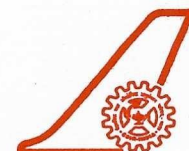


वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्
Council of Scientific & Industrial Research
राष्ट्रीय वांतरिक्ष प्रयोगशालाएं
National Aerospace Laboratories



CSIR - NAL Estd. 1959
ISO 9001 : 2015
Certified Organization

INVITATION FOR BIDS/NIT

Tender No. NAL/PUR/MSD/062/21-Y

Dated: 07-Sep-2021

CSIR- National Aerospace Laboratories (NAL), Bengaluru, India is one of the premier laboratories under Council of Scientific and Industrial Research (CSIR), an autonomous body under Department of Scientific and Industrial Research, Government of India, New Delhi. CSIR-NAL is a Science and Knowledge based Research, Development and Consulting Organization. It is internationally known for its excellence in Scientific Research in Aerospace Engineering.

The Director, CSIR-NAL invites online quotation for procurement of the following item(s) for day to day research work.

Sl.No.	Description of Items	Unit	Quantity
1	High Pressure / Temperature Autoclave Reactor for Polycondensation Process. (Please refer annexure for detailed specification)	Nos	01

Single / Double Bid	Single	Tender Type	Open
Bid Security (EMD) (in INR)	Bid Security Declaration should be enclosed with quotation	Bid submission end date	27-Sep-2021 10.00 Hrs
Performance Security	3% of the purchase order value	Bid opening date	28-Sep-2021 11.00 Hrs

01. Tender Documents may be downloaded from Central Public Procurement Portal <https://www.etenders.gov.in>. Aspiring Bidders who have not enrolled/ registered in e- procurement should enroll/ register before participating through the website <https://www.etenders.gov.in>. The portal enrolment is free of cost. Bidders are advised to go through instructions provided at 'Instructions for online Bid Submission'.
02. Tenderers can access tender documents on the website (For searching in the NIC site <https://www.etenders.gov.in>, kindly go to Tender Search option, select tender type and select ' Council of Scientific and Industrial Research' in organization tab and select NAL-Bengaluru-CSIR in department type. Thereafter, Click on "Search" button to view all CSIR-NAL, Bengaluru tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <https://www.etenders.gov.in> as per the schedule given in the next page.
03. Either the Indian Agent on behalf of the Foreign principal or the Foreign principal can bid directly in a tender but not both. However, the offer of the Indian Agent should also accompany the authorization letter from their principal. To maintain sanctity of tendering system, one Indian Agent cannot represent two different Foreign principals in one tender.
04. Unsolicited / conditional / unsigned tenders (Quotations)/Quotations received after the due date and time **shall be summarily rejected**. The Bidder shall comply the terms and conditions of the tender, failing which, the offer shall be liable for rejection.
05. The Bidders proposing to supply finished products directly/indirectly from vendors of countries sharing the land border with India should submit copy of registration done with the Ministry of Home Affairs and Ministry of External Affairs.
06. If the Products supplied are not from vendors of countries sharing land border with India, the Bidders have to enclose a declaration to that effect.

The bids of those Bidders failing to comply with the above clauses will be summarily rejected.

पी बी सं. 1779, एचएएल एयरपोर्ट रोड, कोडिहल्ली, बेंगलुरु - 560 017, भारत,
P B No 1779, HAL Airport Road, Kodihalli, Bengaluru - 560 017, INDIA
फोन / Phone : (का./ Off) : +91 - 80 - 2508 6040 - 45, फैक्स / FAX : +91-80-2526 9611




<http://www.nal.res.in>



purchasek@nal.res.in



07. Bidders are requested to refer to the instruction regarding Procurement Policies for Make in India issued by Ministry of Commerce and Industry, Department of Industrial Policy and Promotion dated. 28-May-2018 and 4-Jun-2020 and guidelines as and when issued.
08. **The prospective bidders are requested to refer to the Standard Terms and Conditions available on NAL Internet (www.nal.res.in) under the icon Tender-Purchase before formulating and submitting their bids**
09. The Director, CSIR- National Aerospace Laboratories, Bengaluru reserves the right to accept any or all the tenders either in part or in full or to split the order without assigning any reasons there for.

