

INSTITUTE FOR PLASMA RESEARCH

FCIPT

B-15-17/P, G.I.D.C. Electronics Estate, Sector-25, Gandhinagar – 382 044

Gujarat State

Phone no. 079-23269000/23269002, Fax 23269001

TENDER NOTICE NO.FCIPT/TN/PUR/002/2008-2009 DATED 18/12/08

Sealed tenders are invited from reputed manufacturers/authorized dealers for Design, manufacturing, testing, supply, installation and commissioning of 1 No. of 100kVDC, 25 Amp, short duty Resistive Load Bank. Tender documents are available on IPR website www.ipr.res.in//purchasetenders.html. Interested and eligible parties may at their option, download the tender documents from the website and submit their offer along with a **tender fee of Rs. 200/- (Non refundable)** in the form of Demand Draft from any nationalized / scheduled bank drawn in favour of **Institute for Plasma Research** and payable at **Ahmedabad** as per the details given in the tender documents. In case party desires to collect the tender documents by post, they may contact the Purchase section along with prescribed tender fee. Tender documents will be issued up to **08-01-09**.

Tenders in a sealed envelope superscribing the envelope with the above tender no., date, due date and brief description of tendered item along with Tender Fee of Rs.200/- and EMD for Rs. 15,000/- by way of Demand Draft from any nationalised / scheduled bank drawn in favour of **Institute for Plasma Research** and payable at **Ahmedabad** should be submitted to the Purchase Cell at the above address by 1.00 p.m. on **19/01/2009**, which will be opened on the same day at 2.30 p.m. in the presence of attending tenderers. Director IPR reserves the right to cancel the tender in part or in toto without assigning any reason. The representative who is going to attend the tender opening should carry on authorization letter from the organization for participation in the tender opening.

Design, manufacturing, testing, supply, installation and commissioning of 100kVDC, 25 Amp, short duty Resistive Load Bank : 01 No.

NOTE:

1. Full details and specifications of the items and general instructions to be followed regarding submission of tenders are indicated in the tender documents.
2. **Proof for fulfillment of eligibility criteria mentioned hereunder should be submitted along with the tender. If the tender is submitted without valid documents, we shall not consider your offer. Quotations received without proof of eligibility criteria will be rejected.**
3. Tender documents can also be obtained by submitting a written request to the Purchase Cell, FCIPT together with prescribed tender fee, provided that the eligibility criteria is fulfilled. Last date for issue of Tender documents is **08-01-09**.
4. While requesting for Tender Documents, such request shall indicate **the "REQUEST FOR TENDER DOCUMENTS AGAINST TENDER NOTICE NO. FCIPT/TN/PUR/002/2008-2009 DATED 18/12/08"**.
5. The tender fee of Rs. 200/- (non refundable) should be made in the form of DEMAND DRAFT from any nationalized bank drawn in favour of *Institute for Plasma Research* and payable at *Ahmedabad*. Vendor's name and tender number shall be indicated on the reverse side of the Demand Draft.
6. DD should not be prior dated to the date of advertisement.
7. Those who use the download tender documents from IPR Website may submit the prescribed Tender Fee keeping in a separate envelope along with the tender.
8. **Tender received without the prescribed tender fee will be rejected.**
9. No request for the extension of due date will be considered.
10. Late/Delayed offers will not be accepted.
11. **Tenders in a sealed envelope superscribing the envelope with the above tender no., date, due date and brief description of tendered item along with EMD for Rs. 15,000/- by way of Demand Draft drawn in favour of *Institute for Plasma Research* payable at *Ahmedabad* should be submitted to the *Purchase Officer* at the above address by 1.00 p.m. on 19/01/09. Tenders received upto 1.00 p.m. on 19/01/09 will be opened on the same day at **2.30 p.m.** in the presence of attending tenderers.**
12. In the event of any date indicated above is a declared Holiday, the next working day shall become operative for the respective purpose mentioned herein.
13. FCIPT/IPR will not be responsible for any delay/loss of documents in transit.
14. Tenders received without the details asked for including proof of eligibility for participating in the tender may not be considered.
15. Tenderers should furnish/enclose full technical details/literature, delivery period and confirm the terms and conditions attached with the tender.
16. **Those who do not meet with the eligibility criteria need not submit Tender.**

17. Those who are quoting on behalf of their foreign Principals should submit a Proforma Invoice of Foreign Principals in foreign currency.

