



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/0681/24-25/EQPT/2720

Date: 17-01-2025

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 High Pressure Tubular Reactor System"- reg.

Ref: - 1. Our Tender Enquiry No. PUR/IICT/0681/24-25/EQPT DT.14.08.2024 and CPPP tender enquiry No.2024_CSIR_204898_1Dt.14.08.2024.
2. Your bid reference No:AQ-2425/E-148 DT.02.09.24.

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 High Pressure Tubular Reactor System <i>(Detailed Specifications and other items and accessories as per Annexure enclosed)</i>	1No.	66,80,000.00	66,80,000.00
				66,80,000.00
Add GST @18%				12,02,400.00
FOR CSIR-IICT, Hyderabad				78,82,400.00

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

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ईमेल/ Email: cosp@iict.res.in; csiriict@csiriict.in वेबसाईट/website:www.iictindia.org



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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 within the delivery period of 16-18 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 IICT user Scientist.
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 CAMC/AMC in future after warranty period the amount for AMC charges shall not exceed CAMC/AMC Charges indicated in quotation (if any) and the same will 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 prescribed warranty period starting from 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. Supplier has to inform pre-installation requirements if any for site readiness within 10 days of receipt of this mail.
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

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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)

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

Yours faithfully,
For & on behalf of CSIR,


17.01.25

(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: GAP-1013 for Rs.78,82,400/- (Rupees Seventy Eight lakhs Eighty Two Thousand Four Hundred only)

1. Indentor's copy: Dr.A.Venugopal (CFC Divn) 2. Accounts copy; 3. Office copy; 4. Guard File copy 5. Spare copy;



NO.PUR/IICT/0681/24-25/EQPT/2720

DT.17.01.2025

Technical Specifications

Sl.No.	Description
01	SUPPLY OF CUSTOMIZED HIGH PRESSURE TUBULAR REACTOR SYSTEM A. Gas flow Section B. Liquid flow Section C. Pre-treatment Section D. Reactor Section E. Separation Section F. Product Section G. Control Section H. Structure
A)	<ul style="list-style-type: none">A. GAS FLOW SECTION: Gas flow section will be designed for Six gases (CO With Iron Penta Carbonyl Trap, CO₂, CO₂ with badger controller, H₂, N₂, And CH₄) and these gases will be controlled via mass flow Controller. Mass Flow Controller are in lined with Bulk Head Union, Filter, Pressure Gauge, and Ball Valve And Check Valve. <p>Below are the details of Mass Flow Controller;</p> <p>A.1 Mass Flow Controller (CO With Iron Penta Carbonyl Trap): Gas Flow Meter for Above gas,</p> <ul style="list-style-type: none">• Make : Bronkhorst/Brooks• Contact Part M.O.C. : SS316• Gas Flow Range : 5-200 ML/MIN• Maximum inlet pressure : 100 Barg• Maximum Operating Conditions : 97 Barg• Design temperature : 70°C• Design pressure : 100Barg• End Connections : 1/8" OD• Inline filter size : 60 Micron• Inline Pressure Gauge Range : 0 to 100 Barg• Inline Check Valve rating : 10 psi cracking pressure• Qty : 1 Nos <p>A.2 Mass Flow Controller (Carbon Dioxide Gas): Mass Flow Controller for CO₂ gas,</p> <ul style="list-style-type: none">• Make : Bronkhorst/Brooks• Contact Part M.O.C. : SS316• Gas Flow Range : 5-200 ML/MIN



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- Maximum inlet pressure : 45 Barg @ Amb Temperature
- Maximum Operating Conditions : 42 Barg @ Amb Temperature
- Design temperature : 70 °C
- Design pressure : Barg
- End Connections : 1/8" OD
- Inline filter size : 60 Micron
- Inline Pressure Gauge Range : 0 to 100 Barg
- Inline Check Valve rating : 10 psi cracking pressure
- Qty : 1 Nos

A.3 Coriolis Mass Flow Controller CO2 GAS with badger controller
Flow Meter for CO2 with badger controller gas,