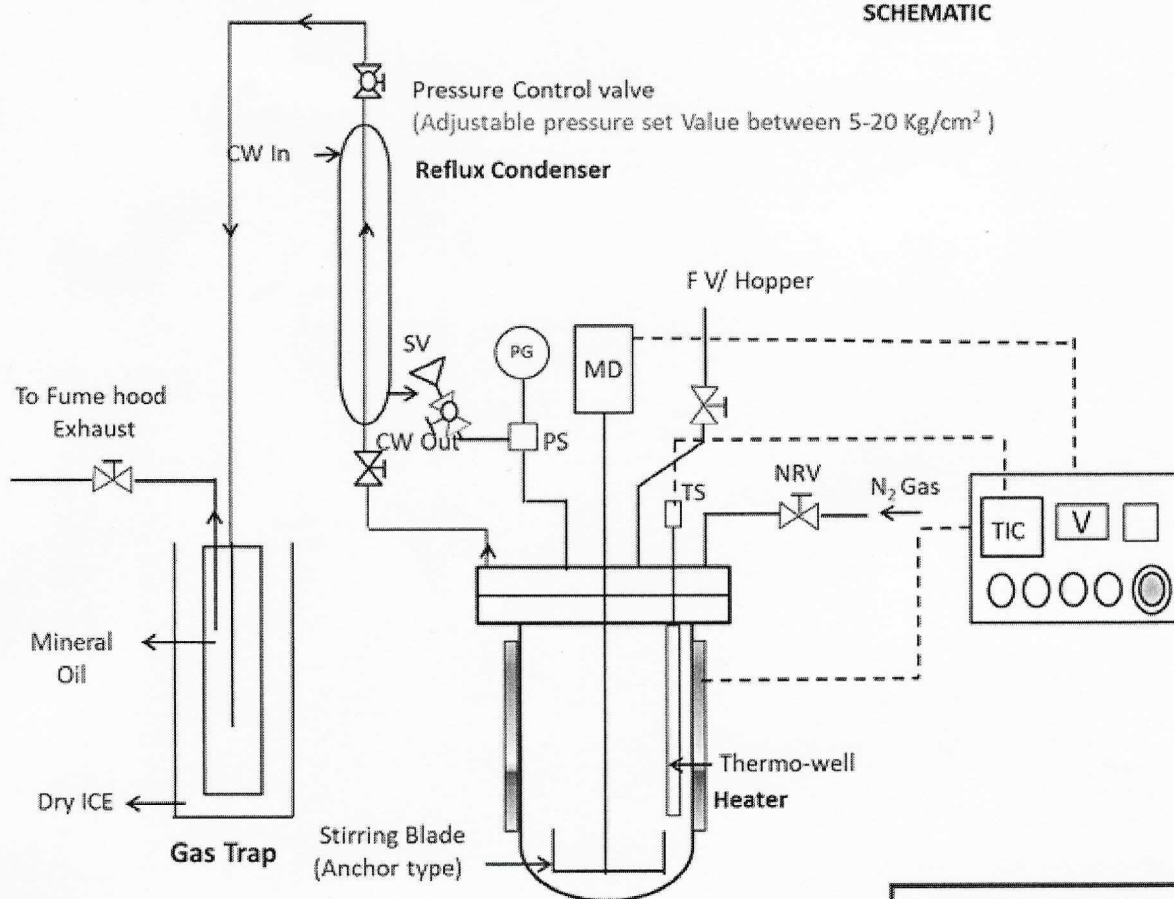

Stores & Purchase Officer
For and on behalf of CSIR

SHEET- I**SPECIFICATIONS OF HIGH PRESSURE/TEMPERATURE REACTOR**

1.	DIMENSION, mm	1040W x410D x 1100 H
2.	Volume & MOC	5.0 Liter and SS 316
3.	Head Mounting Design	Removable for cleaning inside the reactor (Bolted flanges: Removable Head and mount design
4.	Design Pressure, Bar	Up to 100 bar (102 Kg/cm ²)
5.	Maximum Working Temperature	500 °C with provision to adjust heat-up rate in the range of 10-20 °C/min.
6.	Nozzles & Fittings	'External Fittings Pressure Gauge with swivel connector Vent valve, Safety rupture disk, Inert Gas inlet valve with NRV. Feed valve (SS-316 Ball valve with funnel (PEEK Seat) for powder/Liquid inlet with Funnel at atmospheric pressure) Recycling Condenser (Reflux), Catch pot as in sheet-1 Other valves as in Sheet -I Closure Type: Split clamp with clamp bolts
7.	Body & Heat Sealings	Spiral wound metallic gasket with split clamp type quick opening with clamp bolts: Body clamp with shall be with clit/latches to prevent the flying-off clamps in case of over-pressure
8.	Motor & Drive	1/4 HP AC Motor and variable frequency drive 100-1450 RPM infinitely variable speed & Digital RPM Indication Motor shall have 3 pieces quick and maintenance free connect and disconnect motor coupling for ease of operation.
9.	Shaft sealing	Zero Leakage magnetic drive coupling. (M-40) Material of Bush Carbon filled PTFE (CFT)
10.	Stirrer	2 stage, 6 bladed turbine type stirrers
11.	Condenser	For distillation and condensation SS-304 shell side, and SS-316 tube side Reflux / take off condenser with condensing area of 0.2 m ² , chilled water or ethylene glycol cooled, with SS knit mesh packing material for venting off uncondensed vapors & returning the condensate back into the autoclave suitable up to autoclave pressure with hose pipe for chilled coolant circulation as in attached sheet-I