18. The Director, IPR reserves the right to accept or reject any offer in full or part thereof without assigning any reason thereof.

19. Quotation received without EMD will not be considered .

ELIGIBILITY CRITERIA: The Vendor (i) should be a manufacturer/authorized dealer and has supplied similar type of Resistive Load Bank to reputed organizations (attach copy of purchase orders). In case of authorized dealer, attach valid dealership certificate and (ii) should be able to provide after sale service at Mumbai.

NOTE: - Issue of tender documents does not mean that a vendor is qualified to submit tenders. FCIPT/IPR's decision to consider as to whether a vendor has met with the eligibility criteria is final.

INSTRUCTIONS TO BIDDERS AND TERMS AND CONDITIONS

1. The quotation and any order resulting from this tender/enquiry shall be governed by our Conditions of contract and supplier quoting this enquiry shall be deemed to have read and understood the same in toto.
2. Where counter terms and conditions have been offered by the supplier, the same shall not be deemed to have been accepted by us, unless our specific written acceptance thereof is obtained.
3. **Tender Fee: Tenders received without the prescribed Tender Fee will be rejected.**
4. **Clarifications:**
Any technical and commercial questions, information, clarifications, etc. that may be required pertaining to this Tender/enquiry may be obtained from the Purchaser before submitting the tender.
 - 4.1 Bids shall be complete in all respects and shall include properly filled in prices, other specifications, schedules, relevant drawings and catalogues as necessary along with the bid covering letter, all in duplicate.
5. **Quotation:** Your quotation superscribing our tender/enquiry No., date, due date and short description of item should be submitted to the Purchase Officer, IPR in a sealed envelope on or before the due date. Late and delayed quotations will not be considered. FCIPT/IPR will not be responsible for postal delays or any other delays in receipt of quotation. Envelopes received without Enquiry number, date, due date and short description of item may be rejected. The quoted prices should be firm for a period of 120 days from due date for placing order. FCIPT/IPR is not bound to accept lowest rate/s. FCIPT/IPR reserves the right to place order on one or more parties irrespective of whether he is lowest or not. The scope of supply includes insurance by the Contractor/Supplier.

6. **Specifications:** Material should be offered strictly conforming to our specifications/drawings. Deviation, if any, should be clearly indicated by the supplier in their quotation. The supplier should also indicate the Make/Type number of the materials offered and catalogues, technical literature and samples, wherever necessary should accompany the quotation.
7. **Terms of prices:** Quotation should be submitted on door delivery basis without extra charge wherever possible. For quotations on Ex-Works, Ex-godown basis the approximate packing and forwarding charges should be indicated by the supplier. In the case of local suppliers, the material is to be delivered at our stores free of charge. Unit rate/s should be valid throughout the validity of purchase order/contract period for addition/deletion purposes. Break-up of price should be furnished. The quoted price should not be subject to price escalation for whatsoever reasons. The quoted price shall be firm, fixed and non-revisable during the validity/extended validity of purchase order/contract.
 - 7.1 Prices are required to be quoted according to the units indicated in the tender form. When quotations are given in terms of units other than those specified in the tender form, relationship between the two sets of units must be furnished.
 - 7.2 Wherever options are specified in the tender documents, FCIPT/IPR reserves the right to accept any option/s irrespective of whether all the vendors have quoted for all the options or not. The decision of FCIPT/IPR in this regard will be final.
8. Tender should be free from Correction and Erasures. Corrections, if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail.
9. FCIPT/IPR shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portion of the quantity offered and the tenderers shall supply the same at the rates quoted.
10. **Sales Tax etc.:** We have no "C" or "D" form. The percentage of Sales Tax/VAT, surcharge, VAT, if applicable, and other levies legally leviable and intended to be claimed should be clearly indicated in the tender. Where this is not done, no claim on these accounts would be admissible later.
 - 10.1 **VAT Registration:** You may submit a copy of VAT Registration Certificate along with your quotation.
 - 10.2 **Service Tax :** Wherever Service Tax is applicable, it should be mentioned clearly. You may indicate percentage of service tax in your quotation.
 - 10.3 **Excise Duty:** Extra as applicable. Proof of payment of excise duty to be furnished.
 - 10.4 FCIPT/IPR is situated in Gandhinagar District (Gujarat) and hence Octroi is not applicable at present.

