



To, **Ref No: IIT/ EE/SMART CITY/INVERTER AND BATTERY SET/2015/02**

INVITATION FOR QUOTATIONS FOR SUPPLY OF THE FOLLOWING ITEMS REQUIRED FOR SMART CITY PILOT PROJECT AT IIT KANPUR

S.No.	Brief Description of the Goods	Specifications	Qty.	Delivery Period	Place of Delivery	Installation Requirement if any
1.	Inverter 5kVA	Mentioned below	20	4 months	Department of Electrical Engineering IIT Kanpur-208016	Installation & integration with DB will be in scope of bidder
2.	Battery Set (200AH, 12V)	Mentioned below	20			

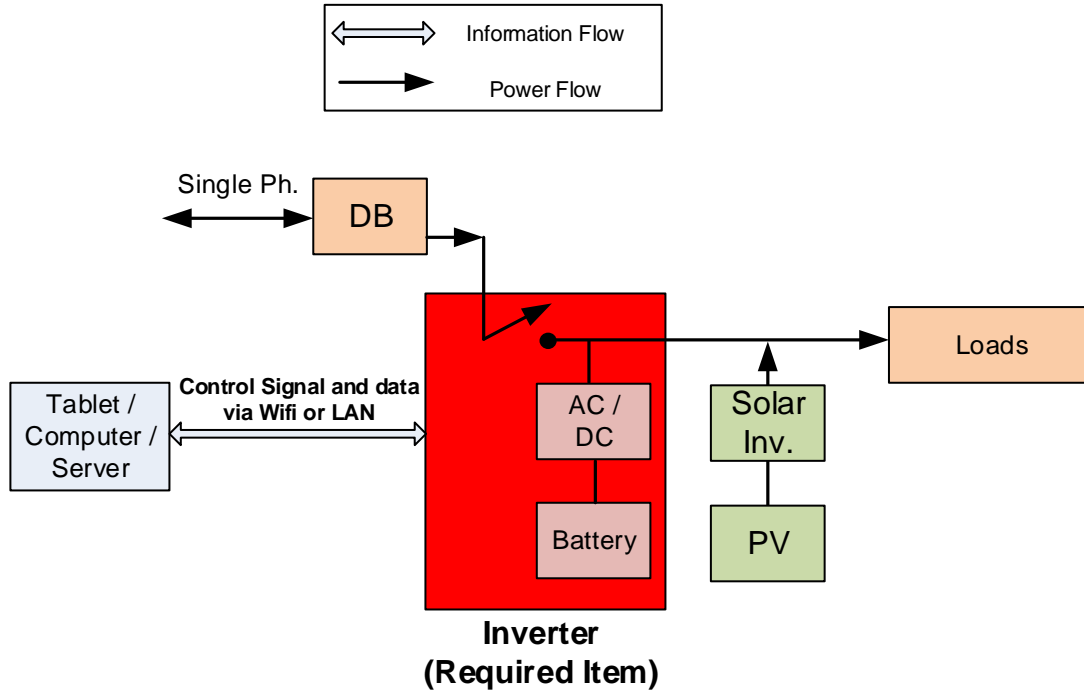
1. INVERTER AND BATTERY SET (DETAILED SPECIFICATIONS OF INVERTER AND BATTERY SET)

Inverter should have the following features / modes of operation:

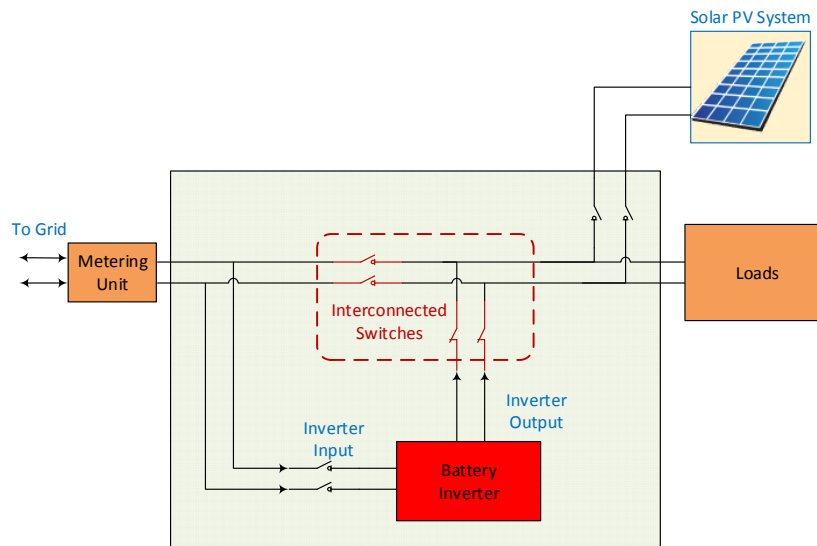
- 1. When grid is off (grid not available mode):** Inverter should supply power to the load. In case of excess solar power** is greater than zero, inverter would charge the battery with excess solar power**. In the extreme case when battery is fully (completely) charged, inverter output frequency should be changed to 57Hz.
- 2. When grid is on (grid available mode):** Inverter should allow excess solar power** to flow back to the grid. A "Reference Power" value would be communication to inverter using WiFi or LAN (Ethernet). In case "Reference Power" value is zero, Inverter should charge battery through grid supply as per required charging characteristics. In case "Reference Power" value is greater than zero, inverter should supply power (equal to this "Reference Power" value) from battery to grid.
- 3. In both of the above modes, load should be supplied without interruption.**
- 4. **excess solar power is defined as power available from solar PV minus the power consumed by essential loads. In case load power is more than solar PV power, there would not be any excess power.**



The inverter required would be connected in the following configuration. The required inverter is highlighted with red color.



Distribution Box Design is shown below



5. The basic Technical Specification is tabulated below:



Table: 1

Inverter rating	5000 VA / 5 kW
Inverter type	Sine wave inverter
Input	Voltage range : 110V -280V AC Frequency Range : 50Hz \pm 5Hz
Output	Inversion voltage : 220V \pm 3% Inversion frequency : 50Hz \pm 2% Overload: 105% for 1 minute + 125% for 5 seconds
DC voltage	96V nominal voltage
THD	\leq 3% output voltage (linear load)
Transfer time	\leq 12ms Automatic transfer
Bypass (direct grid to load)	Should be rated for continuous current of 63A with same breaking capability
Battery charging current	20A (for charging from grid)
Inverter efficiency (Battery to load)	\geq 90%
Protections	Protection against short-circuit, overload, no-battery etc
Ambient temperature	up to 45° C
Communication ports	LAN (Ethernet) or WiFi
INDICATORS	<ul style="list-style-type: none"> • Battery Charging : Yes • Overload : Yes • Low Battery Cut out
Load Power Factor	Should be able to supply any power factor load up to unity



Battery management system	Current controlled battery charging for long battery life
Compatibility battery type	Lead acid / SMF
Technology	MICRO processor / DSP based PWM technology using IGBT / MOSFET
Communication Data from Inverter (via communication port)	Online monitoring of load power, battery charging/discharging current, battery voltage (or battery state of charge), mode of operation of inverter
Communication data to inverter (via communication port)	Reference power supplied by battery to the grid (details provided below)
Air Conditioner Operation	Inverter should be able to start and continuously supply Air Conditioner of 2 ton
Warranty	Inverter must have replacement warranty for a minimum period of 3 years. Warranty should include labor, component, transport and other charges.

Total Backup time on full load	2 hours at-least
Battery AH and voltage	200AH, 12V nom
No. of batteries required for each inverter	8 nos.
Battery type	Sealed Maintenance Free (SMF) Battery
Preferred battery make	Exide, Quanta, Panasonic, Amaron, Amara Raja
Warranty	Batteries must have replacement warranty for a minimum period of 4 years. Warranty should include labor, component, transport and other charges.