12.	Heating	Electrical ceramic band heater with insulation and high temperature steel cladding & cascade temperature ON/OFF heater temperature controller to prevent temperature over-shoot. It shall have insulated heater plate to prevent thermal shock to the operator.
13.	Control Panel	SS control panel with programmable P.I.D temperature controller; Make PPI, Model: Neuro 102a /102ac, Programs: 16 ramp/soak with OSIH overshoot inhibitor parameter to control overshoot with standby mode to (cut-off heating and cooling) with high temperature alarm system with motor speed controller mounted on it. The panel shall be Push lock enclosure, PVC cable tray for internal wiring safe and rugged metal clad military grade lockable plug sockets for all the sensors, heaters and, motors with high temperature and pressure alarm system.
14.	Main Power supply	1 ϕ (Single Phase), 220 V AC, $\pm 10\%$, 50 Hz
15.	Mounting	Suitable SS support at 0.5m height (To be installed inside a walk-in fume hood of total height allowance 1100 mm)
16.	Pressure Relief Valve	MOC SS- 316 with cooling jacketed PRV
17.	Catch Pot	to collect gases, vapors and others from Autoclave vent valve, rupture disks
18.	SS Pressure regulator for releasing	The pressure, pressure gauge, & 4 m long flexible hose pipe with NRV, and adapter for N ₂ cylinder
19.	Water Pump and 10- Liter circulation Tank	With tubing to cool the magnetic drive, pressure sensor extra by water recirculation to save the water. Silicon tube required should be provided.
20.	Tools	Torque wrench for uniform tightening, easy operation, and ensuring leak proof.
21.	Spares	3 No(s) RTD PT -100 temperature sensor ¼ inch Needle valves - 4 No(s)
22.	Instructions manual	Safety precautions Warranty and Tool kit and Spare parts kit should be provided.
23.	Operational Training as part of wet/dry commissioning at our site	
24.	Warranty	24 months from the date of installation for raw material or manufacturing defect.

HIGH PRESSURE / TEMPERATURE AUTOCLAVE REACTOR SCHEMATIC



ATP FOR THE HIGH PRESSURE AND TEMPERATURE AUTOCLAVE REACTOR

1. Pressure Test up to the design pressure of the reactor i.e., 100 Kg/cm².
2. Demonstration of Heat-up rate of 10-20 °C min⁻¹ and up to design temperature of 500 °C
3. Leakage test for vapor condenser and other joints.
4. Pressure relief valve inspection and demonstration at a set pressure value of 50 Kg/cm²

BID-SECURING DECLARATION FORM

Date: _____

Bid No. _____

To (insert complete name and address of the purchaser)

I/We. The undersigned, declare that:

I/We understand that, according to your conditions, bids must be supported by a Bid Securing Declaration.

I/We accept that I/We may be disqualified from bidding for any contract with you for a period of one year from the date of notification if I am /We are in a breach of any obligation under the bid conditions, because I/We

(a)	have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid during the period of bid validity specified in the form of Bid; or
(b)	having been notified of the acceptance of our Bid by the purchaser during the period of bid validity
	(i) fail or refuse to execute the contract, if required, or
	(ii) fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid Securing Declaration shall cease to be valid if I am/we are not the successful Bidder, upon the earlier of (i) the receipt of your notification of the name of the successful Bidder; or (ii) thirty days after the expiration of the validity of my/our Bid.

Signed: (insert signature of person whose name and capacity are shown)
in the capacity of (insert legal capacity of person signing the Bid Securing Declaration).

Name: (insert complete name of person signing the Bid Securing Declaration)

Duly authorized to sign the bid for an on behalf of: (insert complete name of Bidder)

Dated on _____ day of _____ (insert date of signing)

Corporate Seal (where appropriate)

Note:

1. In case of a Joint Venture, the Bid Securing Declaration must be in the name of all partners to the Joint Venture that submits the bid.
2. Bid Security declaration must be signed in by the Proprietor/CEO/MD or equivalent level of Officer of the company.