11. **Delivery Date:** The supplier must indicate the firm delivery date by which the materials will be despatched/delivered/installed by them from the date of our order (i.e. 3 month from the date of LOI/Purchase order).
12. **Inspection:** Materials will be inspected in presence of FCIPT/IPR/BARC representatives at your works prior to dispatch. The decision of Stores in-charge, IPR in the matter will be final.
13. **Earnest Money Deposit (EMD):** Tenderer should furnish Earnest Money Deposit (EMD) for Rs. 15,000/- by way of Demand Draft drawn in favour of *Institute for Plasma Research* payable at Ahmedabad. Quotation received without EMD will be rejected at the discretion of IPR.
 - 13.1 EMD of unsuccessful Bidder will be returned after finalizing the Contract / Placing Purchase Order.
14. **Payment:** Within 30 days from the date of acceptance. Wherever, advance payment is involved, it will be paid only against Bank Guarantee from Nationalised/Scheduled Bank.
15. No correspondence will be entertained within 30 days from the date of receipt of material and bills, whichever is later.
16. Quotation should be valid at least for 120 days from the date of opening of the tender.
17. **Guarantee:** The Stores/material/goods/equipment offered by the bidder should be guaranteed for a minimum period of twelve months, against defective materials, design, workmanship, operation or manufacture. For defects noticed during the Guarantee period, replacement/ rectification should be arranged free of cost within a reasonable period of such notification. In cases, where our specifications call for a guarantee period more than 12 months specifically, then such a period shall apply.
18. **Security Deposit:** The successful Bidder will have to furnish to the Purchaser an interest free security deposit for 10% (Ten percent) of the order value in the form of Bank Guarantee of an equivalent amount from a nationalised/scheduled Bank within 15 days from the date of LOI/Purchase order and the said Guarantee should be valid till the goods are accepted by FCIPT/IPR. The Security deposit shall be forfeited in case the selected Bidder does not start the work within the time limit specified or fail to complete the work within the stipulated delivery period or fail to comply with any of the terms and conditions in the purchase order/contract.
19. **Liquidated Damages:** In addition to forfeiting Security Deposit, Liquidated Damages for the delay shall be 1/2% (half percent) of the total order value for the delay of each week in the scheduled time of supply or the scheduled date of final completion for the work as the case may be, subject to a maximum of 5% (five percent) of total order value. Liquidated Damages will be recovered from the payment due to the supplier.

