



सीएसआईआर- भारतीय रासायनिक प्रौद्योगिकी संस्थान
CSIR-Indian Institute of Chemical Technology
आई. एस. ओ. 9001 संगठन (विश्लेषणात्मक परिसेवा हेतु) /ISO 9001 Organization (for Analytical Services)
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद) / (Council of Scientific and Industrial Research)
तारनाका, उप्पल रोड, हैदराबाद. तेलंगाना राज्य, भारत. 500 007.
Tarnaka, Uppal Road, Hyderabad. Telangana State, India. 500 007



PURCHASE ORDER

No: PUR/IICT/0666/24-25/EQPT/1732

Date: 01-11-2024

To
M/s. AdiChem Technology Pvt Ltd
301, Shree Ganesh Avenue Building
Gangapur Road, Sector -C, Nashik-422013
Ph:+90280 78783/9075078783
Email:info@adichemtechnology.com

Sub: - "Supply Installation and Commissioning of Customized Continuous Reactive Distillation Column - reg.

Ref: - 1. Our Tender Enquiry No. PUR/IICT/0666/24-25/EQPT/ and CPPP tender enquiry No.2024_CSIR_204656_1 dt.12.08.2024.

2. Your bid reference No. AQ-2425/E-147 dt.01.09.2024

Dear Sirs,

Kindly supply the following item(s) strictly as per the terms and conditions.

| Sl. No | DESCRIPTION OF MATERIAL | Quantity | Price in (₹) | Total Amount in (₹) |
|--------------------------|---|----------|--------------|---------------------|
| 1. | Supply Installation and Commissioning of Customized Continuous Reactive Distillation Column (Detailed Specifications and other items and accessories as per Annexure enclosed) | 1 No | 33,08,000.00 | 33,08,000.00 |
| Add GST @18% | | | | 595440.00 |
| FOR CSIR-IICT, Hyderabad | | | | 39,03,440.00 |

TERMS & CONDITIONS:

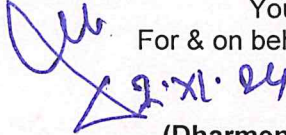
- Prices:** FOR CSIR-IICT Inclusive of all taxes, duties etc., Hyderabad. Unloading the consignment at our site is your cost.
- Order Acknowledgement:** Kindly send order acknowledgement within 15 days through Email: cosp@iict.res.in and csiriict@csiriict.in mention PO No. in the subject line. If you notice any discrepancy/typographical error etc. in this order, you must immediately request for its amendment/correction. Further along with duly signed and stamped copy of this P.O. as token of acceptance of terms and conditions of this P.O. You are also required to sign a contract agreement in pursuance of this Purchase Order in the prescribed format on a Non-Judicial Stamp paper of Rs 200/-(Contract form attached).



3. **Taxes and Levies: Price includes GST@18% also**
4. **Delivery Period :** The ordered material should be supplied within the delivery period of 12 Weeks from the date of receipt of the Purchase Order.
5. **PAYMENT TERMS:**I) 80% through RTGS /NEFT or online mode against supply in complete quantity of ordered items in good condition as per ordered specifications and terms, subject to its joint inspection in the presence of suppliers service engineers/ representative and its confirmations and acceptance by CSIR ICT user.
II) Balance 20% through RTGS /NEFT or online mode after successful completion of installation and commission and final acceptance of End User, our Bankers State Bank of India, IICT Branch, Hyderabad, successful Installation, subject to submission of prescribed PBG.
6. **Warranty:** Warranty should be furnished for **12 months** from the date of successful installation and commissioning of the equipment and subject to final acceptance of the same by the CSIR-IICT user. If CSIR IICT wants to enter into AMC after warranty period the amount for AMC charges shall not be paid in advance and AMC charges shall be paid on bill basis only.
7. **Performance Bank Guarantee: 5% PBG valid till 60 days** beyond the date of final installation and commissioning to be submitted within 21 days from the date of the Purchase Order. Failing which order may be cancelled at the discretion of CSIR IICT.
8. **INSTALLATION, COMMISSIONING AND DEMONSTRATION:** A qualified and factory-trained service engineer should commission the supplied equipment free of cost within *one* month from the date of receipt of the ordered goods and training to be provided for 2 persons 3 working days at our premises i.e., I.I.C.T., Telangana, India.
9. **LD clause:** Timely supply is the essence of stipulation in the delivery period of our purchase order, for our requirements have got a direct bearing with time targeted research work. By any measure, if there is any delay in delivery of the ordered material(s), a sum equivalent to **0.5 (point five)** per cent of contract value for each week of delay or part thereof until actual delivery will be deducted from the contract value as liquidated damages, subject to the maximum deduction of **10 (ten) per cent** of P.O. Value. CSIR IICT is also at liberty to consider the termination of the contract of the items is not delivered within the delivery period without assigning any reason thereof.



