

Indian Institute of Technology Delhi
Department of Chemical Engineering

Date: 12th December, 2011

The Department of Chemical Engineering invites quotations for the supply of Micro reactor required for reforming reactions with the specifications given below. Sealed Technical and financial bids (**in separate envelopes, Super scribing: Micro reactor unit**) must reach the department office by 04.01.2012, 5:00 pm.

Technical details

REACTOR MODULE (Tentative flow sheet is attached)

Sr. No.	Description	
1	Reactor Tube	1 No.
	Type	Flanged
	MOC	Inconel 800 HT
	Design Temperature	1000 Deg. C
	Design Pressure	5 Bar G
	Reactor tube dimensions	21.33 mm OD/15.79 mm ID x 700 mm (L)
2	Furnace Heater for Reactor Tube:	1 No.
	Heating	Electric Furnace Heating
	Type	Split Type
	No. of Zones	2
	Temperature	1100 Deg. C
	Make	Please specify (as per international standard)
3	Other accessories	As required to run the furnace (Temp. controller unit)

FEED MODULE:

1	Gas Feeding Module	3 Nos.
2	Mass Flow Controller	3 Nos.
	Flow Range:	0-100 ml/min, for N ₂ & O ₂ and 0-100 ml/min, for H ₂ (with minimum measurement accuracy of 0.5ml/min)
	MOC (wetted Parts):	Please specify
	Make:	Please specify (as per international standard)
3	Liquid Feeding Module:	2 Nos.
4	Feed Vessel	2 Nos.
	Capacity	1 Lit
	MOC	SS 316
5	Feed Pump	1 No.
	Flow	0.01 to 10 ml/min
	MOC	SS 316
	Make	Please specify (as per international standard)
6	Feed Pump (Bio oil)	1 No
	Flow	0.01 to 10 ml/min
	MOC	Peek
	Viscosity	25-1000cp
	Make	Please specify (as per international standard)
7	Vaporizer	1 No.
	MOC	Inconel
	Dimension	ID=21mm, OD=27mm and length=140mm
	Temperature	600 Deg C along with split type furnace
8	Premixer / Preheater	1 No.
	MOC :	Inconel
	Temperature	350 Deg C along with split type furnace with controller

	Other items	To be supplied as per the requirement (please specify as per international standard)
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VALVES & FITTINGS:

1	MOC	SS 316
	Make	Swagelok/ any other please specify.

OUTLET MODULE:

1	Condenser	1 No.
	Type	Jacketed condenser (length =0.6m and I.D=0.5’’)
2	Phase Separator	1 No.
	Capacity	1 Litter
	Type	Cylindrical Vessel with Jacket
	MOC	SS 316
3	Pressure transmitter	Up to 50 bar (WIKA make) or specify
4	Back Pressure Regulator	1 No.
	Type	Manual Type
	Body:	SS 316
	Make:	Jordan
	Pressure:	5 Bar
	Rest items	To be supplied as per the requirement

CONTROL PANEL:

1	PID Based Control panel Microprocessor	10 PID - (3 Flow, 7 Temp)
	Make	Please specify (as per international standard)

STRUCTURE (SKID):

1	Make:	Please specify (as per international standard)
2	acrylic sheet covered for decorative look & safety provision	

ANY OTHER ITEM

1	Provision for online gas analysis through Gas chromatograph e.g. gas sampling valve (GSV)
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WARRANTY: At least 12 months warranty against all manufacturing defects from the date of installation

Terms and conditions

- The supplier must be an authorized dealer/distributor of the principal/manufacture and should furnish authorization certificate from the principal/manufacture. Quotation without authorization certificate will be rejected.
- CIF New Delhi prices should be quoted with all the terms and conditions i.e. applicable taxes, installation and warranty and delivery schedule.
- Quotations must be valid for at least three months from the date of the NIQ.
- A special discount /rebate wherever admissible keeping in view that supplies are being made for educational purpose in respect of public institution of national importance may please be indicated.
- The institute reserves right to accept or reject any or all quotations without stating the reasons thereof. The discretion of increasing or decreasing of the quantity demanded or selecting only one items out of all quoted also vests with the Institute.
- The quotations should reach Attention: **Mr. Tarak Mondal, C/O Prof. K K PANT Chemical Engineering Department, Indian Institute of Technology Delhi, Hauz Khas, New Delhi – 110016 latest by 5:00 pm on 4th January, 2012.**
- Vendors are advised to have a personal discussion to undersigned if they have any confusion for the same.
- Please quote prices at FOB New Delhi, inclusive of all taxes and duties.
- Quote should be in Indian Rupees for Indian agents, or in foreign currency, for foreign agents, and needs to be valid for at least three months.
- Attach all the technical literature and a list of similar installations done in India.

- If the quote is being submitted by a representative of the manufacturer, a valid agency-ship or dealership certificate authorizing the agent to quote to IIT Delhi on behalf of the manufacturers should be enclosed.
- Complete set of manuals for the operation of the equipment should be given.
- Clearly specify the installation requirements – such as space, power, frequency, environment etc.
- If the item quoted is proprietary in nature, please enclose proprietary certificate from the principals stating, “Certified that _____ is a proprietary of M/s _____ and no other manufacturer makes this item.”
- Please attach a signed and stamped compliance chart for the specifications. The format of the compliance chart is attached to this document.
- Please specify all of your terms and conditions clearly, including delivery period.
- Preferred modes of payment for foreign agents are through letter of credit, or as payment on delivery. For Indian agents, typically payment is on delivery.
- The Institute reserves the right to accept or reject any or all quotations without assigning any reasons thereof. (repetition)
- Quotation must indicate a delivery schedule which in no case should exceed 3 weeks from the date of placement of order.
- Our normal term of Payment is by (i) Letter of Credit for Foreign Suppliers (ii) for Indian Suppliers, by cheque within 30 days after receipt of goods/material in sound condition. Please note that advance payment will not be made. Also State clearly the Name and address of the Supplier to whom the order will be placed. Also mention the “Cheque/Draft to be made in favour of and payable at(City/Country).”
- Kindly provide the exact schematic flow diagram specifying details of the each items.
- Purchasing committee has right to reject any or all of the bids without assigning any reason thereof.