20. **Performance Bank Guarantee:** The Contractor/Supplier will have to furnish to the Purchaser (FCIPT/IPR) an interest free performance bank guarantee for 10% (Ten percent) of the order value/ contract value by Demand Draft or by way of providing a Bank Guarantee from a Nationalised/Scheduled Bank valid for a period of 12 months/guarantee period mentioned in the order from the date of installation/acceptance for satisfactory performance of the work carried out by the Contractor.
21. The Contractor/Supplier shall at all times indemnify the purchaser against all claims which may be made in respect of the stores/material/goods/equipment for infringement of any right protected by Patent Registration of design or Trade Mark and shall take all risk of accidents or damage, which may cause failure of supply from whatever cause arising and the entire responsibility for sufficiency of all means used by him for the fulfillment of the contract.
22. **BAR/PERT Charts:**
To be provided as per the requirement of Purchaser.
23. **Sub-Contract:** All sub-contractors are required to be appraised and approved by the Purchaser before placement of orders by the Vendor.
24. **Jurisdiction:** The contract/Purchase order shall be governed by the Laws of India for the time being in force. The Courts of Ahmedabad only shall have jurisdiction to deal with and decide any legal or dispute arising out of this contract.
25. **Settlement of disputes:** Any disputes or difference arising out of or in connection with the Contract/Purchase order shall be to the extent possible settled amicably between the parties.
- If amicable settlement cannot be reached then all disputed issues shall be settled by arbitration.
26. **Arbitration:** In the event of any dispute or difference arising under this Contract, the matter shall be referred to the Arbitrators one each nominated by the Purchaser and Contractor from their respective organizations. In case the said Arbitrators are not able to settle the dispute by themselves, the matter shall be referred to the Arbitrator mutually nominated by the Purchaser and the Contractor and whose decision will be final and binding on both the parties. The venue of arbitration will be IPR. Subject to as aforesaid the Arbitration Act, 1940 and the rules thereunder and any statutory modification thereof for the time being in force shall be deemed to apply to the Arbitration proceedings under this Contract.
27. **Installation/commissioning/site works:** Wherever these activities are part of scope of work/specifications, Vendor should carryout out the same without any extra cost to FCIPT/IPR.
28. **Free Issue Material (FIM) (if specified in the tender documents):** Successful tenderer will have to furnish in the form a Bank Guarantee or in any other form as called for by the Purchaser towards adequate security for the materials/property provided/issued by the Purchaser as Free Issue Material (FIM) for the due execution of the contract. Successful bidder shall arrange insurance for FIM at his expenses.

29. Late/delayed tenders will not be accepted. Incomplete tenders may be rejected at the discretion of FCIPT/IPR.
30. **FCIPT/IPR is not bound to accept the lowest tender. FCIPT/IPR reserves the right to select any vendor at its sole discretion.**
31. **Result of the tenders:** Unsuccessful tenderers will not be informed of the result of their tenders.
32. The Director, IPR reserves the right to accept or reject any quotation/tenders fully or partly without assigning any reason.
33. FCIPT/IPR reserves the right to place order on a single party or to split the order at its sole discretion.

We agree to above terms & conditions.

Place :

Date :

Signature of Bidder
with seal

Note: A copy of our terms & conditions duly signed should accompany your quotation.

Technical Specifications for 100kV Resistive Load bank

1. Scope

Design, manufacturing, testing, supply, installation, commissioning of 100kVDC, 25Amp short duty rated resistive load bank for semi-indoor installation, destined for use in HVDC system. Delivery site shall be BARC, Mumbai.

2. Standards

The resistor element in general should conform to IS 8909.

3. Description

Load bank will be used as resistive test load for the high voltage power supplies. Non-inductive nature is recommended to observe the fast dynamics of the power supply output. The load bank must be capable of dissipating 2.5MW at 100kVDC safely with a duty cycle of 1sec ON/500sec OFF on regular basis. Active part of the load bank shall consist of various resistor strings put in series/parallel combination for different current selection. These resistor strings will be supported inside the metallic enclosure through suitable insulating tubes/columns. Electrical feed throughs for the load bank shall be taken outside from the enclosure through HV bushings.

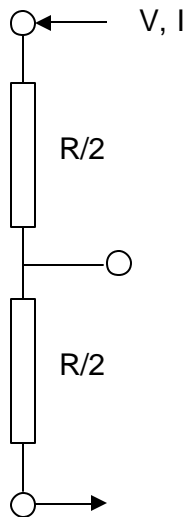
Center tap for all the resistor strings shall be made available at separate HV bushing for using the load bank at half voltage double current mode (50kVDC, 50A).

Forced air-cooling for the resistor elements can increase power density. Fans shall be mounted on the enclosure.

