- out of tolerance Input voltages
- overloads
- battery mode operation
- switching to standby power supply
- over- temperature

The UPS must predict potential criticalities for the UPS itself, due to ambient conditions, in advance and alert the maintenance service / monitoring system.

16. Diagnostics

The system will be equipped with a microprocessor able to run full machine diagnostics to determine:

- Self-compensation of components to ensure stable settings over time;
- Acquisition of the main diagnostic and monitoring information by computer (local or remote);
- First installation procedure wizard;
- Full test procedure at full load on UPS, with no further external loads (auto-charge mode)
    - rectifier;
    - inverter;
    - ,bypass;
    - power bus;
    - cables, contactors and fuses;

The Manufacturer must also supply 24h remote monitoring and maintenance.

17. Uninterrupted Transfer / Retransfer

The transfer control logic shall automatically turn on the static transfer switch, transferring the critical AC load to the bypass source, after the transfer logic senses any of the following conditions:

- Inverter overload capacity exceeded
- Critical AC load overvoltage or under voltage
- Battery protection period expired

- Out of tolerance inverter input DC voltage
- Over temperature
- Inverter fault

Retransfer of the critical AC load from the bypass source to the inverter output shall be automatically initiated unless inhibited by manual control.

18. Maintenance bypass

The manual bypass switch will be provided internally and must ensure that equipment downstream of the UPS is supplied directly by the UPS upstream power source when rectifier, inverter and static switches are open. Switching to the manual bypass and back will be possible without load supply interruption (Make Before Break).

19. Replacement Parts Stocking

Parts shall be available through an extensive network to ensure around-the-clock parts availability throughout the country. Recommended spare parts shall be fully stocked by local field service personnel (in Bangalore office) with back-up available from national parts center and the manufacturing location. The national parts center Customer Support Parts Coordinators shall be on-call 24 hours/day, 7 days/week, and 365 days/year for immediate parts availability. Tenderers may also produce Bangalore service center address along with strength support in the form of escalation chart. The UPS systems are going to feed the power to very critical equipments, and it is the responsibility of local service team to attend any emergency situation immediately during warranty period as well as post warranty period. Hence, service center at Bangalore is very much essential.

20. Battery Circuit Breaker

A suitable battery circuit breaker (DC breaker) shall be provided to isolate the battery from the UPS. This breaker shall be in a separate wall mounted NEMA-1 enclosure. The battery breaker provides a manual disconnecting means, short circuit protection, and over current protection for the battery system. When opened, there shall be no battery voltage in the UPS enclosure. The UPS shall be automatically disconnected from the battery when the battery reaches the minimum discharge voltage level. **During any abnormalities (over charging)/accident, UPS should be able to trip the battery breaker automatically. So necessary arrangement needs to be done.**

21. Other Protections

- Battery protection period expired Input Over/ under voltage, Output over/ under voltage, Output short circuit, Inverter overload, Rectifier overload, Inverter Overvoltage/under voltage, over temp, surge protection.
- It must have Generator Compatibility.
- Must have complete protection for EMI / RF as per the IEC standard.
- Units have built in surge, spike and line noise protection.
- It should have Intelligent Battery Management system
- UPS should be compact and with small footprints.
- UPS sound level should be within the limit as per the standard.

22. Warranty/Guaranty:

The equipments (complete system including battery banks) supplied shall be guaranteed against all types of defects for a period of **Two years (2 years)** from the date of handing over of the equipment to Instem after successful completion of acceptance testing. Any defects in the system/subassemblies found within the guarantee period shall be rectified/replaced by the supplier free of cost. During this period, servicing at bimonthly interval or earlier, as prescribed by the manufacturer and as mutually agreed to, shall be carried out free of cost. It also includes battery health checks of the all the battery banks. Supplier shall also indicate the service facility they can offer at the place of installation and the telephone number and address of their service center. During the warranty period, breakdown call response time should be within 4 hrs in all working hours and 24hrs during after office hours and weekends.

Note: During warranty period, vendor should arrange for "On line battery impedance test" for the complete system once in Six month period.

The track record of the firm in implementing and maintaining similar UPS systems, the nearest local(Bangalore) service establishment and the promptness in attending to service/breakdown calls shall also form basis of tender evaluation.

