

RFP for Procurement of Thermal System and Accessories

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Specification of Thermal System and Accessories

TABLE-1		
Scope of Supply:		
Sr. No.	Description	Quantity
1.1	Closed Loop Single Fluid Heating and Cooling Re-circulation Unit (Thermal System) as per table-2	02 Nos.
1.2	Flexible Hose as per table-3	04 Nos.
1.3	90° Elbow Fitting /90° bend as per table-3	08 Nos.
1.4	Thermal System Fluid as per table-3	40 litres
1.5	Certification Test Certificates as per table-3	02 Nos.
1.6	Spares if vendor suggests if any*	01 Lot

* - This will not be a part of evaluation criteria.

TABLE-2			
Sr. No.	Description	Supplier's response/ Compliance Yes/No	Supplier should write offered specification.
2.0	Requirement / Usage: The proposed Re-circulation Unit (Thermal System) will be connected to a Thermal Vacuum Chamber & will be continuously used (Typically for 450 hours-500 hours of non-stop operation during the test) for achieving and controlling the temperature on base plate and shrouds during a Thermovacuum tests by circulating thermal fluid.		
2.1	Major Specification:		
2.2	Thermal system: As per the below detailed specifications. Supplier may offer closest suitable model (from their product offerings, meeting or surpassing the specifications/performance requirements given below) considering the thermal loads specified below in the detailed specifications.		
2.3	Thermal System Type:		
2.3.1	Closed loop		
2.3.2	Refrigeration cycle based, single / double stage (preferably eco-friendly refrigerant) (Liquid Nitrogen-LN2 cooled system is not acceptable)		
2.3.3	Microprocessor / Microcontroller based auto control		
2.3.4	Air cooled (Water cooled system is not acceptable)		
2.3.5	Single fluid-based Heating / Cooling recirculation thermal system covering the defined temperature range (-85°C to +170°C)		
2.4	Operating temperature range for the machine/unit: -85°C to +170°C (for inside machine fluid reservoir) Note: These numbers need to be demonstrated in Factory Acceptance Test (FAT), (at Manufacturer's works on their standard jig for testing these machines as per their internal quality assurance plan-QAP) and SAC shall approve the results obtained in these tests for dispatch clearance. Supplier shall also submit the detailed schematic of this standard test jig along with the quote.		
2.5	Cooling capacity: ≥ 1.3 kW at -40°C Note: Supplier shall provide the cooling capacity in kW at other temperatures (datasheet) for the proposed model item along with the quote. Note: These numbers need to be demonstrated in FAT, (at Manufacturer's works on their standard jig for testing these machines as per their internal quality assurance plan-QAP) and SAC shall approve the results obtained in these tests for dispatch clearance. Supplier shall also submit the detailed schematic of this standard test jig along with the quote.		
2.6	Temperature stability: ≤ ±0.1°C		
2.7	Temperature display resolution: ≤ ±0.01°C		
2.8	Permissible operating environment temperature: 5°C to 40°C		
2.9	Temperature sensor (internal and external): Pt-100		
2.10	Supplier shall provide the floor space/volume requirement for the system accommodation.		

