



PONDICHERY UNIVERSITY

Tender document for supply of Equipments

- 1. 50 KW IGBT BASED DC PLASMA POWER SOURCE**
- 2. MASTER CONTROL CONSOLE**
- 3. 50 KW PLASMA NON-TRANSFERRED PLASMA TORCH**
- 4. SEVEN TON WATER CHILLER UNIT**
- 5. STAINLESS STEEL DOUBLE WALL REACTOR
CHAMBER**

Under DST-SERB Project

Department of Physics

Pondicherry University

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TERMS AND CONDITIONS (UNDER TWO BID SYSTEM)

I. Instructions to the Bidder: -

1. Purchase of Tender Document

The Tender document can be downloaded from the website <https://eprocure.gov.in/eprocure/app>

2. Tender Document fee and EMD to be submitted

S.No	Equipment	Tender Document fee (₹)	E.M.D (₹)
1.	50 kW IGBT based DC plasma power source	2,500/-	82,500/-
2.	Master control console		
3.	50 kW plasma non-transferred plasma torch		
4.	Seven ton water chiller unit		
5.	Stainless steel double wall reactor chamber		

3. Last Date & Time for submission of Tender Documents

14th October 2019 at 3.00 p.m and it will be opened on 15^h October 2019 at 3.00 p.m

4. Submission of Tender Document

Tender (technical bid and price bid separately) must be submitted through CPP Portal addressed to “ Principle Investigator, DST-SERB project, Department of Physics, Pondicherry University, R.V.Nagar, Kalapet, Puducherry – 605 014, India” positively before the scheduled time.

5. Payment of EMD & Tender Document fee:

The Tender must be accompanied with EMD (refundable) and Tender document fee (non-refundable), as stated above, by means of a separate Demand Drafts, in favour of the Finance Officer, Pondicherry University, payable at Puducherry.

6. Quoting the Core price & Tax, Duties, Discount etc.

The taxes / duties / discounts, if applicable, are to be explicitly and separately shown in the bid and under no circumstances these components shall be added to the basic price and shown as single price. All the components of taxes, if applicable, should be shown explicitly and separately.

7. Electrical Power

All equipment must operate at 415V/50Hz, 3 phase and / or equivalent three phase electrical power.

8. The validity of the Quotation

The validity of the quotation should be for at least 365 days from the opening date of the tender.

9. Late Bids

The offers will not be considered if received after the bid closing date and time.

10. Invalid quotes

The offers received through telex / tele-fax / e-mail/unsealed or open cover will not be accepted by the University under any circumstances.

11. No unsolicited correspondence

No unsolicited correspondence shall be entertained after the submission of the offer.

12. Purchase Agreement

If an order is placed with the firm, the purchase shall be governed by an agreement as per the University rules in force at the time.

13. Additions in terms and conditions

Additional terms and conditions will be incorporated in the purchase order, if needed, to safe guard the interests of the University.

14. Non-transferable

Tender is not transferable.

15. Power to reject the offer

Any offer containing incorrect and incomplete information shall be liable for rejection.

Pondicherry University reserves the right to accept / reject any offer in full or in part or accept any offer other than the lowest offer without assigning any reason thereof. *However, deficiencies on any one or, more of the following crucial criteria will be a material factor, for consideration other than the Lowest Quotation: -*

- a) Total Number of installations of the similar Equipment in the premier Research/Academic Institutes in India.*
- b) Availability of after sale service.*
- c) Valuable feedback from the present users about the performance, service support, accuracy of result, etc.*
- d) Any other techno commercial information which is deemed fit to be important in the opinion of the University.*

II. Price Schedule

16. The bidder who is capable of supplying the entire solutions for the instrument quoted as per the list of ITEMS mentioned in the schedule, is alone need to submit their quotation.
17. The rates should be quoted for single units.
18. The price should include the delivery and installation at the Department of Physics, Pondicherry University, Puducherry and training charges (if any).
19. In price bid no other documents like technical manuals, number of installations, Customer list etc. must be there. All such documents must be enclosed in the technical bid.

III. Eligibility

20. The firm must have the requisite domain expertise with regard to supply, installation and post-sale service of the items they are quoting.
21. The firm should have been in existence for at least **six years** as on the date of this document and must have sufficient number of installations at least three orders of the similar equipment in the premiere Research/academic institutes in India.
22. The feedbacks from the present users of the similar equipment about the performance, service support, accuracy of result, etc. are to be submitted along with the Tender Document.
23. Any other techno commercial information, pertaining to this particular Equipment, principal suppliers, technical background and capability, local agents' background on Scientific Equipment Business, etc. may also be appended along with testimonials and documentary proof.

