



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/1011/24-25/EQPT/2063

Date: 26-11-2024

To
M/s. R L Solutions LLP
D-49, MIDC Satpur
Nashik-422007
Maharashtra
Ph:+91-253 2956232/+91-9028595311
Email:info@rationallabsolutions.com

Sub;-“Supply Installation and Commissioning of “Customized Continuous Reactive Distillation Column” - reg.

Ref: - 1. Our Tender Enquiry No. PUR/IICT/1011/24-25/EQPT DT.12.09.2024 and CPPP tender enquiry No.2024_CSIR_208132_1 Dt.12.09.2024.

2. Your bid reference No: RLS-PE-MW-1024-PO55 dt.03.10.2024 and revised offer received through email dt.18.11.2024.

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.	Customized Continuous Reactive Distillation Column (Detailed Specifications and other items and accessories as per Annexure enclosed)	1No.	43,96,500.00	43,96,500.00
				43,96,500.00
Add GST @18%				Inclusive
FOR CSIR-IICT, Hyderabad				43,96,500.00

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

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days through Email: cosp@iict.res.in and csiriicthyd@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 on or before 03.02.2024.
5. **PAYMENT TERMS:** 1) 100% 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 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 CAMC/AMC in future after warranty period the amount for AMC charges shall not be paid in advance and the same 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 onsite application training to be provided for 2 persons 3 working days at CSIR IICT., 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.

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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.
13. **Jurisdiction** - All disputes related to this tender shall be subject to the local court of competent jurisdiction at **HYDERABAD, Telangana, India** only.

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14. ~~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 (P.O.) shall prevail.
Bill of entry to be submitted at the time of delivery of goods in case of foreign Origin.

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: PPP-240004 RS.43,96,500 (Rupees Forty Three Lakhs Ninety Six Thousand Five Hundred only)

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



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Annexure

NO.PUR/IICT/1011/24-25/EQPT/

DT.26.11.2024

SI.No	Item	Quantity	Specification
1	Distillation column	3 sections	<ul style="list-style-type: none">- Total Height : 3 meters (i.e., 1 meter each section)- Type : Tubular type- Diameter : 2"/ ~5 cm- Design pressure : 5 barg- Operating Temperature : 250 °C- MOC : SS316L- 3 Feeding points/inlet ports at middle section (Reactive zone)- 2 feeding provisions/ inlet ports at top and bottom section (i.e., rectifying and stripping section)- Thermocouples for temperature measurement -6 no (2 Nos at each zone)- Make : R L Solutions LLP- One thermocouple for top tray temperature measurement.- Thermowell for all thermocouples.- Thermocouple Make : Eureka or equivalent- Packing: Polypropylene Pall Ring (10 mm size) for all three zones and additional structured packing for reactive zone.- Packing Material : Chemidist/Bharat Pack/Equivalent- Pressure Transmitter and pressure gauge for monitoring column pressure up to range of 10 kg/cm²- Press Transmitter Make: Baumer- Rupture disc with burst pressure 10 barg- Rupture Disc make: BS&B- Pressure safety valve up to 10 barg- Manual needle valves at different feed locations- Flow meter suitable for system operating conditions to measure the reflux flow to the column (0.1-20 ml/min) <p>Specifications: Type : Low-Flow Ultrasonic Flow Meter for liquids Flow Range : 0.5 to 20 ml/min Volume Flow Accuracy : $\leq \pm 0,8\%$ Rd Zero Stability : $\leq 0,06$ ml/min Fluid Temperature : -10...60 °C</p>

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			Wetted Part MOC : stainless-steel 316L & PEEK Seal : Metal End Connection : 1/4"OD compression Make : Bronkhorst Qty : 01 No - Porus support plate - All accessories specification suitable for column operating/design pressure, flow and temperature range will be provided. Note: Hot insulation to column will be provided without any heating provision.
2	Liquid feed section		
	Feed vessel	2	- Tank capacity : 5 Lit - Type : Jacketed - MOC : SS316 - Make : R L Solutions LLP
	Pump	2	- Flow rate : 0.1 - 10 ml/min - Type : Dosing pump/HPLC type Pump - Pressure : 10 barg - Flow Accuracy : +/- 2% - Make : SSI Teledyne/grund foss
3	Reboiler section & bottom product receiver		
	Jacketed reboiler	1	- MOC : SS316L - Jacket MOC : SS304 - Operating temperature: 250 °C - Design Pressure : 5 Barg - Capacity : ~3 Lit (Will have 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) - Will have provision for controlled collection of continuous liquid bottom product from reboiler - Heating: Jacket with circulator - Heating media : Oil circulation - Suitable thermocouple for temperature measurement - Level Guage for reboiler - Rupture disc : 10 barg - Pressure Safety Valve : 10 barg - Temperature indicators: K type - Pressure gauge/indicators : 0 – 10 kg/cm2 - Pressure Transmitter : up to 10 barg - Suitable Flow meter to measure bottom product flowrate continuously (0.01-20 ml/min) Specifications:

