

	<b>INDIAN INSTITUTE OF TECHNOLOGY MADRAS</b> <b>Chennai 600 036</b>  Telephone: [044] 2257 9798/9723 E-mail: tender@imail.iitm.ac.in	
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The Senior Manager (Project Purchase)

**Ref: MEE/VARK/043/2019**  
Date: 26.09.2019

**Open Tender No: MEE/VARK/043/2019**

**Due Date: 16<sup>th</sup> October 2019, 3 PM**

**Pre-Bid meeting: - Not required.**

**Technical Bid opening meeting on 16<sup>th</sup> October 2019, 4:00 PM at Department of Mechanical Engineering, IIT-Madras.**

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of **“Air separation Unit (ASU)”** conforming to the specifications given in Annexure I.

**Instructions to the Bidder**

- I. **Preparation of Bids:** - The tenders should be submitted under two-bid system (i.e.) Technical bid and Financial bid.
- II. **Delivery of the tender:** - The tender shall be sent to the addresses mentioned below, either by post or by courier so as to reach our office before the due date and time specified in our schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule.  
The tender box is kept in the office of the:

**The Senior Manager,  
Project Purchase,  
IC & SR Building 2<sup>nd</sup> floor,  
I.I.T. Madras,  
Chennai – 600 036.**

- III. **Opening of the tender:** - The offer/bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and will be examined by a technical committee which will decide the suitability of the bids as per our specifications and requirements. All bidders will be invited for opening of the technical bids. With respect to opening the financial bid, only technically qualified bidders will be called.

- IV. Prices:** - The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges to the, **Department of Mechanical Engineering**. The offer/bid should be exclusive of taxes and duties. The percentage of tax & duties should be clearly indicated separately. Kindly note that IIT Madras is eligible for concessional GST and relevant certificate will be issued.

In case of import supply, the price should be quoted without custom duty. IIT Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on EX-WORKS and CIP basis indicating the mode of shipment.

- V. Agency Commission:** - Agency commission, if any, will be paid to the Indian agents in rupees after receipt of the equipment and its satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in the tender document even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign Principal should indicate the percentage of payment and it should be included in the basic price quoted originally (if any)..
- VI. Terms of Delivery:** - The item should be supplied to the, **Department of Mechanical Engineering** as per the Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.
- VII. Technical Bid Opening:** The technical bid will be on 16th October, 2019, 4:00 PM at the **Department of Mechanical Engineering, IIT-Madras**. The financial bids of those tenders who are technically qualified will be opened at a later date under intimation to them.
- VIII. IIT Madras** reserves the full right to accept / reject any tender at any stage without assigning any reason.

Yours sincerely,

**The Senior Manager (Project Purchase)**  
**IC&SR Building, I.I.T. Madras,**  
**Chennai - 600 036.**

## SCHEDULE

### Important Conditions of the tender

1. The due date for the submission of the tender is **16.10.2019, 3 PM.**

The offers / bids should be submitted in two bids systems (i.e.) Technical bid and financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc. The Technical bid and financial bid should be put in separate covers and sealed. Both the sealed covers should be put in a bigger cover. The Open Tender for supply of **“Air separation Unit (ASU)”** should be written on the left side of the Outer bigger cover and sealed.

2. **EMD: - The EMD (Should be in INR) in the form of Account Payee Demand Draft/Fixed Deposit Receipt/ Banker’s Cheque or Bank Guarantee for 2% of the quoted value of the item; drawn in favor of The Registrar-IIT Madras, payable at Chennai should be enclosed in the cover containing financial bid.** Any offer not accompanied with the EMD shall be rejected summarily as non-responsive.

The EMD of the unsuccessful bidders shall be returned within 30 days of the end of the bid validity period. The same shall be forfeited, if the tenderers withdraw their offer after the opening during the bid validity period. The Institute shall not be liable for payment of any interest on EMD. EMD is exempted for Micro and Small Enterprises (MSE) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME).