2. General Terms & Condition

1. The scope includes:

- a) Supply of Inverter and Battery Set for smart home system under smart city pilot project at IIT Kanpur.
- b) Open source code availability for future modification for R&D and installation support services.

2. Bid Price

- a) The contract shall be for the full quantity as described above. Corrections, if any, shall be made by crossing out, initialing, dating and re writing.
- b) All duties, taxes (including sales tax) and other levies payable on the raw materials and components shall be included in the total price, **Except Central Excise Duty & CDEC** (custom duty), as IIT Kanpur is exempted from these duty.
- c) The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- d) The Prices shall be quoted in Indian Rupees only.
- e) The service tax has not to be included into rate. It will be reimbursed by the institute as per reverse mechanism.

3. Each bidder shall submit only one quotation.

4. Criteria of Eligibility

- a) The supplier has turn over of 100% of the value for last 3 financial years.
- b) **Authorization from manufacturer:** In the case of a bidder offering to supply goods under the contract which the bidder did not manufacture or otherwise produce, the bidder has been duly authorized by the goods manufacturer or producer to supply the goods in India.
- c) Details of the experience of supplying similar equipments during the last 2 years.

5. Validity of Quotation

Quotation shall remain valid for a period not less than **90 days** after the deadline date specified for submission.



6. Evaluation of Quotations

Note: The bidder has to submit their quotation/offers in two envelopes. One envelope will contain technical particular/technical bid (please see table 1). The second envelope will contain the quoted offers/financial bid (please see table 2).

Quotations of only following bidders will be evaluated.

- (1) are properly signed
- (2) Conform to the terms and conditions, and specification
- (3) The filled Technical particular/technical bid will be evaluated as per the specification and quotations of only vendor meeting the technical specifications will be shortlisted for opening of their quoted offers/financial bid.

7. Award of contract

The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive (includes technically suitable) and who has offered the lowest evaluated quotation price.

- 1.1 Notwithstanding the above, **the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.**
- 1.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be incorporated in the purchase order.
2. Payment shall be 75% against the delivery, 15% against the installation and 10% after final completion.
3. Delivery period should not be more than 4 months and delivery should be at IIT Kanpur. The Penalty @1% per week or part there of subject to max 10% of the delivery price will be deducted from the balance payment, if supply is not completed within stipulated period.
4. You are requested to provide your offer latest by 3:00PM on 30.11.15.



5. Technical bid clarification date has been fixed on 26.11.15 at 3:00 PM in Dept. of Electrical Engineering meeting room, IIT Kanpur.
6. We look forward to receiving your quotations/tender and thank you for your interest in this project.

Table : 2
FORMAT OF QUOTATION/TENDER*

Sl. No.	Description Goods	Specifications	Qty.	Unit	Quoted Unit Rate in Rs.	Total Amount (in Rs.)	
						In Figures	In Words
1.	Inverter (5kVA)	As per table 1	20	No.			
2.	Battery Set (200AH, 12V)		20	No.			
TOTAL (in Rs.)							

Gross Total Cost: Rs.....

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs..... (amount in figures) (Rs. amount in words) within the period specified in the Invitation for Quotations.

We also confirm that the normal commercial warrantee/guarantee of 48 months shall apply to the offered goods.

Signature of Supplier



Certified that all the information/parameters indicated above exist in the meter offered by you and shall stand all the tests specified above within the variation of current/voltage frequency and climatic conditions specified therein.

SIGNATURE
OF BIDDER NAME
DESIGNATION



SPECIAL CONDITION

1) Authorization from Manufacturer

In the case of a Bidder offering to supply goods under the contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorized by the goods' Manufacturer or producer to supply the goods in India.

2) Proof of Manufacturing and past performance.

Details of experience and past performance of the bidder on equipment offered and on those of similar nature within the past one years and details of current contracts in hand and other commitments.

3) Details of last 3 years turn over of the bidder.

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