IV. Conditions of Contract

24. The offer must be in English. The rates should be indicated both in figures and words against item specified in the given Annexure. The price be quoted in Indian Rupees.
25. The prices quoted shall remain firm until equipment is supplied to the Department of Physics, Pondicherry University, Puducherry.
26. The University has been granted the benefit of exemption from the payment of the Central Excise Duty and Customs Duty by the Department of Scientific and Industrial Research (DSIR), India, vide their Notification No. 10/97 dt. 01-03-1997 and 51/96 dt. 23.07.96 respectively.

In respect of

- a. Scientific and technical instruments, apparatus, equipment including computers.
- b. Accessories and spare parts of goods specified in (a) above and consumables.

- c. Computer software, compact disks, CD ROM, Recording magnetic tapes, microfilms, micro-chips etc.
- d. Prototypes.

Customs duties at Indian port, if any, will be to the account of the University.

- 27. Infra-structural, power and any other requirement for satisfactory installation and commissioning of the whole system must be provided, at least 90 days in advance of the installation to be commenced. All drawing for electrical connections, electrical safety items piping work etc. must be provided in detail.
- 28. Complete technical specifications and literature, including process flow, to be included with the quotation. Manufacturers of various major parts/equipment must be mentioned explicitly.
- 29. A clear statement regarding availability of after-sales service and availability of spare-parts for next 10 years should be included.
- 30. Please give a recent customer list (within last five years) with contact details including email address.
- 31. The tenderer should have the technical ability to take care of the problems in the system, if developed later within the warranty and outside the warranty period and ability of the tenderer has to be provided clearly.
- 32. **Warranty:** The material covered under the purchase order, when installed, shall be warranted for the quality, workmanship, trouble free operation and performance for a period of **at least 36 months from the date of installation and the system into operation** at the Pondicherry University, or at least 42 months from the date of receipt of the last lot of the consignment. (A signed Bidder's Warranty as per Annexure – I has to be submitted along with the Bid Document)
If any item covered under warranty fails, the same shall be replaced free of cost including all the applicable charges including shipping cost both ways.
- 33. **Payments terms:**
The bills in triplicate along with advance stamped receipt immediately after the execution of the supply order in full or in part for arranging payment. All the expenses incurred for the supply to F.O.R destination shall be borne by the supplier. Prices should be inclusive of all charges towards packing, freight, transit etc.
- 34. **Liquidated damages:** Timely supply of the ordered items, installation, commissioning (wherever is applicable) and training etc. is the essence of the contract. In case of failure to supply within the time specified in the Purchase order, a penalty/LD of 0.5% of the total value per week or a part thereof shall be levied subject to a maximum of 7.5% in respect of items which are not supplied. The decision of Pondicherry University shall be final in this regard.
- 35. The training should be provided by the firm on the specimen and operation of the equipments for a minimum period of three weeks from the date of installation with an expert team for two persons.

Tender document for supply of Equipments for DST-SERB project, Department of Physics, Pondicherry University

For any clarification with respect to technical specifications, please contact

**Dr. Yugeswaran Subramaniam, Principle Investigator, DST-SERB Project,
Department of Physics, Pondicherry University, Puducherry-605014**

Email: yugesw.phy@pondiuni.edu.in

Cell : +91 9486803042

For any CPP Portal clarification,
eProcurement Cell, Chief Secretariat,
Puducherry – 605 001
Tel: 0413-2233262 / 2220225

Tender document for supply of Equipments for DST-SERB project, Department of Physics, Pondicherry University

Checklist is to be submitted along with the Technical bid

		To be submitted by the firm	To be verified by the Pondicherry University
1	Name of the firm and address		
2	Two sealed covers (Technical bid / Commercial bid)		
3	Earnest Money Deposit (EMD)	Name of the bank:	
		Amount:	
		Date:	
4	Tender Document Fee	Name of the bank:	
		Amount:	
		Date:	
5	GST Registration Copy		
6	Income Tax Returns details for the last three years.		
7	Letter of Authorization from the Original Equipment Manufacturer (OEM) Distributor		
8	Tenderer should be in the business of similar products atleast for 6 years as on the date of submission of the bid. Proof to be submitted		
9	A list of customers with contact details to whom supply were made during last 3 years may be furnished		
10	Name of the service engineer to be deployed and his Contact No.	1. Name & Cell No.	