- Make : Bronkhorst/Brooks
- Contact Part M.O.C. : SS 316
- Gas Flow Range : 5-200 ML/MIN
- Maximum inlet pressure : 100 Barg @ Amb Temperature
- Maximum Operating Conditions : 97 Barg @ Amb Temperature
- Design temperature : 70 °C
- End Connections : 1/8" OD
- Inline filter size : 60 Micron
- Inline Pressure Gauge Range : 0 to 100 Barg
- Inline Check Valve rating : 10 psi cracking pressure
- Qty : 1 Nos

A.4 Mass Flow Controller (Hydrogen):

Mass Flow Controller for H₂ gas,

- Make : Bronkhorst/Brooks
- Contact Part M.O.C. : SS316
- Gas Flow Range : 15-800 ML/MIN
- Maximum inlet pressure : 100 Barg @ Amb Temperature
- Maximum Operating Conditions : 97 Barg @ Amb Temperature
- Design temperature : 70 °C
- Design pressure : Barg
- End Connections : 1/8" OD
- Inline filter size : 60 Micron
- Inline Pressure Gauge Range : 0 to 100 Barg
- Inline Check Valve rating : 10 psi cracking pressure
- Qty : 2 Nos

A.5 Mass Flow Controller (Nitrogen): Mass Flow Controller for N₂ gas,

- Make : Bronkhorst/Brooks
- Contact Part M.O.C. : SS316
- Gas Flow Range : 5-200 ML/MIN
- Maximum inlet pressure : 100 Barg @ Amb Temperature
- Maximum Operating Conditions : 97 Barg @ Amb Temperature
- Design temperature : 70°C

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	<ul style="list-style-type: none">• Design pressure : 100 Barg• End Connections : 1/8" OD• Inline filter size : 60 Micron• Inline Pressure Gauge Range : 0 to 100 Barg• Inline Check Valve rating : 10 psi cracking pressure• Qty : 1 Nos <p>A-6 Mass Flow Controller (Methane): Mass Flow Controller for CH₄ gas,</p> <ul style="list-style-type: none">• Make : Bronkhorst/Brooks• Contact Part M.O.C. : SS316• Gas Flow Range : 5-200 ML/MIN• Maximum inlet pressure : 100 Barg @ Amb Temperature• Maximum Operating Conditions : 97 Barg @ Amb Temperature• Design temperature : 70 °C• Design pressure : 100 Barg• End Connections : 1/8" OD• Inline filter size : 60 Micron• Inline Pressure Gauge Range : 0 to 100 Barg• Inline Check Valve rating : 10 psi cracking pressure• Qty : 1 Nos
B)	<ul style="list-style-type: none">• B. LIQUID FLOW SECTION:• B.1 Feed Tank:• Feed Tank Capacity : 2 to 3 Lit• Feed Tank M.O.C : SS 316• Process Fluid : Water• B.2 HPLC Pump: <p>The pump is used for liquid feeding to the premixed where the mixing of gases and vaporized liquid takes place.</p> <ul style="list-style-type: none">• Flow Range : 0.01-10 ML/MIN• Design temp : 100°C Operating Temp : 60°C• MOC : Suitable for Liquid.• Design Pressure : 120 Barg• Operating Pressure : 100 Bar• Type : Single Piston pump• Qty : 1 Nos• Make : Teledyne/ Equivalent• Communication : SCADA Compatible RS 232
C)	<ul style="list-style-type: none">• C. PRE-TREATMENT SECTION: <p>The gases will pass through the pre-heater and will heat up the reactant gas. Same pre-treatment will be provided for liquid feed line where liquid preheated and vaporized. Vaporizer outlet will be connected to the inlet of the preheater for uniform mixing of liquid vapours and gases. Outlet of the</p>



	<p>pre heater connected to the reactor inlet. The maximum temperature for heat traced line is 250°C</p> <ul style="list-style-type: none">• All liquid lines are heat traced to avoid liquid condensation.• Provision of Drain valve, Tee type filter, flow check valve in the line, check valves, pressure relief valve with return path to pump inlet. <p>C.1 PRE-HEATER with Static Mixer: Following are the specifications for Pre-Heater:</p> <ul style="list-style-type: none">• Make : AdiChem• Type : Ceramic Band Heater• MOC : SS316• Operating Temperature : 250 °C• Design Temperature : 300 °C• Max Pressure : 100 Barg• Temperature control : Skin based• Mixture : STATIC• Qty : 1Nos <p>C.2 Vaporizer</p> <ul style="list-style-type: none">• Make : AdiChem• MOC : SS 316• Pressure : 100 bar• Max Temperature : 250 °C <p>C.3 Thermocouples: Following are the specifications for Thermocouple.</p> <ul style="list-style-type: none">• Make : Tempsense• Type : K
D)	<p>D. REACTOR SECTION: The reactor assembly will be designed for vapour phase as well as gas-liquid reaction. Reactor temperature control with split tube furnace up to 500°C. Hand tighten reactor will be design for high pressure and high temperature. Isotherm across the reactor will be maintained. The rupture disc will be provided for safety of reactor</p> <p>D.1 Reactor Tube 1: Pre-mixed and pre-heated gases are entered at the top of the reactor tube. Following are the specifications of Reactor Tube:</p> <ul style="list-style-type: none">• Make : AdiChem• M.O.C. : SS 316• Type : Metal to Metal Seal (Seamless);Hand Tightened• Design Temperature : 900°C• Operating temperature : 700°C• Design Pressure : 100 Barg• Operating Pressure : 100 Barg• Internal Diameter : 1"• Length : 700 mm• Heating Media : Three zone furnaces



- Temperature indicators : Single point variable thermocouples
- Reactor flow direction : Down flow
- Qty : 3

D.1.2 Furnace:

Following are the specifications of Heating Furnace:

- Furnace Make : ATS Make
- Type : Split Tube Type
- Construction : Three zone
- Design temperature : 1100 °C
- Design Pressure : 100 Barg
- Power supply : 230 V AC, 1 phase, 50/60 Hz.
- Thermocouples : 1 Nos

D.1.3 Thermocouples:

Following are the specifications for Thermocouples

- Make : Tempense
- Type : K type with thermowell
- Design Temperature : 800 °C
- Design Pressure : 100 Barg

D. 2.1 Reactor Tube 2:

- Make : AdiChem
- M.O.C. : SS 316
- Type : Metal to Metal Seal (Seamless) ; Hand Tightened
- Design Temperature : 900°C
- Operating temperature : 700°C
- Design Pressure : 100 Barg
- Operating Pressure : 100 Barg
- Internal Diameter : 0.5"
- Total Reactor Length : 700 mm
- End Connection : 1/8" OD
- Heating Media : Three zone furnaces
- Temperature indicators : Single point variable thermocouples
- Reactor flow direction : Down flow
- Qty : 3

D.2.2 Furnace:

Following are the specifications of Heating Furnace:

- Furnace Make : ATS Make
- Type : Split Tube Type
- Construction : Three zone
- Design temperature : 1100 °C
- Design Pressure : 100 Barg
- Power supply : 230 V AC, 1 phase, 50/60 Hz.
- Thermocouples : 1 Nos

D.2.3 Thermocouples:



	<p>Following are the specifications for Thermocouples</p> <ul style="list-style-type: none">• Make : Tempense• Type : K type with thermowell• Design Temperature : 800 °C• Design Pressure : 100 Barg
E))	<ul style="list-style-type: none">• E. SEPARATION SECTION:• E.1 Condenser: Hot mixture of the gases passes through the condenser by providing cooling/chilling water outside.<ul style="list-style-type: none">• Make : AdiChem• MOC : SS 316• Type : Shell and tube And Serpent Coil type• Coil : 1/4" Tube Coil• Coil Length : 250 mm• ID Of Jacket : 54mm• OD Of Jacket : 60.3 mm• Jacket Length : 250 mm• Design Pressure : 100 Barg• Design temperature : °C• Operating Temperature : -40 °C to 200 °C• Operating Pressure : 100 Barg• E.2. Gas Liquid Separator:<ul style="list-style-type: none">• Make : AdiChem• MOC : SS316• Capacity Of HPS : 375 ml• ID Of Shell : 40 mm• OD Of Shell : 48.26 mm• Shell Length : 200 mm• Cooling Coil Outside The Vessel : 1/8" OD Copper Tube Coil• Operating Pressure : 100 Barg• Design temperature : °C• Qty : 1 Nos• E.3 BPR: Automatic Pressure Controlling Valve<ul style="list-style-type: none">• Make : Jordan, USA• Type : Automatic with pneumatic• M.O.C. : SS316• End connection : 1/4" Suitable Connection• Pressure : 100 Barg• Temperature : 100 C• Qty : 1 Nos• E.4 Chiller :<ul style="list-style-type: none">• Make : Polyscience/ Eq.



	<ul style="list-style-type: none">Type : Heating And Cooling ChillerM.O.C. : CompatibleWorking Temperature : 0 C to 80 CPressure : BargCapacity : 2 to 4LQty : 1 Nos
F)	F. PRODUCT SECTION: F.1 Product Collection Tank: Liquid from GLS will be collecting in the product collection tank. <ul style="list-style-type: none">Make : AdiChemMOC : SS316Capacity : 3 LitOperating Condition : AtmosphericQty : 1 Nos
G)	G. Accessories : G.1 Bulk Head Union : <ul style="list-style-type: none">Type : Bulk HeadM.O.C : SS 316End Connection : 1/8 " ODMax Operating Pressure : 100 Barg @Amb Temp G.2 Filter : <ul style="list-style-type: none">Type : In- Lined Filter For gas LineM.O.C : SS 316End Connection : 1/8 " ODMax Operating Pressure : 100 Barg @Amb TempPore Size : 07 Micron For Gas G.3 Ball Valve : <ul style="list-style-type: none">Type : 1 Piece Two Way Ball ValveM.O.C : SS 316End Connection : 1/8 "ODMax Operating Pressure : 100 Barg @Amb Temp G.4 Needle Valve : <ul style="list-style-type: none">Type : 1 Piece Two Way Needle ValveM.O.C : SS 316End Connection : 1/8 " ODMax Operating Pressure : 100 Barg @ 236 C TempSeal : PTFE G.5 Pressure Gauge: <ul style="list-style-type: none">Type : Bourdon Tube Pressure gaugeM.O.C : SS 316Dial Size : 63mmMounting : Back and BottomEnd Connection : 1/8" MBSP



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- Pressure Range : 0 to 100 Barg

G.6 Check Valve:

- Type : Inline Check Valve
- M.O.C : SS 316
- End Connection : 1/8 " OD
- Seal : Fluorocarbon FKM

G.7 Filter:

- Type : In- Lined Filter For Liquid Line
- M.O.C : SS 316
- End Connection : 1/8"OD X 1/8"OD
- Max Operating Pressure : 100 Barg @Amb Temp
- Pore Size : 60 Micron For Liquid Line
- Type : 1 Piece Three way
- M.O.C : SS 316 End Connection : 1/8 " OD
- Max operating Pressure : 100 bar g at ambient temp
- Seal : Fluorocarbon FKM

G.9 Micro Metering Valve:

- Type : Flow Control Valve
- M.O.C : SS 316
- End Connection : 1/8 " OD
- Max Operating Pressure : 100 Barg @ 236 C Temp
- Seal : PTFE

G.10 Rupture Disc:

- Type : Rupture Disc
- Disc M.O.C : SS 316
- Disc Size : 0.5"
- Burst Pressure : 100 Barg @200 F

G.11 Transducer:

- Type : 2 Wire Pressure Transmitter
- Contact Part : 316 L
- End Connection : 1/8 " MBSP
- Pressure Range : 0 to 100 Barg
- Power Supply : 24 VDC

G.12 Pressure Control Valve :

- Type : Diaphragm Type Globe Valve
- Operating Pressure : 100 Barg
- End Connection : 1/8 " OD
- CV : 0.05

G.13 Pressure Safety Valve :

- Type : Pressure Relief Valve
- M.O.C : SS 316

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	<ul style="list-style-type: none">• End Connection : 1/8" OD• Control Range : 50 to 100 Barg <p>G.14 Level Control Valve :</p> <ul style="list-style-type: none">• Type : Ball Valve• M.O.C : SS 316• End Connection : 1/8 " OD• Max Operating Pressure : 100 Barg @ Amb Temp• Seal : PTFE• Operation : Automatic (Air Operated) <p>G.15 Level Switch :</p> <ul style="list-style-type: none">• Type : Level Switch• Contact Part M.O.C : SS 316• End Connection : 1/8 " OD• Max Operating Pressure : 100 Barg @ Amb Temp <p>G.16 Cylinders Regulators : High Pressure H₂, CO₂, N₂, CO CH₄ Regulator :</p> <ul style="list-style-type: none">• Max Inlet pressure : 200 Bar g• Max Flow Rate : 4600 SCFH• Operating Temp : -26 Deg C to 74 Deg C• Gauges : Stainless Steel• Bonnet : Nickel Plated Brass• Piston : SS316 <p>G17 Online UPS : 10 KVA</p> <ul style="list-style-type: none">• Battery backup: 1 Hrs.• Make : APC/Luminous / Vertiv-Emerson <p>G18 CO Sensor</p> <ul style="list-style-type: none">• For Carbon Monoxide -XCD Gas Detector,• ATEX/IECEX/Asian approvals,• 2 X M20 entries• Output signal : 4 -20 mA• Painted LM25,• CO EC sensor cartridge : 0 to 300 ppm• User selectable FSD between : 100 and 1000 ppm (100 ppm resolution),• Protection : includes nylon weather protection
H)	<p>H. CONTROL PANEL: The process parameters will be controlled and monitored by this module; it is incorporated with PLC based control system. Following are the specifications of Control Panel:</p> <ul style="list-style-type: none">• Type : PLC and HMI from Siemens• Operation : Both from HMI and SCADA.• Classification : IP55

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	<p>Fully automatic application after readiness of soft start. Soft Start measures are noted with inline gas present at the inlet of the MFC. You can define operational philosophy with time basis. And integrated with the online analysis of feed and product.</p> <p>Hi and Hi Hi limit alarming for the process parameters. Safety interlocks with three levels. Level 1 and 2 are settable. Level 3 is predefined for emergency stop. Control panel is designed.</p> <p>Safety interlocks</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 release the pressure for over pressure limit• Safety limit to hazardous gas detection evacuation digit bit and emergency stop. UPS probes can be hooked up and monitoring of process parameters incorporated										
1)	<p>I. 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"><tr><td>Data Logging</td><td>All process parameters i.e., temperature, Pressure, Level, 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>STATION TWO: A latest computer suitable for SCADA software.</p> <p>Computer: Make-HP Intel original motherboard and processor > 3GHz (i7, seven generation) with 16GB RAM, 1 TBSSD, 1TB HDD, optical mouse, multimedia keyboard, DVD +RDW, 4USB ports, 10/100 Ethernet card with WOL, 24" LED colour monitor and necessary Windows with license.</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>	Data Logging	All process parameters i.e., temperature, Pressure, Level, 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
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	Utility Name	Operating range at battery limit
	Feed gas	Pressure controlled via cylinders
	Electric Power	230 VAC, 50 Hz, Current Amp- 25 Amps
	Space	For reactor system
	Customer has to arrange for the sufficient feed supply at rated pressure of 100 bars with appropriate connections	
J)	J. STRUCTURE	Whole Fixed Bed Reactor is designed to fix on skid mounted structure, made up of heavy-duty aluminum extruded pipe. <ul style="list-style-type: none">• Tubing, Valves and Fittings

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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