	Also, supplier shall provide the dimensional drawing for the proposed model in L X W X H (Maximum permissible dimensional envelop is 1100 mm x 700 mm x 1500 mm).		
2.11	Atmospheric air interaction: Offered thermal system design should be such that there shall be no atmospheric air interaction with the fluid flow circuit.		
2.12	Pump Capacity Flow rate: Maximum 40 lit/min		
2.13	Heating capacity of inbuilt heater in the system: ≥ 1.8 kW		
2.14	Performance Verification:		
2.14.1	Temperature Range: As per Sl. No. 2.4.		
2.14.2	<p>Heating and Cooling Ramp: (for inside machine fluid reservoir)</p> <p>During Heating:</p> <ul style="list-style-type: none"> ➤ 2 K/min ramp rate (-50°C to +170°C) at unit (Programmable up to 0.1 K/min) <p>During Cooling:</p> <ul style="list-style-type: none"> ➤ Minimum 2.0 K/min from 170°C to 0°C temperature range and ➤ Minimum 1.0 K/min from 0°C to -50°C temperature range <p>The system shall be capable of running as per temperature profile with required ramp rates (Programmable up to 0.1 K/min) and dwell times as per pre-defined cycles.</p> <p>Heating and cooling ramps should be demonstrated with connecting supply and return lines without load.</p>		
2.14.3	Heat Handling Capacity: As per Sl. No. 2.5.		
2.14.4	Temperature stability: As per Sl. No. 2.6.		
2.15	Type of Cooling of Thermal unit: Air-cooled type.		
2.16	Display screen (Colour): 5.5" or larger sized touch screen.		
2.17	<p>Operating Touch Screen: The thermal system required to be operated by inbuilt touch screen / LCD / LED Display. Also, the thermal system shall have provision to operate from a separate computer, all the corresponding communication cables (minimum length 25 meters), protocols convertors and software (including its license) for operation and communication are to be included in the Scope of Supply.</p> <p>Note: The PC is not under the scope of supply.</p>		
2.18	Digital interface RS232 / Ethernet and USB.		
2.19	<p>Supplier shall provide the remote-control software, which enables the complete user display to be available on a PC as well as to operate the unit from the PC. Supplier shall provide the PC configuration (including for OS compatibility) required for using/loading the software along with the quote for each thermal system.</p> <p>Note: The PC is not under the scope of supply.</p>		
2.20	<p>Operating Power Supply:</p> <p>1-phase 230V AC \pm 5%, 50 Hz</p> <p style="text-align: center;">OR</p> <p>3-phase 400-415V AC \pm 5%, 50 Hz</p> <p>(In case of special interface requirement, the supplier shall also supply the required interface adapter/s for connecting these to Indian power supply modules/connections).</p>		

2.21	Additional parameters: which can be accessed on Touch Screen Display of thermal system:		
2.21.1	Internal temperature		
2.21.2	External / process temperature		
2.21.3	Set temperature		
2.21.4	Pressure for the flow of the thermal fluid		
2.21.5	Level of fluid in tank (Low/High level)		
2.21.6	Local and remote mode operation		
2.21.7	Real time trend / graph displays of internal and external / process temperature		
2.22	Additional parameters: which can be accessed on thermal system:		
2.22.1	Integrated programmer: The thermal system should be capable of programming minimum 6 programme of minimum 60 steps.		
2.22.2	Self-diagnostic checks available in these types of system to convey the health of the system.		
2.22.3	Data logging of the critical system health parameters (temperature etc.)		
2.22.4	Protection against single phasing / reverse phasing-if required.		
2.22.5	Overheating protection switches for heaters.		
2.22.6	Emergency shut off		
2.23	Movement / Lifting: The thermal system shall have four numbers of heavy-duty castor wheel with locking arrangements to move the system on finished floor. System should also have a lifting provision for handling and shifting the unit from one place to another with the help of crane.		

TABLE-3

Sr. No.	Description	Supplier's response Compliance Yes/No	Supplier should write offered specification.
3.0	Essential Accessories & spares: (Electrical & Mechanical) for connecting and operating the above re-circulation unit (Thermal System) to the Thermal Vacuum Chamber. (Prices to be offered on per unit basis).		
3.1	<p>Flexible Hoses: 3-meter-long, double / triple insulated flexible hoses of minimum ½" size having compatible female connections (Material: SS 304 / SS 304L) towards Thermal Vacuum Chamber side, and matching connection towards re-circulation unit (thermal system) end (details of both sides of end connections to be submitted along with the quote).</p> <p>Note: 1. The insulated flexible hose shall be compatible to the operating temperature range as specified in Sl. No. 2.4 of table-2 (-85°C to +170°C) and pressure range of the Thermal System. 2. Supplier should provide data sheet of flexible hose along with quotation.</p>		
3.2	90° Elbow Fitting / 90° bend: 90° Elbow Fitting / 90° bend (Material: SS 304 / SS 304L) having one end compatible to re-circulation unit (thermal system) and other end compatible to flexible hose.		
3.3	<p>Thermal System Fluid: The fluid should be compatible for the entire temperature range of Thermal System as specified in Sl. No. 2.4 of table-2 (-85°C to +170°C).</p> <p>Supplier shall indicate the quantity of thermal fluid needed in one charging operation for the re-circulation unit (thermal system) and offer the prices for thermal fluid in their standard containers (5 litre / 10 litre) for finalising order quantity. SAC reserves the right to decide the thermal fluid quantity at the time of purchase order.</p> <p>Note: 1. Thermal fluid should be compatible to S.S. and Aluminium. 2. Vendor should quote for Thermal System Fluid per litre basis.</p>		
3.4	Certification Test Certificates: Test certificates for the standard quality / performance tests as per their internal quality assurance plan-QAP).		