***When a foreign vendor does not have a local agent in India, he can submit demand draft equal to 2% or wire transfer the amount to our account as detailed in the attachment (Annexure II) and enclose the proof with the financial bid.***

3. **Performance Security: -** The successful bidder should submit Performance Security for an amount of 5% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt from the commercial bank, Bank Guarantee from any nationalized bank in India. **The performance security should be furnished within 21 days from the delivery of the purchase order.**

**Performance Security in the form of Bank Guarantee:-** In case the successful bidder wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee from a Nationalized Bank of India.

The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

4. **Indian agent:** If an Indian agent is involved, the following documents must be enclosed:  
Foreign principal’s proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.
  - ✓ Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.
5. The offer/bids should be sent only for a machine that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.

6. Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid.
7. Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
8. **Validity:** Validity of Quotation not less than 90 days from the due date of tender.
9. **Delivery Schedule:** - The tenderer should indicate clearly the time required for delivery of the item (subjected to the executive committee-IITMadras approval). In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.  
If there is delay, the penalty will be @1% per week of delay subject to a max of 10% of the value of purchase order and if the delay is more than accepted time frame by IITM, the PO would be cancelled and liquidated damages will be enforced.
10. **Risk Purchase Clause:-** In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
11. **Payment:-**
  - (i) No Advance payment will be made for Indigenous purchase. However 90% Payment against Delivery and 10% after installation are agreed to wherever the installation is involved. In case of import supplies the payment will be made only through 100% Letter of Credit i.e. (90% payment will be released against shipping documents and 10% after successful installation wherever the installation is being done).
  - (ii) **Advance Payment:** No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Foreign Vendor has to submit a Bank Guarantee equal to the amount of advance payment and it should be routed through the Beneficiary Bank to the end user Bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.
12. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within number of days (as prescribed by PI) from the date of receipt of the item at site of IIT Madras.
13. **Warranty/Guarantee:** - The offer should clearly specify the warranty or guarantee period for the machinery/equipment. Any extended warranty offered for the same has to be mentioned separately (For more details please refer our Technical Specifications).
14. **Late offer:** - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
15. **Acceptance and Rejection:** - I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
16. **Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**

**17. Disputes and Jurisdiction:**

**Settlement of Disputes:** Any dispute, controversy or claim arising out of or in connection with this PO including any question regarding its existence, validity, breach or termination, shall in the first instance be attempted to be resolved amicably by both the Parties. If attempts for such amicable resolution fails or no decision is reached within 30 days whichever is earlier, then such disputes shall be settled by arbitration in accordance with the Arbitration and Conciliation Act, 1996. Unless the Parties agree on a sole arbitrator, within 30 days from the receipt of a written request by one Party from the other Party to so agree, the arbitral panel shall comprise of three arbitrators. In that event, the supplier will nominate one arbitrator and the Project Coordinator of IITM shall nominate on arbitrator. The Dean IC&SR will nominate the Presiding Arbitrator of the arbitral tribunal. The arbitration proceeding shall be carried out in English language. The cost of arbitration and fees of the arbitrator(s) shall be shared equally by the Parties. The seat of arbitration shall be at IC&SR IIT Madras, Chennai.

- a. **The Applicable Law:** This Purchase Order shall be construed, Interpreted and governed by the Laws of India, Court at Chennai shall have exclusive jurisdiction subject to the arbitration clause.
- b. Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.

18. All Amendments, time extension, clarifications etc., will be uploaded on the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

**Acknowledgement:** - It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER  
ALONG WITH SEAL OF THE  
COMPANY WITH DATE**

## Technical specification of Air separation Unit (ASU)

Equipment Name : Air separation unit (ASU herein).

Capacity : 30 Nm<sup>3</sup>/h of O<sub>2</sub>.

O<sub>2</sub> Purity level : 95% and above.

Technology preferred : Pressure swing Adsorption based system (PSA).

O<sub>2</sub> pressure required : 7 kg/cm<sup>2</sup> (g) and above.

The offer should include all the details as indicated in sections (A) and (B), given below.

### (A) Technical requirements :

- Details of all the accessories associated with the ASU such as air compressor, air drier, air filtration unit, PSA towers, air receiver, oxygen storage tank, oxygen booster pump, control valves, piping and other instrumentation has to be clearly mentioned in the offer. The complete technical and other relevant specifications of sub-components of the ASU have to be provided in a separate sheet. Some important specifications of the main sub-components (but not limited to) are given as below.