Signature of the authorized person of the firm

Committee Members:

Descriptions & Technical Specifications of Instruments

Equipments for DST-SERB Project, Department of Physics

ITEM 1: 50 KW IGBT BASED DC PLASMA POWER SOURCE

ITEM 2: MASTER CONTROL CONSOLE

ITEM 3: 50 KW PLASMA NON-TRANSFERRED PLASMA TORCH

ITEM 4: SEVEN TON WATER CHILLER UNIT

ITEM 5: STAINLESS STEEL DOUBLE WALL REACTOR CHAMBER

ITEM 1:

TECHNICAL SPECIFICATIONS FOR 50 KW IGBT BASED DC PLASMA POWER SOURCE

- a) DC power supply- For the usage with 50 kW DC plasma torch to produce various plasma jets (Air/N₂/Ar/CO₂/CH₄).
- b) Power source should have the capacity to run the 50 kW DC plasma torch continuously (Minimum 5 hours/day) with minimum fluctuation (+/-10 V)
- c) All the components/items must be supplied by a single vendor for want of compatibility

- Input voltage: 415 volts ,±5% 3 phase 50c/s ,
- Input kVA: 60kva at 80% efficiency
- Input current per phase: 90 Amps.
- Output current range: 200 Amps.
- Output kW: 50 kW
- Output voltage: 250 volts DC at full load
- Max output current: 200 Amps.
- Duty cycle: 100%
- Open circuit voltage: 600 to 650 Volts DC
- Efficiency: 80 to 90%
- Power factor: >0.9
- System frequency: 20 khz
- Feedback system: ct and shunt
- Filtration: L and C filters
- Cooling temperature setting: 22°c to 28° C (auto cut-off and start)
- HF unit for plasma ignition: In-built (1MHz; 15 kV; 50 mA)
- Cooling system: Inbuilt 2-ton chiller for IGBT cooling

Power Supply Control Panel:

- Three phase Indicators
- Output volt meter (digital)
- Output Ampere meter (digital)
- 7 in one Meter (For input Parameters)
- Fault module indication
- Under / Over Voltage Indicator
- On/Off push button with indicator
- Emergency stop
- HF on indication with push button
- Short circuit indication

Power Supply body:

- All the components including IGBT modules and chiller will be enclosed with the powder coated metal sheet with proper frame
- Proper wheels should be fixed for easy transportation

ITEM 2:

TECHNICAL SPECIFICATIONS FOR MASTER CONTROL CONSOLE

- a) Master Control Console – to integrate the 50 kW DC plasma power source and 50 kW DC plasma torch
- b) Master control console should have the capacity to control all the operating input parameters like current, gas flow rates, water flow rate, gas mixing compositions of the 50 kW DC plasma torch.
- c) Whole system should meet the basic requirements of BIS
- d) All the components/items must be supplied by a single vendor for want of compatibility

The whole systems should comprise of

- Start Stop Push Button
- Emergency Stop
- HF Push Button
- Fault Indicator
- Electrode Short Indicator
- Volt Meter
- Ammeter
- Gas Indicator
- Water Indicator
- Temperature Indicator
- Rotometer for Air/N₂/Ar/CO₂/CH₄ gases (0-50 slpm)
- Gas pressure gauges for Air/N₂/Ar/CO₂/CH₄ gases
- Gas flow setting push button
- Water input pressure gauge
- Water Rotometer with control valve
- Water inlet and out let Temperature
- DC Input Terminals
- Torch power and water connection Terminal
- Gas input and output connections

ITEM 3:

TECHNICAL SPECIFICATIONS FOR 50 KW PLASMA NON-TRANSFERRED PLASMA TORCH

- a) 50 KW DC Plasma torch - For usage with 50 kW DC plasma source to produce various plasma jets (Air/N₂/Ar/CO₂/CH₄).
 - b) 50 kW Plasma torch should be able to run continuously (Minimum 5 hours/day) with minimum fluctuation (+/10 V) and erosion
 - c) Torch design will be provided if needed
 - d) All the components/items must be supplied by a single vendor for want of compatibility
-
- | | |
|-------------------------------|---|
| ○ Maximum Power rating: | 50kW (Max.) |
| ○ Operating Gas: | Argon/ CO ₂ /CH ₄ |
| ○ Additional Gas: | Nitrogen /Air |
| ○ Minimum Flow rate of gases: | 10-20 Lpm |
| ○ Torch Body: | Brass / SS |
| ○ Nozzle: | Oxygen-free copper |
| ○ Electrode: | Oxygen-free copper / pyrolytic graphite |
| ○ Maximum Operating voltage: | 250 V |
| ○ Maximum Operating Current: | 200 Amps |
| ○ Insulator: | Boron nitride |
| ○ Gas flow: | Vortex generator |
| ○ Power cable for anode: | 10 Meter (water cooled) |
| ○ Power cable for cathode | 10 Meter (water cooled) |
| ○ Weight: | <5 kg |