TABLE-4			
Sr. No.	Other Terms & Conditions:	Supplier's response Compliance Yes/No	Supplier should write offered specification.
4.1	Supplier shall quote for nearest matching standard model (which is meeting or exceeding the temperature range & other parameters as indicated in table-2 and table-3) along with the catalogue.		
4.2	Eligibility criteria:		
4.2.1	Only OEM / Authorized Vendor should quote: Authorization certificate from OEM is must along with the quotation if quote is from authorized vendor.		
4.2.2	CE/ISO /equivalent certification for the product or for the OEM.		
4.3	Supplier need to submit a performance verification / quality report as per Sl. No. 2.4 and Sl. No. 2.14 of table-2 for each re-circulation unit (thermal system) prior to despatch and obtain SAC clearance for dispatch. Supplier need to install and demonstrate operational performance in close loop condition (without connecting to vacuum chamber) at SAC as per Sl. No. 2.4 and Sl. No. 2.14 of table-2.		
4.4	Warranty: Supplier shall provide one year of standard warranty for hardware as well as software (software updates and compatibility-if any) after installation and demonstration of operational performance in close loop condition (without connecting to vacuum chamber) at SAC. Supplier shall provide replacement for faulty item/s free of charge within the warranty period.		
4.5	Supplier shall respond to the complaint within 72 hours during warranty period after getting request from SAC by e-mail.		
4.6	Supplier shall provide technical details of the thermal fluid such as brand, flash point, fire point, working temp range, shelf-life, storage condition and other physical properties along with quote.		
4.7	Supplier shall fill the compliance / non-compliance column and submit the same along with their quote, without which, the offer will not be considered for further evaluation. Supplier shall also include and submit the relevant details like product data-sheets, dimensional drawings, interface details etc.		
4.8	PO will be placed on single supplier for consolidated items as specified in the scope of supply of this indent and will not be split. Partial quotation will not be accepted.		
4.9	Delivery Duration: Seven months from the date of acceptance of Purchase Order		
4.10	Delivery terms: supplier has to clearly specify the delivery terms in the offered quote.		
4.11	Payment terms: Supplier has to clearly specify the payment terms in the offered quote. Our normal payment terms are 100% payment within 30 days after successful installation and acceptance of the system.		
4.12	Packing: All items shall be dispatched in suitable packing to avoid ingress of dust and handling, transit and storage.		
4.13	Documents along with quotation: Following documents to be submitted to SAC, Ahmedabad along with the quotation:		
4.13.1	OEM: Certificate of incorporation for the entity.		
	OEM Authorized Vendor: OEM authorisation certificate with validity for agency /dealership/representative. (if the offer is submitted by authorised representative/dealer/agency)		
4.13.2	Basic schematic for specifications demonstration as per Sl. No. 2.4 of table-2.		

4.13.3	Data sheet for cooling capacity as per Sl. No. 2.5 of table-2.		
4.13.4	Supplier should submit details of P.O. executed by supplier for the similar supplied systems in last three years-if any (not mandatory)		
4.13.5	Supplier should submit the spares details which supplier feels are required to have system operational along with price. Actual quantity of the spares will be decided at the time of purchase order placement if SAC feels the need.		
4.14	Documents to be submitted before dispatch: Performance verification / quality report as per Sl. No. 2.17 of table-2 for each re-circulation unit (thermal system) prior to despatch and obtain SAC clearance for dispatch.		
4.15	Documents along with supply: Following documents to be submitted to SAC, Ahmedabad along with the supply:		
4.15.1	One set of product installation manual / procedure for each re-circulation unit (thermal system).		
4.15.2	One set of product installation manual / procedure and operation and maintenance manual for each re-circulation unit (thermal system), indicating the operating steps and troubleshooting steps. (1 Hard copy & 1 Soft copy in CD / digital format)		
4.15.3	List of their servicing centres in India- If any.		
4.15.4	Dimensional and weight details of re-circulation unit (thermal system).		
4.15.5	Name plate on thermal system		
4.16	Personnel Training: Supplier should provide operational training to the operators at the time of installation of the thermal system.		