28th Oct, 2019

To Whom It May Concern

Limited Tender for supply and installation of UPS system.

This is an RFQ (Request for Quote) for supply, installation, commissioning and testing of UPS system for cleanroom as part of a limited tender for the Centre for Nano Science and Engineering (CeNSE.) at IISc., Bangalore.

CeNSE is a multidisciplinary research department at IISc that houses a 14,000 sq. ft. cleanroom and characterization facility used by 50 faculty members from various disciplines at IISc. CeNSE also runs a program called Indian Nano electronics Users Program (INUP) which has allowed 4200 participants from more than 700 universities and institutes all over India to use the facilities at CeNSE. Consequently, any utility/facility at CeNSE receives significant exposure to scientific community at IISc and beyond. The vendors are requested to factor in the value of this exposure in to their quotes. Details of existing facilities and INUP program can be gleaned from:
http://nnfc.cense.iisc.ac.in/
http://www.mncf.cense.iisc.ac.in/
https://www.inup.cense.iisc.ac.in/

1. Vendors will be required to submit a technical proposal and a commercial proposal in **two separate sealed envelopes**. Quotes in violation of this will be rejected.
2. **The deadline for submission of proposals is the 7th of Nov 2019, 5:30 pm Indian Standard Time.** Proposals should arrive at the NNFC office, GF-20, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India, by the above deadline.
3. The decision of the purchase committee is final.
4. The technical proposal should contain
    a. Relevant technical datasheets. The committee reserves the right to cross-check the information in these datasheets with publicly available information.
    b. A compliance table with 5 columns. The first column must list the technical requirement, in the order that they are given in the technical configuration below. The second column should describe the capability of the tool for that specific requirement. In case the technical requirement is a question, second column must provide a technical answer. Please be quantitative and consistent with the technical datasheets. Third column must specify whether the technical requirement is met with a “Yes”, “No”, or “Partially”. If the response is “Partially” or “No” the third column, the fourth column must explain the extent of the deviation and, if possible, the reasons for the deviation. The fifth column is for other “Remarks”. You can use it to compare your tool with that of your competitors or provide more details/justifications.
    c. Technical capabilities of any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
    d. Any additional capabilities or technical details, which you would like to bring to the attention of the purchase committee. Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors
5. The technical proposal will be evaluated against the technical requirement. Only vendors who meet the technical requirement will be considered for the commercial negotiation.
6. If multiple systems fulfill the requirements, vendors can offer multiple bids.
7. The commercial bid must contain:
    a. Itemized cost of the system and *required* accessories, such as software, power supply, etc.

b. itemized cost, as an option, for any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
c. The quotes should be CIF Bangalore, India. So please include cost of shipping to Bangalore. The quote does not need to account for Customs duties.
d. Please indicate the warranty provided with the tool. Warrant of 5 years of more is preferred.
e. Provide itemized cost for *required/expected* spares for 5 years of operation. This number will be used to estimate the life cycle cost of the tool.
f. The cost of annual maintenance contract (AMC). The details of AMC are given below. This number will be used to estimate the life cycle cost of the tool.
g. Length of time that the tools will be supported with service and spares from the date of installation. Our requirement is that the tools be supported for at least 5 years from the date of installation. To quote lowest price, vendors often quote for obsolete or soon-to-be obsolete equipment. This is **NOT** acceptable. For a user-facility like CeNSE, it is vital that the equipment be serviceable and supported for the foreseeable future. The length of guaranteed support will be used to estimate the life-cycles cost of the tool.

8. The AMC, valid for 3 years, must
   a. cover 4 scheduled and 2 emergency visit per year;
   b. The emergency visit should be supported with a 24-hour response window.
   c. In case the OEM is foreign, clarify if maintenance will be done by a trained local engineer (OEM representative within India) or a specialist from abroad.
   d. Include in the commercial offer, an itemized list of spares (e.g. maintenance kits) that are essential for scheduled visits.
9. The commercial bids will be evaluated based on life-cycle cost of the tool. This includes the cost of purchase, maintenance, spares, etc.
10. The RFQ must include references of 3 previous installations, preferably in India. Please provide the names and contact addresses of the referees, so that the committee can contact them independently.
11. We encourage vendors to give technical presentations, physically or over Skype, so that we can better understand the technical capabilities of their tools and vendors can better understand the requirements. To schedule the presentations, the vendors can contact Dr. Savitha P, GF-20, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India. (savithap@iisc.ac.in).
12. Any technical questions or request for site-visit/audit can be directed to Dr. Savitha P, GF-20, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India. (savithap@iisc.ac.in).

Table 1: Technical Requirements

1.	Main application	a) To supply uninterrupted power to cleanroom tools. b) Real-estate is very limited. System must have a reasonably small footprint. c) System should need minimal maintenance or upkeep. Systems that need regular replacements or spares will not be considered. d) The system should conform to industrial safety standard. e) The proposed system should be compatible with existing UPS bank and electronics. Contact savithap@iisc.ac.in for details.
2.	Facility type	a) The system must be compatible with utility or maintenance facilities. b) Vendor MUST show evidence of atleast 3 prior installations at similar (or larger) scale facilities.