ITEM 4:

TECHNICAL SPECIFICATIONS FOR SEVEN TON WATER CHILLER UNIT

- a) 7-ton water chiller unit should have the capacity to maintain the temperature of 50 kW DC plasma torch and plasma reactor (selectable)
- b) Whole system should meet the basic requirements of BIS
- c) All the components/items must be supplied by single vendor for want of compatibility

- Type: Fin and tube condenser
- Evaporator : Coil Immersion Type
- Water used: D M Water or distilled water/RO Water
- Chilling rating: 10 kW (Max)
- Chiller capacity: 7 Ton
- Set temperature (low): selectable (15-22°C)
- Inlet/out let connector: 1" BSP (main)
- Maximum flow rate: 40 LPM
- Auto start: adjustable with preset temperature
- Water circulator system: Closed loop
- Tank Capacity : 400 To 500ltrs
- Water Pressure : 4 to 6Kg
- Pressurized pump: 2 HP

Front panel fitted with:

- ON / Off Switch
- Temperature Indicators
- Compressor ON Indicator
- Lp Trip; Hp Trip
- Pump on Indicator
- Water level low Indicator

Accessories:

The following accessories are needed to circulate the hot/cool water between the plasma reactor, plasma torch and chilling unit. The distance between the chiller and plasma processing unit is roughly 10-15 Meters

- Proper insulations
- Pressurized pumps
- Proper piping's
- Proper valves and fittings

Body:

- Totally enclosed in a MS fabricated body duly powder coated
- Mounted on four heavy wheels for easy transportation.

ITEM 5:

TECHNICAL SPECIFICATIONS FOR STAINLESS STEEL DOUBLE WALL REACTOR CHAMBER

- a) Stainless steel double wall reactor chamber to hold the 50 kW DC plasma torch and to collect the plasma processed powders
- b) Reactor chamber design will be provided if needed
- c) All the components/items must be supplied by a single vendor for want of compatibility
 - Primary chamber: Double walled stainless steel cylinder with closed flanges
 - Primary chamber Dimensions: 30 cm inner diameter, 90 cm length
 - Secondary chamber: stainless steel cylinder with cyclone filters and flanges
 - Secondary chamber Dimensions: 15 cm inner diameter, 45 cm length
 - The chamber fitted in fabricated stand with plasma torch holding arrangements
 - View port in primary chamber
 - Gas injector nozzle (2 number)
 - Proper piping and SS fillings
 - Water circulating ports with fittings
 - Cyclone filter in secondary chamber
 - Powder collector
 - HEPA filter arrangement to arrest in-flight fine particles
 - Proper exhaust system with blower
 - All chamber and Accessories Made in SS 304 Grade

ANNEXURE - I

BIDDER'S WARRANTY

The Registrar, Pondicherry University, Puducherry invited Bid Document for Supply of Sophisticated Instruments at Department of Physics, Pondicherry University and M/s. _____

Thereinafter referred to as "The Bidder" having carefully studied all the bid documents, Specifications, etc. accompanying the tender for supply of the _____ (Name of the Instrument) and desirous to submit the bids as per the Tender Document advertised vide Notification-TenderNo. /..... **dated**.....

DO HEREBY WARRANTY THAT

1. The bidder is familiar with all the requirements of the bid documents.
2. The bidder has investigated the site and satisfied, he regarding the character and scope of the work and local conditions that may affect the supply or it's Performance.
2. The bidder is satisfied that the supply can be performed and completed as required in the contract.
4. The bidder accepts all risk directly or indirectly connected with the performance of the contract.
5. The bidder has had no collusion with other contractors, with any of the men of Pondicherry University, Puducherry, or with any other person in preparation of the bid.
6. The bidder has not been influenced by any statement or promise of the Officials of Pondicherry University, Puducherry but only by the bid documents.
7. The bidder is financially solvent.
8. The bidder is experienced and competent to perform the contract to the satisfaction of the Co-ordinator, Central Instrumentation Facility, Pondicherry University, Puducherry.
9. The statements submitted with the bid are true.
10. The contractor is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State and Central Government that may affect the work, its performance or personnel employed therein.
11. All the terms & conditions of the Supply Order will bind the bidder once his quote is accepted and supply order issued.

