

INSTITUTE FOR PLASMA RESEARCH

An Aided institute of department of Atomic Energy, Govt. of India)
Near Indira Bridge, Bhat. DIST.GANDHINAGAR - 382 428 (INDIA)
PHONE :(079-2396 2000),FAX :91-079-23962277
Web : www.ipr.res.in

MINOR FABRICATION WORKS ENQUIRY

Office Copy

ENQUIRY NO :IPR/MFW/20-21/93

Date : 09-02-2021

Due Date : 23-02-2021 13:00 IST

Please send your offer in sealed envelope specifying Inquiry No, Date & Due Date, ALONG WITH your credentials for the following items:

Important Note:

Please note that e-mail quotations are not acceptable however you may send your queries (if any) to **ashok@ipr.res.in**

Please Ensure that your sealed quotation reaches this office not later than above mentioned due date and time.

Kindly go through the following document properly before Quoting which are available on the IPR web portal i.e., <http://www.ipr.res.in/documents/tenders.html/> attached here with.

1. Technical specification as enclosed.
2. Instruction to the bidders & terms and Condition (refer Form NO:IPR-MFW-01-V1)
3. Bidding format(refer Biddingformat MFW-Bid.pdf)

GST fro Goods and Services (IGST/CGST/SGST TAX BENEFITS): PLEASE REFER clause no:8 of Form No:IPR-MFW-01-V1

QUOTATION SHOULD BE ADDRESSED TO **ASHOK D. MANKANI** ONLY.

Sr.No.	Description	Quantity	Rate
1	Fabrication, Assembly and Supply of Rectifier and its accessories	1	No.

Free Issue Material

Sr.No.	Description	Quantity	Unit	Value
--------	-------------	----------	------	-------

Note : Please quote with complete technical details (Technical Compliance sheet and product data sheet)

Encl:As per attachment

Sd/-

ASHOK D. MANKANI
Scientific Officer-G

Technical Specification for the Fabrication, Assembly and Supply of Rectifier and its Accessories

1. Introduction:

Rectifier system will consists of 3 phase inductor, 3 phase six pulse diode rectifier, blocking diode and RC Filter. The Inductor will have multiple taps for different values. The input inductor will be fed by a 3-Level NPC Sinusoidal Inverter at 400V and 400Hz frequency. The Diodes of the rectifier will be mounted on the heat sink and cooling arrangement shall be provided to maintain the junction temperature with in allowable limit. The whole assembly will be assembled in a panel.