S.No	Component name/ requirement	Technical details	Quantity
1	<b>Air compressor &amp; Refrigerated type Air dryer</b>	Oil lubricated Screw type Air compressor coupled with motor to be provided with a free air delivery of 360 Nm <sup>3</sup> /h or more and working pressure of 7 kg/cm <sup>2</sup> (g) or above. Also the supplier should provide a refrigerated type air dryer for moisture removal for a air flow capacity of 430 Nm <sup>3</sup> /h or more.	1 No. each
2	<b>Filtration system</b>	Three stage air filtration system has to be provided for oil and dust particle removal to the level of 0.01 micron or below. An activated carbon filtration systems (with carbon granules) should be provided for removing oil vapors in the compressed air.	As applicable
3	<b>Air Receiver</b>	A separate air receiver tank of 1 Nm <sup>3</sup> or more has to be supplied to ensure continuous uninterrupted supply of compressed air. The air receiver tank should be equipped with instrumentation and controls to read pressure and temperature and should include an auto-drain valve for removing moisture periodically.	1 No.
4	<b>PSA Unit</b>	Programmable logic controller (PLC) based continuous mode skid mounted PSA unit (with twin towers or more) has to be provided. The automatic switch over time between the towers should be one minute or lesser. The PSA towers should be	As applicable

		equipped with necessary safety interlocks and alarms for indicating (but not limited to ) low air receiver pressure, high air temperature, low oxygen content and high storage tank pressure etc, as per norms.	
5	<b>Surge tank</b>	A separate surge tank of 1 Nm <sup>3</sup> or more has to be provided to collect the oxygen from PSA tower. Necessary instrumentation should include (but not limited to) oxygen analyzer coupled with three way auto vent valve to vent out oxygen below the required purity level and oxygen flow meter. The control of this should be through a PLC. Oxygen booster pump to store the oxygen at 7 kg/cm <sup>2</sup> (g) in the oxygen storage tank has to be supplied along with the surge tank.	1 No.
6	<b>Material of construction</b>	Supplier should ensure that the material of construction of all the lines, system and sub-components be so chosen to be anti-corrosive to oxygen and other fluids as applicable to the system.	As applicable
7	<b>Oxygen storage tank</b>	Oxygen tank of 2 Nm <sup>3</sup> or more has to be provided to ensure continuous supply of oxygen at 7 kg/cm <sup>2</sup> (g) at the rated flow. All operational and safety items like isolation valves, safety valves, pressure switches, pressure gauges, hand holes, drain valves etc., have to provided as required.	1 No.
8	<b>Electrical control panel</b>	Supplier should provide fully wired auxiliary contactors, PLC, indication lamps as per the control logic. All the instruments, equipment and their controls should have a read out display in the front panel of the PLC.	1 No.

### (B) Other requirements

- The entire system should be of skid mounted type and a detailed PID of the same to be provided with the offer.
- All the sub-components, lines and other accessories of the system should of reputed make and the supplier should mention the same along with the offer.
- The safety logic of the system should be separately provided in the form of a document with schematics and the PID of the same should to provided separately in the offer.
- The specific energy consumption, turn down ratio and other relevant performance characteristics of the ASU at different loading ratios have to be attached with the offer.
- Erection, commissioning and testing of the entire ASU unit is at the scope of the supplier. All necessary cables, wires, other hardware components and consumables required for erection, commissioning and testing of the ASU unit in specified time period to be borne by the supplier and complete details of these items must be included in the bid.

- The warranty period should be 3 years. Terms and conditions of the warranty should include a list of spares and consumables covered under the warranty and a list of items excluded. Expected life time and replacement cost of items excluded from the warranty list must be provided along with the offer.
- Spares and consumables to ensure operation for 3 years must be provided after installation and testing of the ASU unit.
- Details of at least 3 ASU systems of the same specification as indicated here, supplied by the vendor in the last 3 years must be included in the technical bid.
- The supplier should respond to service requests within 2 weeks of the receipt of the request for service by email and the authorized email id for service requests must be included in the offer.
- The system should be capable of operating in ambient temperature range of 20-45 degree celcius and relative humidity of up to 80%.
- Prescribe noise limits for the system when under operation.
- The space requirement, civil, piping and electrical work to be done at the scope of the customer should be mentioned in the offer with drawings clearly indicating the dimensions. A detailed drawing indicating the foundation requirements and electrical connections should be sent along with the offer.
- Offer validity should be not less than 90 days.
- Payment terms, warranty terms, annual maintenance plan, timeline for delivery of the equipment, erection, commissioning and installation of the same to be clearly mentioned in the offer and all the timelines has to be strictly adhered to by the supplier.
- Any inclusions and exclusions apart from the above mentioned items has to be clearly mentioned in the offer.