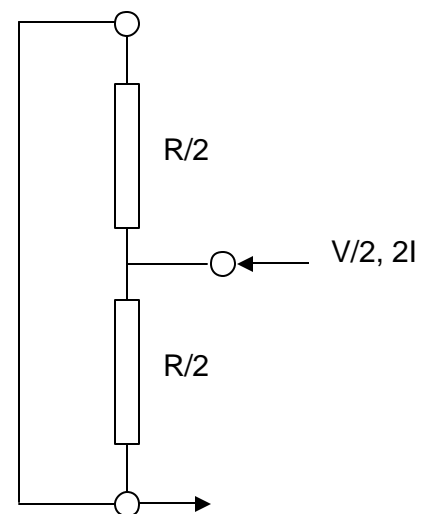
Necessary high voltage practice, clearances/creepage shall be maintained between all active parts and the metallic enclosure that is grounded.

Load bank assembly should be sturdy & may be demountable type.

Schematic for load bank operation mode:



Rated voltage & rated current



Half the rated voltage & double the rated current

4. Parameters for the load bank

Parameter	Specification
Rated voltage	100kVDC
Rated current	25A
Current selection at rated voltage	<ul style="list-style-type: none"> - Any setting up to 25A in steps of 1A, selection by links offload type. Suggested links are 1A, 2A, 2A, 5A, 5A, 10A (total 25A). - Provision for 50kV, 50A operation
DC isolation from the enclosure at the terminals	125kVDC at all terminals (incoming, outgoing, center tap, all current selection links)
L/R ratio at the terminals	1us or less
Operating duty cycle	1sec ON/ 500sec OFF
Operating ambient temperature	5 ^o C - 45 ^o C
Allowable temperature rise above ambient	<ul style="list-style-type: none"> - 50^oC on surface of resistor elements - Less than 20^oC on other parts
Temperature coefficient	Less than 500ppm/ ^o C
Tolerance	Initial value $\pm 5\%$ or less Stability $\pm 2\%$ or less
Type of resistor elements	Non-inductive
Cooling	Forced air
Enclosure	MS sheet, IP 31
Overall dimensions (approx.)	3m (L) x 3m (W) x 4m (H) Compact size would be preferred
Quantity	1nos.

5. Resistor element

Material for the resistor element shall be Cu-Ni resistive wire/strip. Former for the winding the resistors can be glazed porcelain for moisture protection. Coating on the resistor element must be compatible to high temperature and moisture resistant. Resistor elements must be provided with smooth metallic caps/rings to avoid corona discharges.

6. Support elements for the active parts

Support elements for the active parts/resistor elements shall be FRP epoxy base (thermal class H) tubes.

7. Metallic enclosure

Active parts of the load bank must be equipped with ventilated sheet steel enclosure for indoor application having an ingress protection of IP 31 and incorporating:

- Anti corrosion protection
- Lifting lugs enabling the load bank assembly to be handled
- Hinged access doors on the enclosure front panel, fitted with handles.

- Danger electricity warning label
- Rating plate
- Braid for earthing
- HV bushings
- Junction box for power/control signals.
- No sharp edges allowed on the inside as well as outside of the enclosure.
- Structure will be mounted on 10mm thick MS template spread over the load bank footprint. Template will be fixed to the floor using anchor fasteners.

Importantly; electrical continuity between the different metallic panels/sections of the enclosure must be maintained.

8. Protection and safety interlocks

8.1. High voltage protection

Adjustable sphere gaps at all the HV bushings shall be provided.

8.2. Fan power failure protection

Electrical NO/NC contacts shall be made available for interlocks to detect fan power failure

8.3. Over temperature protection with NO/NC contacts & buzzer alarm, sensors at suitable locations.

8.4. Limit switches at the access door

NO/NC limit switches at access door to be provided for interlock for human safety

8.5. Double key interlock at the access door.

8.6. Smoke detectors with buzzer and NO/NC contacts (at least 3nos. at suitable locations).

9. Control Panel

All the control (including protection& interlocks)/power signals shall be terminated at the control panel mounted at a separate location ~50m away from the load bank. Control panel shall receive LT power with power ON indication, protections and contactors. Scheme shall be finalized at the design stage.