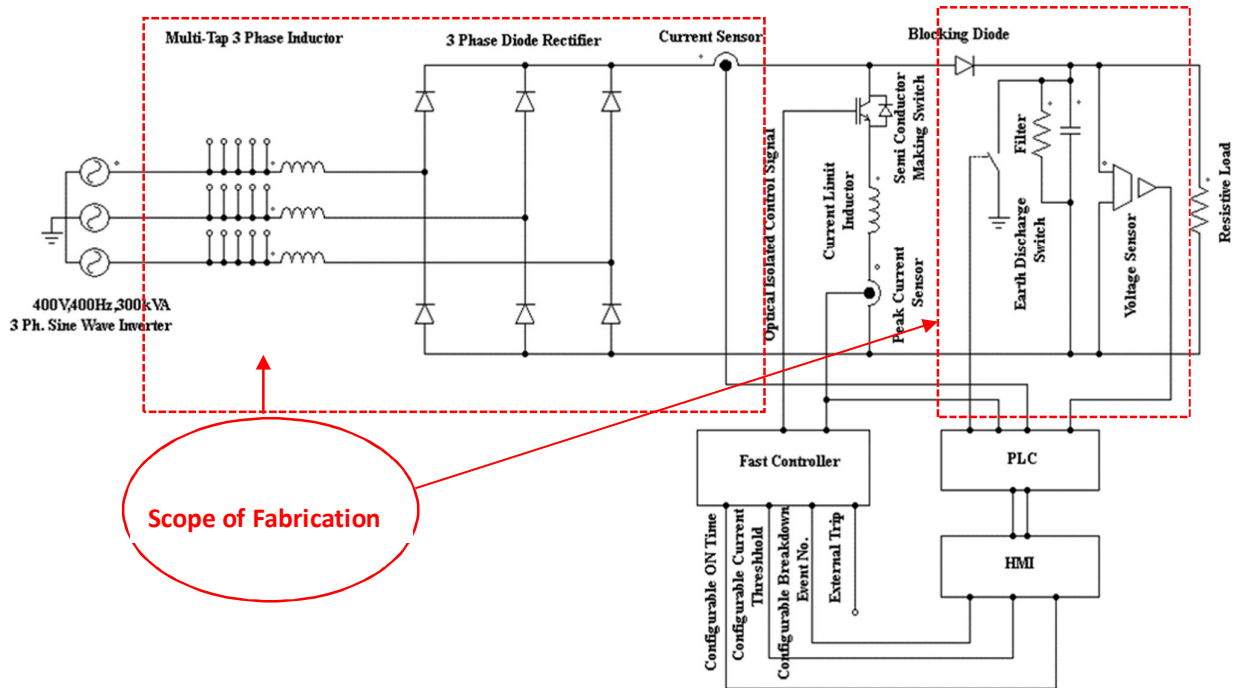


Figure 1 Scope of Fabrication & Supply marked in Box

2. Scope of Work:

The scope of work includes, but not limited to, the following main tasks:

- Assembly of 3 phase Diode Rectifier on fabricated heat sinks;
- Fabrication 3-Phase Inductor with multiple taps;
- Supply of Current and Voltage sensors;
- Fabrication of sheet steel enclosure/panel;
- Assembly and wiring of Rectifier Components including filter capacitor, blocking diode etc. in the Fabricated Panel;
- Perform Functional Tests; and
- Dispatch and Unloading at IPR

3. Technical Specifications of Major Components of Rectifier:

3.1 3-Phase Inductor:

The input Inductor shall be fabricated to meet following Technical requirements:

Sr. No.	Technical Parameters	Requirements
1.	Input Parameters	400V, 400Hz, 300 kVA, 3 Phase Sine wave from Inverter Unit
2.	Input nominal current	500 A
3.	Inductor Power Rating	100 kVA per phase
4.	Inductance	50 μ H , 3 phase , with taps for 10 - 50 μ H i.e 5 taps each at 20%
5.	Allowable tolerance	\pm 10%
6.	Max. temperature rise	55 deg. Celsius

- a) **Clamping:** The inductor cores should be suitably clamped using stainless steel base/top plate and strap and/or glass epoxy sheets and rods. Other low resistivity and/or magnetic materials should not be used as they are likely to generate heat near the air gap due to eddy currents. The base plate should have suitable mounting holes.
- b) **Coil material for Inductor:** Fibre-glass insulated copper conductor should be used for coil.
- c) **Terminals:** Terminals should be flat, smooth and free from varnish/tape/burr/oil/grease for good electrical connection with external bus bars and cables.
- d) **Insulation:** Class-F or better insulating material should be used for the fabrication of coil.
- e) **Impregnation:** Coil should be impregnated with varnish under vacuum.

3.2 3-phase 6 Pulse Diode Rectifier:

Three phase 6 pulse diode rectifier circuit will be fabricated to meet following input and performance parameters.

Sr. No.	Technical Parameter	Requirement
1.	Input Voltage	400V rms Line-Line
2.	Input Line Frequency	400Hz
3.	Rated Output Voltage	600 V DC
4.	Output Power	200kW
5.	Transient stability	Must be able to handle short circuit current of 2kA for 100 μ seconds
6.	Cooling	Air Natural/Forced as appropriate
7.	Protection	Over Current, Voltage, Temperature
8.	Measurements	Output Voltage \pm 600 V DC Output Current \pm 500 A The rated voltage and current suitable for 0-10 V signal interface with PLC to be provided.
9.	Control	ON, OFF, Emergency Trip from front panel

3.3 Blocking Diode:

Blocking diodes will be used to avoid discharges of dc filter through solid state crowbar switch during ON state. The diode will meet following parameters:

Sr. No.	Technical Parameter	Requirement
1.	Reverse biased Voltage	× 1.2kV
2.	Forward Current	×500A
3.	Reverse Current	Ö50 mA

3.4 DC Filter:

- Filter will keep the ripple 5% peak to peak at output.
- Capacitance Ratings of DC filter : 500uF, 100A
- Operating DC Voltage : 600V
- Bleeder resistance across filter capacitor: 10 k Ohm, 50W, Discharge time 30 s
- Filter capacitor must discharge to 70V in 10 minutes after switch off.