3.	Footprint & weight of cylinder storage and other equipment	a) Real estate is very expensive. Compact systems are preferred. Please specify the total foot print in cm x cm, volume, and weight.
4.	System software	a) Front panel displaying equipment and process status along with appropriate software to be supplied. b) System must interface with the building management software. c) Complete logs of all the process and system parameters to be available and stored for future trouble shooting d) Please specify the date the system was launched and the time the software will be supported. This is long-time investment. The system MUST have lifetime support.
5.	Periodic Maintenance	a) The system should require minimal maintenance. Mention the recommended preventive maintenance schedule for the system. Provide details of what constitutes preventive maintenance. b) Can the preventive maintenance be done by a trained on-site engineer (CeNSE employee) or requires a specialist from the OEM? c) Please note, that system should be supported by a trained local representative with a 24-hour window of response.
6.	Installation and Training	a) Installation and training at customer site, by the experts from OEM should be part of the package. b) During the installation all the specifications of the processes should be verified for acceptance by the customer.
7.	Safety	a) Mention any special safety requirement of the system b) The system must come with a complement of interlocks to prevent common user errors. c) Flashing lights with the hooter during emergencies
8.	Recommendation	a) The system must submit references from at least 3 previous installations at similar or larger cleanrooms. b) The names and contact addresses of the referees must be submitted with the proposal, so the purchase committee can contact them independently.
9.	Acceptance tests	a) As per industry standards

Table 2: Technical Specifications

A	**General Features**	
1	Power (kVA)	500
2	UPS Topology	ON LINE - Double Conversion
3	Nominal output power (kVA Cosφ 0.9)	500
4	Nominal output power (Cosφ 1.0)	450
5	Efficiency (AC - AC) (%)	
6	@25% load	92
7	@50% load	95
8	@75% load	95
9	@100% load	94.5

10	Efficiency (AC - AC) (Eco Mode)	> 98
12	UPS ambient temperature (°C)	0 - 40
24	Electromagnetic compatibility EMI	According to “IEC EN 62040-2” (CE marking)
25	Safety	IEC EN 62040-1
26	Test and performance	IEC EN 62040-3
36	Reference standards	EN 62040-1 - EN62040-2 - EN62040-3 ISO 9001:2008 - ISO 14001
37	Front panel	LCD
B	**Input: rectifier and battery charger**	
1	Power (kVA)	500
2	Input	Three-phase
3	Nominal input voltage (Vac)	400
4	Input voltage range	320-460 V
5	Input frequency (Hz)	50 – 60
6	Input frequency range	±5 /±10 adjustable
7	Input power factor	> 0.99
8	Input current THD at nominal voltage and THDV <0,5% (%)	
	@25% load	< 10
	@50% load	< 7
	@75% load	< 5
	@100% load	< 3
9	DC output voltage accuracy (%)	±1
10	DC output voltage ripple (%)	1
12	Maximum recharging current (A)	
	At nominal load	80
13	AC-DC Converter	IGBT-based PFC
17	Rectifier soft-start (walk-in) (sec)	Selectable from 5’’ to 30’’
18	Rectifier sequential start-up (hold-off) (sec)	Selectable from 1’’ to 300’’
C	**Batteries**	
1	Power (kVA)	500
2	Type (standard) other on request	Sealed lead acid (VRLA - maintenance free)
12	Battery Ah and quantity	"x" no "y" Ah. Vendors may provide quantity and capacity of batteries based on the DC voltage of the UPS and according to battery wattage Chart provided by the manufacturer and consider design margin of 10%
D	Output: Inverter	
1	Power (kVA)	500
2	Inverter Bridge	IGBT (High Frequency PWM)
3	Nominal apparent output power(Cosφ 0.9)	500
4	Nominal active output power(Cosφ 1.0)	450
5	Efficiency (AC - AC) (%)	
	@25% load	92

	@50% load	96
	@75% load	96
	@100% load	96
6	Output	3 Phase + neutral
7	Nominal Output Voltage (selectable) (Vac)	380-400-415
8	Output Voltage Stability	
	- Static (Balanced Load) (%)	± 1
	- Static (Unbalanced Load) (%)	± 2
	- Dynamic (Step Load 20%÷ 100% ÷20%) (%)	± 5
	- Output Volt. Recovery Time(after step load) (ms)	< 20
13	Nominal Output Current (@ 400 Vac output) (A)	
	Cosφ 0.9 (leading and lagging)	724
	Cosφ 1 (purely resistive load)	652
14	Overload Capability	10 min >100%…125%
		1min >125%…150%
		10 s >150%...199%
15	Short Circuit Current (A)	870
18	Output Harmonic Distortion (%)	
	Linear load	< 1
	Non Linear load	< 5
E	**Bypass**	
1	Overload Capability (%)	150 Continuously 1000 For 1 Cycle

Thanking you,