10. **CSIR-IICT-GST No: 36AAATC2716R2ZF**
PAN No. AAATC2716R TAN No. HYDI00674C
11. **Availability of spares and service engineer support shall be conformed for a period of 10 years as part of after sales and service support on applicable charges after warranty period.**
12. The dispute settlement mechanism/arbitration proceedings shall be Concluded as under:
- a) If any dispute or difference arises between the parties hereto as to the construction, interpretation, effect and implication of any provision of this agreement including the rights or liabilities or any claim or demand of any party against other or in regard to any other matter under these presents but excluding any matters, decisions or determination of which is expressly provided for in this Agreement, such disputes or differences shall be referred to **Delhi International Arbitration Centre (DIAC), New Delhi**. A reference to the Arbitration under this Clause shall be deemed to be submission within the meaning of the Arbitration and Conciliation Act, 1996 and the rules framed thereunder for the time being in force. Each party shall bear and pay its own cost of the arbitration proceedings unless the Arbitrators otherwise decides in the Award.
- b) In the case of a dispute between the purchaser and a Foreign Supplier, the dispute shall be settled by arbitration in accordance with provision of sub-clause (a) above. But if this is not acceptable to the supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.
- The venue of the arbitration shall be the place from where the purchase order or contract is issued. (for further information please refer to our Tender Document)
- Jurisdiction** - All disputes related to this tender shall be subject to the local court of competent jurisdiction at **HYDERABAD, Telangana, India** only.
13. **The terms and conditions and tender specifications and clarification there off as contained in the tender document shall form part of this purchase order .However, incase of any discrepancy between this P.O. and Tender terms this purchase order**
14. **(P.O.) shall prevail.**

Yours faithfully,
For & on behalf of CSIR,

(Dharmendra Kumar)
Controller of Stores & Purchase

Note: Kindly, mention our purchase order reference number for all your future correspondence so as to enable us to avoid any delay while tracking/clearing the material(s).

Budget Head: FTT-030507 for Rs. 39,03,440/- (Rupees Thirty Nine lakhs Three Thousand Four Hundred and Forty only)

1. Indentor's copy: Dr.Reddi Kamesh(CEPT) 2. Accounts copy; 3. Office copy; 4. Guard File copy 5. Spare copy;

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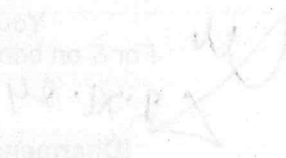
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Yours faithfully,
For & on behalf of CSIR

Director (Research & Development)
Council of Scientific & Industrial Research

Kindly mention our purchase order reference number for all your future correspondence so as to enable us to track and delay while considering the matter.
Phone No: 011-26109511 to 26109514 (Press this 5 digit extension first)
Then our number and your name.
1. Inland's copy: Dr. Huda, Research & Development, CSIR, New Delhi.
2. Inland's copy: Dr. Huda, Research & Development, CSIR, New Delhi.

| SNo | Description |
|-----|--|
| 01 | <p>Supply, Installation and commissioning of Customized Continuous Reactive Distillation Column :</p> <p>A. Liquid Feed Section B. Distillation Column C. Reboiler D. Condenser E. Reflux Drum F. Product Section G. Control Section H. Structure</p> |
| a) | <p>A. LIQUID FLOW SECTION:</p> <p>A.1 Liquid Feed Vessel: Feed tank has provision of Nitrogen gas blanketing with pressure gauge, suitable safety valve, drain port with suitable valve and level indicator. Feedable liquids should be in liquid state at room temperature.</p> <ul style="list-style-type: none"> • Make : AdiChem • Liquid Feed tank capacity : 5 Lit • Connections : ¼" • Qty : 2 Nos <p>A.2 Pump: The pump is used for liquid feeding to the column.</p> <ul style="list-style-type: none"> • Flow rate : 0-10 mL/min • Type : Single Piston pump/Dosing Pump • Pressure : 10 Barg • Make : Ecom • Qty : 2 Nos <ul style="list-style-type: none"> • Provision of Drain valve, Tee type filter, flow check valve in the line, check valves, pressure relief valve with return path to pump inlet. |
| b) | <p>B. DISTILLATION COLUMN:</p> <p>Distillation column specifications are given below:</p> <p>B.1 Column Details:</p> <p>Following are the specifications for Pre-Heater:</p> <ul style="list-style-type: none"> • Make : AdiChem • Type : Tubular Type • MOC : SS316L • Max Temperature : 250 °C • Design Pressure : 5 Barg • Column Length : 3 M (1m separate zones) • Internal Diameter : 2" • End Connection : Flange type (150 Class) • Inlet Port : 3 Nos (Total 5 Nos, 2 in spare) • Inlet Port connection : ¼" • Gaskets : PTFE |