4. Assembly and Mounting arrangement:

- The rectifier components including wiring, bus-bars and input/output terminals shall be assembled in enclosure made up of rigid and self-supporting structure of suitable steel sheet/profiles and shall be free of sharp edges/corners. The structural strength of the unit shall be such as to withstand its ultimate mechanical load without any deformity. The base of unit shall ensure uniform floor loading. The gauge of steel that is used for the fabrication of rectifier unit shall not be less than 2.5 mm (minimum).
- Lifting facilities shall be provided by removable eyebolt located at the top of the unit or by any other means which ensure the portability. Top of the unit shall be fully covered except for ventilation and/or cable entries. The necessary arrangement for fixing the unit on the floor shall also be provided.
- The enclosure sides of the rectifier shall have suitable ventilating arrangements. Each air flow vent shall be covered by a gill to prevent the entry of foreign material larger than 2.5 mm. The front and rear door (if provided shall be of hinged type and shall have proper arrangement for ventilation.
- The rectifier unit shall be designed for easy operation, maintenance and installation. The unit mounting arrangement shall be such as to provide easy access from front, rear and top for installation and maintenance activities.
- Suitable space for mounting of crowbar switch assembly and its controller shall be provided. The tentative dimension of crowbar switch is 5u rack of 19 inch.
- All the doors of the rectifier unit shall be equipped with the cabinet locks with keys (either distinctive or same for all doors). All the doors shall be provided with neoprene rubber gasket to make the panel compartments dust proof.
- Cooling: Ample number of exhaust/blow fans with proper ratings should be employed; these fans should be of die-cast aluminium painted black with grills.
- The manufacturer shall ensure good workmanship while manufacturing/fabrication process of the rectifier unit.

5. Drawing Submission:

All assembly drawings, dimension of panel and inductor, thermal considerations of heat sinks and datasheets of semiconductor devices to submit to IPR for review and approval.

6. Acceptance Test:

- a) IR Tests at crucial points
- b) Measurements of passive components
- c) No load test
- d) Load test at available load at factory.

7. Dispatch and Unloading at IPR:

After fabrication, assembly and testing; the rectifier shall be despatched to IPR upon issue of dispatch clearance from IPR. Unloading of rectifier shall be done by vendor on receipt of delivery at IPR site.



INSTRUCTIONS TO BIDDERS AND TERMS AND CONDITIONS

1. The Quotation and any order resulting from this enquiry shall be governed by our Conditions of Work Order and Contractor quoting this enquiry shall be deemed to have read and understood the same completely.
2. Where counter terms and conditions have been offered by the Tenderer, the same shall not be deemed to have been accepted by IPR unless our specific written acceptance thereof is obtained.
3. **Quotation:** Quotation should be submitted in the prescribed QUOTATION FORMAT attached with this Enquiry and the same should be submitted in a sealed envelope super-scribing the same with our enquiry No., date, due date and brief description of item on or before the due date. Late/delayed/incomplete/unsigned quotations will not be considered. Envelopes received without Enquiry number, date, due date and brief description of item may be rejected. The quoted prices should be firm for a period of 90 days from due date for placing order. IPR is not bound to accept lowest rate/s. IPR reserves the right to place on one or more parties. The scope of supply includes insurance by the Contractor.
4. **Specifications:** Goods should be offered strictly conforming to our specifications/drawings. Deviation, if any, should be clearly indicated by the contractor in their quotation. The Tenderer should also indicate the Make/Type number of the goods offered and catalogues, technical literature and samples, wherever necessary should accompany the quotation. Clarification/s on drawings should be obtained before submitting quotation.
5. **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 contractor. In the case of local contractors, the goods are to be delivered at our stores free of charge.
- 5.1 In respect of tenders on Ex-works basis, in case the tenderer has not mentioned in the offer packing, forwarding and transportation charges for safe delivery up to Purchaser's site, 2% of the price quoted towards packing (in respect of both local and outstation firms), 1% of the basic price quoted towards safe delivery charges in respect of local tenderer and 3% of the basic price quoted towards safe delivery charges in respect of outstation firm will be added for comparison of offers on safe door delivery at Purchaser's site.
- 5.2 Prices are required to be quoted according to the units indicated in the tender form/Enquiry. 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
6. 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. Unsigned quotations will summarily be rejected. If there is a discrepancy between the unit price and total price, unit price shall prevail.
7. 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 rate quoted.
8. **Goods & Services Tax (GST):** The details of Taxes/GST and other levies legally applicable 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.
 - a) **GST for Goods (IGST/CGST/SGST TAX BENEFITS):**

IPR is entitled to avail tax benefit as per the following notifications issued by Ministry of Finance, Department of Revenue, Government of India:
(1) No: 47/2017-INTEGRATED TAX (RATE) DATED 14/11/17 for IGST
(2) No: 45/2017-CENTRAL TAX (RATE) DATED 14/11/17 for CGST
And,
IPR is entitled to avail tax benefit as per the following notifications issued by Finance Department, Government of Gujarat:
(1) No. 45/2017-STATE TAX (RATE) DATED 15/11/17 for SGST
As per above notifications IPR will bear only 5% IGST for procurement of goods from outside Gujarat & 2.5% CGST and 2.5% SGST (total 5%) for procurement of goods within Gujarat. Vendors are required to charge tax as per these notifications while quoting/supplying the goods. Deviations, (if any) should be clearly mentioned in the quotation/offer.
 - b) **GST for Services:**

As applicable. **Specify the SAC codes wherever services are involved.**
9. **Delivery Date:** Delivery period is essence of the Contract. Contractor must indicate the firm delivery date by which the goods will be dispatched or delivered by them from the date of our order. Delivery period shall be clearly indicated against each item separately.
10. **Price/ Purchase Preference:** Purchase/Price preference to industries will be given as per the policy of the Government of India in force at the time of evaluation provided their offer is in compliance with the conditions of the policy.