Signature of the Bidder

ANNEXURE - II

BANK GUARANTEE

Pondicherry University
Bharat Ratana Dr. B R Ambedkar Administrative Building
R Venkataraman Nagar
Puducherry 605 014

This guarantee made on this _____ day of _____ 201_ by _____ Bank having its Registered Office at _____ and one of its branches at _____ (hereinafter referred to as “the Guarantor” which expression shall, unless it be repugnant to the subject, meaning or context thereof, be deemed to mean and include its successors and assigns) in favour of the Pondicherry University, Puducherry 605 014 represented by its Registrar, having his office at R. Venkataraman Nagar, Kalapet hereinafter referred to as the “University” which expression shall include his successors in office for an amount not exceeding Rs. _____ (Rupees _____ only) at the request of M/s. _____ (more fully described hereunder)

2. Whereas the University has placed work Order No: PU/ _____ dated _____ for _____ with M/s. _____ having its office at _____ and hereinafter referred to as the “Contractor” which expression shall include their successors and assigns.

3. And whereas the Contractor has accepted and agreed to execute the work as per the work order as per undertaking / agreement dated _____ within the time stipulated and in the manner specified therein.

4. And whereas the University has called upon the Contractor to furnish Bank Guarantee for the sum of Rs. _____ (Rupees _____ only) for fulfilment of the said work as specified in the work order and as agreed to by the Contractor.

5. And whereas the Contractor has requested the Guarantor herein to furnish an irrevocable and unconditional Bank Guarantee in favour of the University for an amount of Rs. _____ as guarantee towards execution of the work as agreed to by the contractor to the University.

6. Now, therefore, we _____ Bank, the Guarantor herein, do hereby irrevocably and unconditionally Guarantee the payment to the University the sum not exceeding Rs. _____ (Rupees _____ only) in the event of any breach, failure, neglect or inability on the part of the Contractor in the execution of the said work, on demand without reference of the matter to the Contractor and without any prior consent of the Contractor, at all times throughout the period of execution of the work, without demur, cavil or argument or delay.

7. The Guarantor agrees and undertakes that the decision of the University as to whether the contractor has committed any breach of the obligation with respect to the work to be executed, and the quantum of amount therefore payable by the Contractor to the

Tender document for supply of Equipments for DST-SERB project, Department of Physics, Pondicherry University

University in that regard, shall be final, binding and conclusive as against the Guarantor and the Guarantor shall make payment accordingly, on demand by the University.

8. The Guarantor further agrees and undertakes to pay to the University the amount demanded by the University irrespective of and notwithstanding any dispute raised by the Contractor in any suit or proceeding before any judicial forum relating to the Contracted work and the Guarantor's liability under this Guarantee shall be absolute and unequivocal.

9. This Guarantee is issued subject to the condition that the liability of this Guarantor under this guarantee is limited to the maximum of Rs. _____ (Rupees _____ only) and the guarantee shall remain in full force up to _____ and cannot be invoked otherwise than by a written demand or claim by the University for the payment of the said amount by the Guarantor on or before _____ or any extended date as decided by the University.

10. This University shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the contracted work or to extend time for performance of the work by the Contractor. Any change to the contracted work shall not in any way release the Bank (Guarantor) from liability under this Guarantee and we waive notice of any such change. The University shall have full liberty to forbear or enforce any of the terms and conditions of the contracted work.

11. This Guarantee shall not be affected by any legal limitation, disability or other circumstances relating to the Contractor or the Guarantor.

12. This Guarantee shall be valid for the period upto _____ and shall extend further and beyond _____ for such period as determined by the University.

13. The Guarantor undertakes not to revoke this guarantee except with the previous consent of the University in writing.

14. Notwithstanding anything contained herein:

- Our liability under this guarantee shall be limited to Rs. _____ (Rupees _____ only)
- This guarantee shall be valid upto _____ and for such further period as determined by the University for fulfilment of the contract.
- We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before _____ or such extended period / date.

In witness whereof, this Guarantee has been executed by _____ for an on behalf of the Bank (Guarantor) on the day, month and year first above written.

SIGNATURE AND SEAL

NAME OF THE BANK (GUARANTOR):

ADDRESS: