

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A & 2B, Raja S.C. Mullick Road, Jadavpur, Kolkata-700032

NIT No. : IACS/SMS/AB/2019-20/08

Date: 25/04/2019

Sealed tender in two bids system (technical bid and price bid) is invited from bonafide, resourceful and eligible manufacturer/exclusive distributor/vendors for **High Pressure Autoclave Reactor**.

Part-I (Technical Bid) of the tender should contain technical specifications in detail as well as commercial terms and conditions. Part-II (Price Bid) should clearly indicate group-wise price, if needed, as mentioned in the technical bid. The Technical Bid and Price Bid are to be submitted in separately sealed envelopes, distinctly marked accordingly and both to be put inside another envelop, that should be sealed and superscribed with tender notice no. and due date. The bidders may submit bids duly signed in their own letterheads.

Completed tender bids should reach the office of the **Registrar, Indian Association for the Cultivation of Science (IACS), 2A & 2B Raja S. C. Mullick Road, Jadavpur, Kolkata-700032** on or before the scheduled date and time specified below:

Tender Notice No.	NIT No. IACS/SMS/AB/2019-20/08 Date: 25-04-19
Last date and time of submitting tender	May16, 2019 at 5.00 PM.
Pre-bid meeting(date, time & place) to discuss technical specification	May10, 2019 at 3.00 AM(Room No. C-235)
Date and time of opening tender (Technical Bids)	May 17, 2019 at 1.00 PM.
Place of opening tender	Room No. C-235
Date and time of opening of Price Bid	The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.
Contact	Email: msab@iacs.res.in Tel.+91 33 2473 4971 [Ext. 1207]

The technical bids will be opened first to judge/evaluate the technical specifications of the said instrument and thereafter the price bids of only technically qualified bidders will be opened.

Technical Bid Evaluation: The Technical Bids will be evaluated in the presence of the representatives of intending bidders who will be able to clarify technical aspects of their bids, if any, required by the Technical Evaluation Team.

Opening of price-bid: The Price Bids of the bidders qualifying the technical bid will only be opened, the date of which will be intimated to the short-listed bidders at their email addresses. The rest of the bids will be rejected.

Please note that IACS will not provide any accommodation or reimburse any expenses to any of the bidders for attending opening of technical bid.

Quotations received incomplete or beyond the stipulated time will be summarily rejected.

Bidders should submit their past experience for supplying and successful installation of similar units to other research Institutes/Universities/other organizations in India and abroad. Please provide documentary proofs of such successful installation and supportive documents that the instruments are running successfully.

1. TECHNICAL BID

The technical bid should contain technical specifications and should be kept in a separate sealed envelope duly superscripted as 'TECHNICAL BID' on the outer cover of the envelop as already detailed above. **It should be clearly mentioned on the envelope as "High Pressure Autoclave Reactor ".**

Technical Specifications for High Pressure Autoclave Reactor

A.	Volume	100 ml net filling capacity
B.	Material of Construction	Wetted parts made of stainless steel
C.	Design pressure	100 bar (Continuous safe working pressure should be 90% of the design pressure)
D.	Maximum working temperature	300°C
E.	Head mounting style	Removable head and vessel design
F.	Heating	Flameproof Design heater with explosion-proof junction box with insulation and cladding. It shall have insulated heater plate to prevent thermal shock to operator.
G.	Cooling	Auto-cooling System with FLP II C Motor (for Hydrogen Gas) with water pump, SS tank & hose pipes for exothermic reaction & faster cooling.
H.	Motor & drive	¼ hp ex-proof gas group IIC motor and variable frequency drive with 100-1450 RPM with variable speed & digital RPM indication. Motor shall have 3 piece quick & maintenance free connect/disconnect motor coupling for ease of operation. (in place of spring-loaded clutching).
I.	Shaft sealing	Zero leakage Magnetic drive coupling, M8 with 0.8 Nm torque Material of Construction of Bush- carbon filled PTFE (CFT)
J.	Stirrer	• 4-bladed turbine stirrer • Hollow shaft with gas induction impeller (for Gas-Liquid reaction)
K.	Standard fittings	<u>External Valves & Fittings:</u> • Pressure gauge with vacuum protection • Intrinsically safe IIC Pressure sensor suitable for Hydrogen Gas • Vent needle valve • Safety rupture disc (Inconel) with vacuum protection • Pressure relief valve (Please specify the set pressure) • Gas inlet-valve & liquid sampling valve mounted on common dip tube <u>Note:</u> All Needle valves should have 1/8" BSP(M) end connections
		<u>Internal Fittings:</u> • Serpentine cooling coil • Thermowell (with Flameproof RTD PT100 temperature sensor) • Dip tube
L.	Gasket	PTFE Gasket with split clamp type quick opening system with clamp bolts. Body clamps shall be with clits / latches to prevent flying off of clamps in case of over pressure.

M.	Closure type	Split clamp with clamp bolts
N.	On field temperature sensor	Flameproof Enclosure with Digital Temperature indicator in it, mounted on the autoclave trolley so that control panel can be remotely mounted at upto 5m in safe area
O.	Control Panel	SS control panel comprises of, (Control panel shall be mounted 5m away from the reactor set up) • Programmable P.I.D temperature controller (over shoot inhibit parameter to control overshoot with standby mode to cut off heating & cooling) with high temperature alarm system • Digital pressure indicator in bar & psi with high-pressure alarm in addition to analog pressure gauge. • Motor speed controller The panel shall be Screw less design with push lock enclosure, PVC Cable tray for internal wiring, safe & rugged metal clad military grade lockable plug sockets for all the sensors, heaters & motors (for tight connection & safety).
P.	Software	Necessary Software, Database, Reporting Tool Crystal Report with convertor for online display trends, datalogging & remote set points of temperature, pressure alarm & rpm w.r.t. time on PC. Note: Cable length should be 5 m from PC to panel unless specified.
Q.	SS Pressure Regulator	With self-venting for releasing the pressure, pressure gauge & 4m long flexible hose pipe with NRV for 0-140 bar O/P pressure for H ₂ gas & adaptor for CO ₂ , O ₂ or air cylinder.
R.	½ L High Pressure Liquid/Catalyst Slurry/Gas charging pot	For injecting liquids / Gas / Catalyst during the reaction under pressure. It should consists of a high pressure pot, inlet & outlet valves, pressure gauge, high pr. Hose pipe , NRV & Pressure relief Valve } (Upto 100 bar).
S.	0.01m² SS Reflux / take off condenser	With SS knit mesh packing material for venting off uncondensed vapours & returning the condensate back into the autoclave.
T.	0.1m² Condenser	For distillation / condensation SS shell side & tube side heat exchanger with hose pipe.
U.	Digital gas mass flow controller in flame proof enclosure	For CO ₂ gas with totalizer. (upto 50 LPM)
V.	Power Supply	1φ, 220VAC 50 Hz
W.	Mounting & dimension	SS movable trolley with all 4 lockable wheels
X.	Spare vessel (1 no.)	Design pressure and design temperature of vessel will be 100 bar & 300 Deg C
Y.	Spare parts	For 2 years uninterrupted operation
Z.	Torque Wrench for uniform tightening, easy operation & ensuring leak tightness.	

Warranty: 2 years free AMC after installation together with Manufacturer's Warranty Certificate.

Servicing facility within India is a must while service engineer stationed at Kolkata will be preferred.

A list of other places where the instrument has been installed should also be provided.

A compliance table (see below) must be prepared and submitted along with the technical bid.

Sr. No	Tender specification	Your offered instrument specification	Extent of compliance

Tender will not be accepted if the technical compliance chart is NOT provided following the above format.

2. PRICE BID

The financial bid indicating (item-wise) price for the item(s) mentioned in the technical bid should be kept in a separate sealed envelope duly super scribed as 'PRICE BID' on the outer cover of the envelop as already detailed above. Price bids of only technically qualified bidders will be opened and they will be intimated the date and time of the opening of price bid at their e-mail ids. Rest of the bidders will stand rejected.

PRICE: Price to be quoted on CIF Kolkata and also FOB or Indian currency basis.

3. BID SECURITY:

An Account payee Demand Draft of any of the Commercial Banks for Rs. 20,000 (Rupees Twenty Thousand only) drawn in favour of "Indian Association for the Cultivation of Science (State Bank of India, Jadavpur University Branch, A/C No. 11079699211, IFSC: SBIN000093, MICR Code: 700002048)" is to be furnished by the bidders alongwith Technical Bid, except Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) or are registered with the Central Purchase Organisation or the concerned Ministry or Department.

Alternatively, the bidder shall have the option to furnish EMD in the form of Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks. The Bid-Security should have at least 90 (ninety) days validity period beyond the final bid validity period.

In case of non-award of the work the Bid Security money would be returned to the unsuccessful Bidders.

4. PERFORMANCE SECURITY:

An Account Payee Demand Draft on any commercial bank of India or Bank Guarantee (BG) of any Commercial Bank preferably located at Kolkata of 10% of the order value in the name of "Indian Association for the Cultivation of Science" is to be furnished by the successful bidder as Performance security. Performance security money should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. Bid security money or EMD will be refunded to successful bidder on receipt of the Performance security money.

5. TERMS OF PAYMENT:

Payment will be made through irrevocable Letter of Credit/wire transfer/RTGS in two instalments. 90% of the money will be released on submission of shipping of documents. Remaining 10% will be released after successful installation of the instrument or full payment after successful installation.

6. GENERAL INSTRUCTIONS:

1. Validity of tender: Tender submitted should remain valid for at least six months from the date of opening the tender. Validity beyond six months from the date of opening of the tender shall be lapsed by mutual consent.
2. The tender should accompany a compliance chart.
3. Incomplete and conditional tenders as well as tenders received after the due date will be summarily rejected without assigning any reasons thereof.
4. At any time prior to the bid due date, IACS may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder during pre-bid meeting, modify the bidding documents. The amendment(s) will be notified on the institute website. Prospective bidders are advised to occasionally visit the website (www.iacs.res.in/tender) for any amendment.
5. Installation/Demonstration/Application training at site: Installation & user training at IACS, free of cost by the supplier.
6. Service facility: In India, preferably Kolkata, supplier should mention their details of service setup and man-powers who are responsible for after sales support. Response time should be within 24 hrs.
7. The model number, make and a printed literature of the product should be submitted positively.
8. Proposed delivery schedule should be mentioned clearly.
9. Manufacturers / exclusive distributors / vendors should have history of supplying this type of instruments to this or other scientific organizations. Availability of a list in this regard would be preferred.
10. Authorized dealership certificate should be provided in case of principal manufacturing company is not quoting directly.
11. Guarantee certificate, users manuals etc. are to be handed over to the user after successful commissioning of the system.
12. In the event of date being declared a closed holiday for purchaser's office, the due date for submission of bids and opening of the technical bids will be the following working day at the appointed time.
13. In case of any dispute, the decision of IACS authority shall be final and binding on the bidders.
14. In case of any litigation the matter will be dealt within the jurisdiction of the High Court of Calcutta only
15. For any clarification regarding technical specifications, information etc., please send your queries to Prof. Asim Bhaumik (msab@iacs.res.in).
16. The authority of IACS reserves the right to reject any or all of the tenders received without assigning any reason thereof.

Acting Registrar