प्लाज़्मा अनुसंधान संस्थान

(भाट, इन्दिरा पुल के पास, गांधीनगर 382428 - , गुजरात) भारत

Institute for Plasma Research

Bhat, Near Indira Bridge, Gandhinagar - 382428, Gujarat (INDIA)

Phone: +91-79-23962000 Fax: +91-79-23962277 Website: www.ipr.res.in



11. **Liquidated Damages:** The successful Vendor/Bidder should pay liquidated damages @ ½% (half percent) of the total work order value for the delay of each week in the scheduled date of completion of the work envisaged in the Work Order subject to a maximum of 5% (Five percent) of the total Work Order value.
12. **Inspection:** Goods on its arrival at IPR will be inspected by Stores, and his decision in the matter will be final. However, where the items are required to be inspected at the Contractors Premises, Contractor has to give advance notice regarding readiness of the Goods to enable us to depute our representative for inspection.
13. **Payment:** Payment will be arranged for accepted goods only within 30 days from the date of receipt of goods at IPR and bills in our accounts section, completed in all respects.
14. No correspondence will be entertained within 30 days from the date of receipt of good and bills, whichever is later.
15. **Guarantee:** The Stores offered should be guaranteed for a minimum period of twelve months, from that date of acceptance, against defective Goods, design, workmanship, operation or manufacture. For defects noticed and communicated during the Guarantee period, replacement/rectification should be arranged free of cost within a reasonable period of such notifications. In case where our specifications call for a guarantee period more than 12 months specifically, then such a period shall apply.
16. **Performance Bank Guarantee:** If demanded by IPR, the successful bidder will have to furnish Performance Bank Guarantee for 10% of the order value (basic price) from a Nationalized/Scheduled Bank/State Bank of India, valid throughout the Guarantee/Warranty period. The scheduled banks approved by IPR are Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank. Bank Guarantees submitted other than from banks approved by IPR will not be accepted.
17. **Security Deposit:** If demanded 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 nationalized/ scheduled Bank/State Bank of India within 15 days from the date of work order and the said Guarantee should be valid till the goods are accepted by IPR. The scheduled banks approved by IPR are Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank. Bank Guarantees submitted other than from banks approved by IPR will not be accepted. 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 work order. On successful completion of scope of work and its acceptance by IPR, Contractor should send a letter requesting return of the original BG.
18. The Contractor shall at all times indemnify the purchase against all claims which may be made in respect of the stores 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 fulfilment of the contract.
19. **Free Issue Material (FIM):** Successful tenderer will have to arrange insurance showing beneficiary as "Institute for Plasma Research" at their risk and cost towards adequate security for the materials/property provided/issued by the Purchaser as Free Issue Material for the due execution of the contract.
20. The Director, IPR reserves the right to accept or reject any quotations fully or partly or to cancel the enquiry without assigning any reason.
21. **Jurisdiction:** The contract shall be governed by the Laws of India for the time being in force. The Courts of Gandhinagar only shall have jurisdiction to deal with and decide any legal or dispute arising out of this Contract.

(This need to be printed in Bidders letter head)

1. Please quote with complete technical details along with technical compliance sheet.
2. Quotation should be submitted in the format given below, else IPR shall not consider the offer by the vendor.

NAME OF PARTY : _____

ENQUIRY NO: _____

QUOTATION No. & DATE : _____

Currency of Quotation: **Indian Rupees**

Sr. No.	Item Description	HSN/SAC Code	Quantity	Unit Rate (Basic)	Packaging & forwarding (P&F)	Applicable GST	Rate (incl P&F and GST)	Total Value
			a	b	c	d	e = b + c + d	f = a * e
1								
2								
3								
4								
5								
6								

Sr. No.	Particular	Remarks
I.	Ex-works / FOR Destination	
II.	Freight	
III.	Insurance	
IV.	Delivery Period	
V.	Payment (IPR terms will apply)	
VI.	Guarantee / Warrantee	
VII.	Validity Period	
VIII.	Discount (if any)	
IX.	Remarks	

Place: Authority Signatory

Date: Company Seal

Note:

1. Bidder should submit the copy of GSTIN / ARN Certificate along with the offer
2. Bidder should specify the SUPPLY and SERVICE rates/ charges separately wherever applicable