23. Rating test

8 hrs full load endurance test shall be carried out at factory premises and followed by 110% load for 1 hr period. Test to ascertain the rated and transient capacities and overall efficiency of the system will be carried out at factory and with the battery backup of 15(Fifteen) minutes with full load at the factory. Satisfactory performance at this stage meeting the prescribed limits will only be construed as acceptance of the UPS. The quoted UPS which falls short of our prescribed minimum overall efficiency will not be accepted.

If the full load endurance test needs to be conducted at INSTEM-GKVK, then vendor should arrange all load banks with necessary cable arrangement along with metering (Digital oscilloscope/power analyzer to find out transients and I/P & O/P wave forms). The cost for energy consumption during the endurance test shall be deducted in the final bill after due certification from the Engr-in-charge.

- Voltage and frequency regulation
- THDv and THDi
- TVD & TVR from 20% to 100% rated full load & 100% to no load
- Unbalance load test and Noise level measurement

24. Scope of Installation

- Minimum ground clearance for ups should be 200mm and for battery should be150mm, hence suitable powder coated MS base frame shall be supply along with ups.
- The proposed 2x80KVA UPS systems will be installed at 1st floor of INSTEM lab building, it is vendor responsible to shift the UPS at above mentioned location. However, service lift facility is available at the building.

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Note:

The Contractors shall submit all technical supporting document details/third party certificates of the system along with the tender and also should attach the Battery backup calculations and battery discharge characteristics catalog along with the technical bid for evaluation purpose.

The Tenderers shall give the names and full postal addresses of their clients (data center) from Bangalore to whom similar equipments have been supplied by them.

The tenderers shall attach latest two purchase order copy/performance certificates (similar equipments i.e 80kVAUPS) from the existing clients(data center) from Bangalore.

24. Vendors are required to fill the following sheet and submit along with technical bids.

Sr.no	Description	To be filled by vendor	Remark if any
1.	UPS make		
2.	Capacity/Rating		
3.	Output voltage & Frequency		
4.	Regulation: a. O/P voltage regulation b. O/P frequency regulation		
5.	Input power factor		
6.	Output power factor		
7.	No. of phases- Input / Output		
8.	Overall efficiency-online mode AC-AC		
9.	Input THDi		
10.	Voltage THD		
11.	Battery backup – 15 mints per UPS. a. No. of batteries b. AH rating of battery		
12.	Over loading capacity		

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13.	Isolation transformer a. Make b. Winding - Copper		
14.	Warranty for entire system		
15.	Parallel configuration		

The following Parameters of Technical Bid will be taken into account for Short listing the Commercial Bid. The Proposals shall be evaluated in two stages: (1) Technical and (2) Price / Financial. A Minimum qualifying mark is set as per given table below and only those Agencies whose Technical Proposals score the minimum mark of 75% and above shall be considered for Financial Evaluation.

Evaluation table

Sr. no	Evaluation of vendor	Max marks	Evaluation
1	**General specifications:** (i) UPS type: DSP control based On-Line double conversion technology (ii)UPS Capacity: 80kVA/72kW (iii)Total Efficiency AC/AC at 100% load(online mode) :≥93% (iv) Output power factor : ≥0.9 (iv) Parallel configuration : ≥4 units (v) Rectifier/Inverter : IGBT with PFC control (vi) Isolation transformer : copper wound Make: OEM	20	All the parameters are very critical for our application, so each parameters will be considered for evaluation purpose.
2	**UPS Input configuration** as per technical specification indicated in Sr.no.2	20	

3	**UPS Output configuration** as per technical specification indicated in Sr.no.3	20	
4	**Battery banks and its accessories:** (i) Battery make & type: Rocket, SMF VRLA type (ii) Battery backup : 15 mints For battery calculation, ECV should be consider as a 1.75V at 20hrs rating. (iii)Online battery test: as per specification (iv) Battery charger: as per specification (v) Batter stand: as per specification (vi) insulation mat and battery cable	10	
5	Necessary Type test/third party certificate from CPRI/govt. authorized certificate agency.	10	
6	Local service center and team strength. (Please provide the list of clients in Bangalore for 80kVA Online UPS (same proposed model) and provide latest two performance certificates from the clients for 80kVA UPS.	10	
7	**Warranty/Guaranty:** 2 years for the complete system including battery banks from the date of commissioning and handed over the system to department. Please mention in writing.	4	
8	Rating test (rating test will be conducted as per technical specification). Please mention in writing	3	
9	Acceptance of all conditions as per our technical specification. Please mention in writing.	3	