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			Type : Low-Flow Ultrasonic Flow Meter for liquids Flow Range : 0.5 to 20 ml/min Volume Flow Accuracy : $\leq \pm 0,8\%$ Rd Zero Stability : $\leq 0,06$ ml/min Fluid Temperature : -10...60 °C Wetted Part MOC : stainless steel 316L & PEEK Seal : Metal End Connection : 1/4"OD compression Make : Bronkhorst Qty : 01 No - Port/ Provision for vapour product removal/collection
	Heating Circulator	1	- Design temperature Range : Ambient -300 °C - Working temperature Range : +50 -250 °C - Temperature stability : ± 0.01 °C - Heating Capacity : 2 kW - Pump capacity : up to 30 l/min - Filling volume : 9- 12 L - Model # : MAGIO MX-BC12 Heating circulator - Make : Julabo - Accessories : Tubing (3 m length), Insulation (3m length), and tube clamps etc. - Data log-in as-well-as remote temperature control provision: RS232/USB Ports
	Product collection/storage tank/Receiver vessel	1	- MOC : SS316L - Type : Jacketed Vessel - Capacity : 5 Lit - Design Temperature : ambient to 250 °C - Design Pressure : 5 Barg - Make : R L Solutions LLP
4	Top Condenser Section		
	Shell & Tube Heat exchanger/Condenser	1	- Type : Tube in tube/ shell and tube - MOC : SS316L - Heat transfer surface area : 0.02 m2 - Design pressure : 5 barg - Operating Temperature : -20 to 250 °C - Suitable nozzles for process in and Out - Suitable thermocouple for temperature measurement - Make : R L Solutions LLP
	Cooling circulator	1	- Working temperature Range : -20 to ambient - Pump capacity : up to 20 l/min - Cooling capacity : 2 KW - Pressure head : 6-7 meter - Bath capacity : 8-10 Lit - Accessories : Tubing, Insulation, and tube clamps etc.

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			- Make : Indigenous/Being/Siskin
5	Reflux Drum/Decanter section		
	Reflux Drum/Decanter		<ul style="list-style-type: none"> - Application : Two-phase layer separation (organic layer or top layer will return to the column and continuous collection of aqueous layers from bottom with desired flow rate without disturbing interphase) - Capacity : 1 Lit (Will have multiple nozzles for sending reflux liquid to column at different liquid holdups i.e., 25%, 50% and 75% hold-up levels for operation at different feed rates) - MOC : SS316L - Design Pressure : 5 barg - Design Temperature : 250 °C - Level gauge for decanter - Suitable thermocouple for temperature measurement - Will have provision for reflux rate or ratio control and distillate flow rate control using timer-based solenoid valve or any other hardware (i.e., Two Solenoid valve with timer based on-off for reflux ratio control/ reflux liquid (organic layer) sending back to the column (one) and distillate withdraw/flow control of top by-product collection (aqueous layer) (one) - Will have provision for remote control of reflux ratio from computer. - All accessories specification suitable for column operating/design pressure, flow and temperature range will be provided - Make : R L Solutions LLP
	Top Product Receiver vessel	1	<ul style="list-style-type: none"> MOC : SS316 - Type : Jacketed Vessel - Capacity : 5 Lit - Design Pressure : Atmospheric - Temperature : Ambient to 250 °C - Make : R L Solutions LLP
6	Control panel/system with Human-Machine Interface (HMI) & SCADA station		

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with computer			
	Control Panel	1	<ul style="list-style-type: none">- PLC panel with HMI based control unit.- Display size: Minimum 9-inch touch screen for HMI with minimum resolution of 800 x 480 will be provided.- Suitable for operation with Both HMI & SCADA.- Control panel will have provision for access to setting up the limits.- Control panel to be designed for control and monitor the temperature, pressure, and flow.- Control panel will have provision of safety interlocks, safety sensors/limits (safety limit to ensure power stop resistive load, sensor breaks, limit to release pressure for over pressure, to stop flow for over pressure) and alarms where ever applicable for distillation column- Power supply: 230VAC, Single phase- 02 No Power supply to Circulators- PLC Make : Allen Bradley
	SCADA Station	1	<ul style="list-style-type: none">- SCADA License- Communication hardware- For application to remote operation, data logging of all process parameters, design to control, and monitor the features of control panel.- SCADA will have following features such as Data logging, online-trending. Historical trending, Report generation, and Recipe.- Make : I Fix Intellution(GE fanuc)
	Computer	1	<ul style="list-style-type: none">- Computer (i7 processor, above 13th generation, windows 11 professional, 16 GB RAM, 500 GB SSD, 24" Monitor, Business PC with MS office license- Make : HP
7	Valves and fitting		<p>Necessary vales, lines and fitting for column connections to reboiler, Condenser and reflux drum and feed tank and storage tanks</p>

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			- Make : Swagelok/FITOK
8	Skid-mounted structure	1	- Distillation unit will be designed to fix on skid mounted structure with Aluminium MOC.

The Supplied Equipment along with accessories should completely comply with all the technical specifications and related requirements indicated in Chapter 4 of Tender Documents on the subject and subsequent "corrigendum" issued in pursuance of the same.

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26.11.24

COSP