CENTRE FOR INDUSTRIAL CONSULTANCY & SPONSORED RESEARCH (IC&SR)  
INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
CHENNAI 600 036



**ELECTRONIC CLEARING SERVICE (Credit Clearing)/ REAL TIME GROSS SETTLEMENT (RTGS) FACILITY FOR RECEIVING PAYMENTS**

**A. Details of Account Holder**

Name of the Institution	Indian Institute of Technology - Madras
Complete Contact Address	Industrial Consultancy and Sponsored Research Indian Institute of Technology-Madras, IIT- Madras Campus Post Office, Sardar Patel Road, Guindy, CHENNAI - 600 036
Telephone No./ Fax No.	Tel - 044-22578355 / Fax - 044-22570545
E- mail ID of the FO/AO/REG/DIR	dricsr@iitm.ac.in

**B. Bank Account Details:**

Institution Account Name (As per Bank Record)	The Registrar, Indian Institute of Technology - Madras
Account No.	2722101001741
Account Print Name	IIT F A/C , The Registrar IIT Madras
IFSC CODE	CNRB0002722
Bank Name (in full)	Canara Bank
Branch Name	IIT-Madras Branch
Complete Branch Address	Canara Bank, IIT-Madras Branch, IIT- Madras Campus Post Office, Sardar Patel Road, Guindy, CHENNAI - 600 036
MICR No.	600015085
Account Type	Savings Account

Certified that the Institute's account is in an RTGS enabled branch.

I hereby declare that the particulars given above are correct and complete.

Date: \_\_\_\_\_ Signature of the Competent Authority  
of the Institution with seal.

*K. M. Srinivasan*  
**DEPUTY REGISTRAR (IC&SR) (IC)**  
**IC & SR, I.I.T. MADRAS**  
**CHENNAI - 600 036**

Certified that the particulars furnished above are correct as per our records.

Date: \_\_\_\_\_ Signature of the Authorized  
Bank Official with Bank Seal.



For CANARA BANK  
*B. Sekar*  
SENIOR MANAGER  
I.I.T. CHENNAI 600 036.

**B. SEKAR**  
Senior Manager  
SP No 39312



CENTRE FOR INDUSTRIAL CONSULTANCY & SPONSORED RESEARCH (IC&SR)  
 INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
 CHENNAI 600 036



K VIJAYALAKSHMI  
 DEPUTY REGISTRAR (IC&SR) *KL*

Project Accounts  
 July 5, 2019

TO WHOMSOEVER IT MAY CONCERN

In connection with project, US currency may be transferred to CANARA BANK, IIT – MADRAS  
 Branch In connection with the following details.

FOR TRANSFER OF CURRENCY US DOLLAR

Please Credit in USD (THROUGH)

JP MORGAN CHASE, NEW YORK  
 SWIFT CODE: CHASUS33

For credit to

USD ACCOUNT No: 001 – 1395969, of CANARA BANK INTERNATIONAL DIVISION MUMBAI

For Further Credit to

ACCOUNT NO: 2722101001741 of IIT Chennai – Swift Code: CNRBINBBIT OF THE  
 REGISTRAR, IIT, MADRAS

*K Vijayalaxmi*  
 DEPUTY REGISTRAR(IC & SR) i/c

This is to certify that particulars furnished are correct.

*[Signature]*  
 Senior Manager  
 Canara Bank – IIT Madras branch

B. SEKAR  
 Senior Manager  
 SP No. 39312



DEPUTY REGISTRAR (IC&SR) (i/c)  
 IC & SR, I.I.T. MADRAS  
 CHENNAI - 600 036