- Qty : 1Nos

B.2 Packing Details:

- Type : Pall rings
- MOC : PP
- Packing size : 10mm
- Packed Height : 3 m

B.3 Support Plate:

- Type : Porus Plate
- MOC : SS316
- Thickness : 3 mm

B. 4 Mass Flow Meter

- Flow Range : 0.1-20 ml/min
- MOC : SS316
- Make : IFM
- Qty : 01 nos

B.5 Thermocouples:

Following are the specifications for Thermocouple.

- Make : Tempense
- Type : K
- Max temperature : 900 deg C
- Qty : 4 Nos

c) **C. REBOILER:**

The reboiler will be designed for heating the fluid. Reboiler temperature control with electric furnace up to 250°C. The rupture disc and Pressure safety valve will be provided for safety.

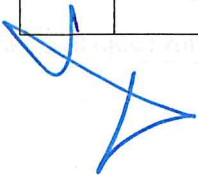
Following are the specifications of Reboiler:

- Make : AdiChem
- M.O.C. : SS316L
- Capacity : 3 Litres (flexible/multiple nozzles for overflow provision at different liquid holdups i.e., 25%, 50% and 75% hold-up levels for operation at different feed rates)
- Type : Jacketed (MOC: SS304)
- Design Temperature : 250°C
- Operating temperature : 200°C
- Design Pressure : 5 Barg
- Operating Pressure : 4 Barg
- Capacity : 10 mm
- Heating Media : Oil Circulation
- Temperature indicators : Single point variable thermocouples

| | |
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| | <p>C.2 Heating Circulator: Following are the specifications of Heating Furnace:</p> <ul style="list-style-type: none"> • Make : Julabo, Model#: MAGIO MX-BC12 • Temperature range : 20 to 300 deg C • Temperature Stability : +/-0.01 degC • Heating Capacity : 3 Kw • Filing Volume : 8.5 to 12 L • Thermal Fluid : 15 Lit • Flexible Pipes : 2 m <p>C.3 Thermocouples: Following are the specifications for Thermocouples</p> <ul style="list-style-type: none"> • Make : Tempsens • Type : K type with thermowell • Max Temperature : 900 °C <p>C. 4 Mass Flow Meter</p> <ul style="list-style-type: none"> • Flow Range : 0.1-20 ml/min • MOC : SS316 • Make : IFM • Qty : 01 nos |
| d) | <p><u>D.1 TOP CONDENSER:</u></p> <ul style="list-style-type: none"> • Type : Shell & Tube • Tube length : 1m • Tube Diameter : 12 mm • MOC : SS316L • Internal Dia of Jacket : 3" NB • Diameter of Jacket : 3" • Jacket Length : 800 mm • Number of tubes : 9 (12mm Id) • M.O.C : 316 SS • Working Pressure : 5 Barg • Temperature : -20 to 200 °C <p><u>D.2 Chillier:</u></p> <ul style="list-style-type: none"> • Make : PolyScience/Eq. • Temperature : -20°C to Ambient • Power : 230 VAC, 50 HZ • Capacity : 10 Lit • MOC : SS304 • Compressor : Hermetically Sealed Gas Compressor • Temperature control indicator : Temperature controlled by digital temperature cum controller |
| e) | <p><u>E.1 REFLUX DRUM:</u></p> <ul style="list-style-type: none"> • Capacity : 1lit (multiple nozzles for sending reflux liquid to column at |



| | |
|----|--|
| | <p>different liquid holdups i.e., 25%, 50% and 75% hold-up levels for operation at different feed rates)</p> <ul style="list-style-type: none"> • MOC : SS316L • Design Pressure : 5 Bar • Design temperature : 200 deg C • Reflux Control : Timer based solenoid valves to control reflux rate and distillate rate Make- FITOK (Qty:2No) <p>E.2 Product receiver from Top:</p> <p>Product will be received in the receiver.</p> <ul style="list-style-type: none"> • Make : AdiChem • MOC : SS316 • Capacity : 5 Lit • Design Conditions : 5 Bar @ Amb Temperature • Operating Conditions : 1 Bar • Qty : 1 Nos |
| f) | <p><u>F. SEPARATION SECTION AT BOTTOM:</u></p> <p>F.1 Product Collection Tank:</p> <p>Liquid from GLS will be collecting in the product collection tank.</p> <ul style="list-style-type: none"> • Make : AdiChem • MOC : SS316 • Capacity : 1500 ml • Design Conditions : 5 Bar @ Amb Temperature • Operating Conditions : 1 Bar • Qty : 1 Nos |
| g) | <p><u>G. CONTROL PANEL:</u></p> <p>The process parameters will be controlled and monitored by this Control Panel; it is incorporated with PLC based control system.</p> <p>G.1 CONTROL PANEL :</p> <p>Following are the specifications of Control Panel:</p> <ul style="list-style-type: none"> • Make : Eldon /Ritter • Type : PLC &9-inchHMI from Siemens • Operation : Both from HMI and SCADA. <p>Fully automatic application after readiness of soft start. You can define operational philosophy with time basis. Hi and Hi Hi limit alarming for the process parameters.</p> <p>Access for the setting up of the limits.</p> <p>Safety interlocks with three levels. Level 1 and 2 are settable. Level 3 is predefined for emergency stop.</p> |



| | <p>Control panel is designed</p> <ul style="list-style-type: none"> - To control and monitor the temperature, pressure, and flow. - Two station operation - Safety limits to ensure power stop to resistive load. - Safety for sensor breaks alarming. - Safety limit to stop the flow for over pressure second level - Safety limit to hazardous gas detection evacuation digit bit and emergency stop. | | | | | | | | | | | | | | | | | | | | |
|---------------------|--|--------------|--|------------------|--|---------------------|---|-------------------|--|--------|---|--------------|----------------------------------|-------------|--------------------------|----------------|---------------------------------------|----------------|--|-------|---------------------------------|
| h) | <p>H. SCADA STATION:</p> <ul style="list-style-type: none"> - Make: Siemens <p>SCADA station will be is design to control, monitor and logged the features of control panel. SCADA is featured with:</p> <table border="1" data-bbox="252 689 1528 987"> <tr> <td>Data Logging</td> <td>All process parameters i.e. temperature, Pressure, Flow is logged in SCADA and saved the data in its server.</td> </tr> <tr> <td>On Line trending</td> <td>Process parameters can be monitored in graphically for its current values of specified time frame.</td> </tr> <tr> <td>Historical Trending</td> <td>It is a feature to view the earlier process parameters in graphical trends.</td> </tr> <tr> <td>Report Generation</td> <td>It is a tool to generate the process parameters in tabular format either the current or past sessions.</td> </tr> <tr> <td>Recipe</td> <td>It is a tool to operate the system in sequential manner for its given time frame.</td> </tr> </table> <p>Computer: Make-HP –1TB HDD, 1TB SDD, 24 Inch Monitor, with all suitable accessories, i7 processor, above 13th generation, windows 11 professional</p> <p>➤ BATTERY LIMITS & UTILITY REQUIRMENTS: All battery limit connections will be located at the process frame edge for connections by the client. It is assumed that the client secures all feeds on overpressure as stated below:</p> <table border="1" data-bbox="469 1330 1295 1525"> <thead> <tr> <th>Utility Name</th> <th>Operating range at battery limit</th> </tr> </thead> <tbody> <tr> <td>Liquid Feed</td> <td>To fill up the feed tank</td> </tr> <tr> <td>Electric Power</td> <td>230 VAC, 50 Hz, Current Amp- 25 Amps,</td> </tr> <tr> <td>Instrument Air</td> <td>Moisture free regulated 10 barg pressure</td> </tr> <tr> <td>Space</td> <td>For reactor system and computer</td> </tr> </tbody> </table> | Data Logging | All process parameters i.e. temperature, Pressure, Flow is logged in SCADA and saved the data in its server. | On Line trending | Process parameters can be monitored in graphically for its current values of specified time frame. | Historical Trending | It is a feature to view the earlier process parameters in graphical trends. | Report Generation | It is a tool to generate the process parameters in tabular format either the current or past sessions. | Recipe | It is a tool to operate the system in sequential manner for its given time frame. | Utility Name | Operating range at battery limit | Liquid Feed | To fill up the feed tank | Electric Power | 230 VAC, 50 Hz, Current Amp- 25 Amps, | Instrument Air | Moisture free regulated 10 barg pressure | Space | For reactor system and computer |
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| Instrument Air | Moisture free regulated 10 barg pressure | | | | | | | | | | | | | | | | | | | | |
| Space | For reactor system and computer | | | | | | | | | | | | | | | | | | | | |
| i) | <p>I. STRUCTURE: Whole Distillation unit will be designed to fix on skid mounted structure made us of MS square pipes with powder quoted.</p> | | | | | | | | | | | | | | | | | | | | |