10. Earthing Rod

FRP rod of suitable length with flexible cable.

11. Climatic, Environmental condition

11.1. Climatic condition: Ambient temperature from 5°C to 45°C; semi indoor installation.

11.2. Environmental condition: Relative humidity 95%, non-condensing, near sea shore.

12. Design

Vendor must design the load bank as per the specifications. Vendor has to submit the design/drawings to IPR for approval. Vendor must submit the detailed QAP, routine test and stage wise inspection schedule.

13. Manufacturing

Vendor can initiate the fabrication of the load bank after approval from IPR. Material TC for the bought out items shall be submitted to the IPR. Stage wise inspection shall be followed.

14. Test at vendors site (to be witnessed by IPR and BARC personnel)**14.1. Visual & dimensional checks:**

- Resistor surface must be smooth, coating must be uniform.
- No cracks or boils allowed on the coating surface of the resistor elements under cold or hot conditions or after cyclic thermal loading.
- Enclosure dimension as per the design and ingress protection as per IP 31.
- Resistor strings must be sturdy.
- Mounting of cooling fans, temperature sensors, fan power/control, sphere gaps, ground strip etc. Vibrations from the cooling fans must be suitable damped.

14.2 Routine test (component level)

Following routine tests shall be conducted on each resistor element

- Measurement of resistance cold condition.
- Measurement of resistance hot condition (for continuous wattage or design temperature, whichever is higher).
- Temperature rise test for pulsed application (at designed voltage), test will be continued till thermalisation of the resistor surface temperature.
- Resistance & inductance measurement at 50Hz and 1MHz on 10% resistor elements produced.

14.3. Special test (assembly level)

- Resistance measurement at different current settings
- Resistance & inductance measurement at 50Hz and 1MHz on load bank terminals.
- Separate source voltage withstand test
125kVDC or equivalent AC applied between load bank terminal (at HV bushing) and metallic enclosure kept at ground potential.

14.4. Simulation of protection & safety interlocks as mentioned in #8.

15. Installation at site

After testing at the site, IPR will issue dispatch clearance to the vendor. Vendor will remain responsible for safe loading/unloading/transit of the load bank from his site to BARC, Mumbai.

At BARC vendor will unload the load bank and install at the site. Templates along with necessary hardware must accompany the job. Any damage to the load bank/resistor elements during the loading/transit/unloading/installation at site will not be acceptable.

16. Deliver period

Three months for manufacturing and installation at site.

17. Final acceptance

Once the load bank is installed at the site it will be inspected for the following:

- No damage allowed to the load bank elements
- Installation at the requisite location
- Proper leveling, anchoring of the templates
- Proper fastening of the enclosure to the template
- Proper leveling of the load bank
- Resistance measurement at different current settings.
- Simulation of protection & safety interlocks as mentioned in #8.
- Site cleaning

Qualifying above load bank shall be considered accepted.

PRICE BID FORMAT*(Bidders are requested to offer their price bid in the following format)*

Sr. No.	Description	Quantity	Unit Cost (Rs.)	Total price (Rs.)
1.	Design, manufacturing, testing, and supply of 100kVDC, 25 Amp, short duty Resistive Load Bank as mentioned in the tender specifications.	01 No.		
2.	Installation and commissioning charge (including unloading, shifting, handling with accessories) (Quote lumpsum charge)	Lumpsum		
3.	Other charges, if any			

	<u>Indicate percentage except Freight</u>		
	Percentage	Included	Excluded
Packing & Forwarding			
Excise Duty			
Sales tax / VAT			
Insurance			
Freight	Rs.		
Service tax on Sr. No. 2 above	Rs.		

Total Rs.	
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Place:

Signature of Bidder with official seal

Date: