Ahmedabad University

Procurement of Composite Curing Oven

Vendor Technical Pre-Qualification

Sr No.	Criteria
1	Bidder must have a minimum of more than 05 years of experience in the supply of related products within the respective industry. .
2	Should have installed at least 20 machines at different educational / private / public institutions and organizations.
3	Authorized dealer/distributor certification from original equipment manufacturers.
4	Bidder/authorized dealers' OEM must be capable of providing supply, servicing, spare parts, technical assistance, and training, along with periodic technical updates, for a minimum of 5 years after the machine's supply.
5	The warranty period should be clearly mentioned. The comprehensive warranty will commence from the date of the satisfactory installation/commissioning of the equipment against the defect of any manufacturing, workmanship and poor quality of the components. Annual maintenance charge (AMC) post-warranty period should be specified.
6.	Suppliers shall provide complete project deliverables including General Arrangement Drawings (GAD), Detailed Electrical and Instrumentation Schematics, Piping and Instrumentation Diagram (P&ID), Complete Operation, Maintenance & Service Manuals, Original Factory Acceptance Test (FAT) and Site Acceptance Test (SAT) protocols and reports, Calibration certificates for all critical sensors and controllers.

Technical Specifications

AURIS Requisition Number: 3052

Machine Type: Composite Curing Oven

Quantity: One (01)

Technical Criteria: The technical evaluation of all the proposals will be done in the following parameters:

A. OVEN SPECIFICATIONS

1. Workspace Dimensions
    i. Width: Minimum 2000 mm
    ii. Depth: Minimum 3000 mm
    iii. Height: Minimum 2000 mm

The designated usable space shall remain free of obstructions to ensure unimpeded material placement, consistent airflow, and uniform thermal distribution throughout the entire

specified envelope.

2. Temperature Operating Parameters
    i. Continuous Operating Range: From ambient conditions (approx. 25° C) up to 350° C sustained without performance degradation.
    ii. Temperature Stability: ± 3°C within the entire usable workspace.
    iii. Temperature Uniformity: Deviation across the chamber interior shall not exceed± 5 °C at any test point during steady-state operation, verified by multi-point thermal mapping.
    iv. The heating system shall be capable of delivering programmable, linear or stepped ramp-up temperature profiles with definable dwell/soak phases and repeatable thermal cycle precision.

3. Primary Chamber Construction

    i. Wall Panels: Fabricated from high performance modular sandwich panels incorporating a rigid, non-combustible high-density mineral wool (rockwool) insulation core encapsulated between dual metallic facings, providing outstanding thermal retention, acoustic attenuation, and inherent fire resistance.
        a. Inner Face: Not less than 1.2 mm thick SS 304 austenitic stainless steel, fully welded and polished to industrial food/pharma-grade finish for corrosion resistance, easy decontamination, and durability against repeated thermal cycling.
        b. Outer Face: Minimum 1 mm thick CRCA or Mild Steel sheet, cold-rolled, chemically treated with anti-corrosive primer, and finished with an oven-baked epoxy-polyester or equivalent industrial powder coating for superior resistance to mechanical abrasion and environmental exposure.
    ii. Panel joints shall be designed for gas-tight interlocking with concealed fasteners to minimize heat loss and air leakage.
    iii. Provision shall be made for integrated cable routing, vacuum line penetration, sensor feed-through, and inspection access without compromising structural or thermal integrity.

4. Door Construction and Access Provisions
    i. Chamber should be equipped with one or more full-surface doors fabricated with identical construction methodology as the main wall panels, maintaining equivalent thermal insulation and fire resistance characteristics.
    ii. Door Opening: minimum 1600 mm (length) x 1800 mm (height)
    iii. Doors shall be equipped with high-grade rubber perimeter gaskets (or equivalent high- temperature elastomeric seals) to ensure leak-proof closure.
    iv. Hinges shall be self-closing, cam-lift gravity type, or equivalent heavy-duty industrial hinges capable of supporting repeated cycles without

misalignment.

v. Door closure shall utilize lockable latch handles engineered for industrial safety standards, preventing unauthorized or accidental opening during pressurized or high- temperature operation.

vi. Door jambs shall be fabricated from fiberglass reinforced plastic (FRP) or a material offering equivalent chemical and thermal compatibility with the door structure.

vii. Safety interlock provision to inhibit door operation during active curing/vacuum cycles for operator safety.

5. Heating System Architecture
    i. The primary heat source shall comprise seamless SS 304 tubular heating elements incorporating a high-resistance 80/20 Nichrome wire core or better, ensuring uniform heat distribution, minimal thermal lag, and high resistance to burnout under sustained duty cycles.
    ii. Total installed heating capacity shall be configured for balanced three-phase power supply to ensure even power draw and minimize electrical phase imbalance.
    iii. Heater banks shall be staged or proportionally controlled via solid-state relays or contactors to facilitate smooth temperature ramping, eliminate thermal overshoot, and ensure precise soak maintenance.

6. Forced Air Circulation System
    i. The chamber shall deploy a robust forced convection system to ensure homogenous thermal distribution across the working envelope.
    ii. Recirculated air shall be channeled via a dedicated baffle wall plenum to optimize flow paths and minimize temperature gradients.
    iii. Airflow Pattern: Vertical downward flow through precision-perforated dual baffle walls positioned laterally for laminar air distribution and boundary layer management.
    iv. Blower Assembly:
        a. Minimum of two (2) industrial-grade radial blowers.
        b. Each blower drives by a minimum 1 HP suitable motor.
        c. Blowers shall be capable of delivering sufficient volumetric flow.
        d. Rotors dynamically balanced and vibration-isolated to ensure quiet, maintenance-free operation during prolonged thermal cycles.

7. Vacuum Curing System (8 ports)
    i. The system shall include a built-in vacuum curing manifold enabling simultaneous or selective vacuum application across multiple connection points.
    ii. A minimum of 8 vacuum ports fabricated from SS 304 tubing, corrosion resistant, fully welded and pressure tested for leak integrity.
    iii. Each vacuum port shall be independently valved with manual lever-type shut-off valves for localized vacuum control.
    iv. A high-capacity oil-lubricated or dry-running industrial vacuum pump shall

be supplied, sized to achieve and maintain the required vacuum level for the full working envelope under load.

v. An appropriate capacity vacuum reservoir should be kept in loop before the product for consistency of operations.

8. Cooling System for Oven
   i. The chamber shall incorporate a robust mechanical refrigeration package to facilitate controlled cool-downs, stable thermal transitions, and precise environmental control during complex multi-stage curing programs.
   ii. Refrigeration unit shall comprise:
      a. Hermetically sealed compressors of Bitzer / Emerson / Danfoss make or internationally recognized equivalent, engineered for high reliability and continuous industrial operation.
      b. Environmentally compliant CFC-free refrigerant, meeting current international environmental protection statutes.
      c. Split-type condenser configuration positioned externally in a ventilated zone to mitigate recirculation of waste heat into the conditioned workspace.
      d. Air delivery and circulation designed to prevent condensation on product surfaces and promote maximum thermal uniformity.
      e. Condenser shall incorporate solenoid-operated hot gas bypass and low-pressure control valves to enable compressor-friendly defrosting cycles, prolong compressor life, and support continuous duty usage.
   iii. The entire refrigeration loop shall include all ancillary components: HPCO/LPCO switches, oil separators, moisture dryers, motor protection relays, time-delay relay circuitry, and approved electrical protection devices.

9. Control and Automation
   i. Chamber shall be governed by an industrial-grade Programmable Logic Controller (PLC) interfaced with a full-color Touch Screen Human Machine Interface (HMI) for operator interaction.
   ii. Functional Requirements:
      a. Multi-stage programmable temperature profiles supporting minimum 50 distinct programs,
      b. Fully configurable ramp rates, soak dwell times, and controlled cool-down rates.
      c. Real-time operating mode with elapsed time monitoring.
      d. Integrated data acquisition system with RS 485/232 communications interface for direct connection to external computing or SCADA networks.
      e. Dedicated central data archiving unit with robust retrieval functionality.
      f. Embedded ambient condition sensors with graphical trending.
      g. Visual and audible alarms for deviation fr0m programmable setpoints.
      h. Over-temperature cut-off, over-current trip, and full system failsafe mode.
      i. User authentication via minimum 4-digit password lockout to prevent unauthorized changes.
      j. Intelligent self-diagnostic routines and event logging for predictive maintenance and process traceability.

k. Automatic power failure restarts with event log, ensuring process continuity.
l. With electronic data integrity and user activity logging in accordance with regulated industry requirements.

10. Compliance Requirements for Oven
    i. The entire system shall comply with relevant ISO /CE standards as applicable for industrial ovens, vacuum systems, and thermal processing equipment.
    ii. Suppliers shall provide complete project deliverables including:
        a. General Arrangement Drawings (GAD)
        b. Detailed Electrical and Instrumentation Schematics
        c. Piping and Instrumentation Diagram (P&ID)
        d. Complete Operation, Maintenance & Service Manuals
        e. Original Factory Acceptance Test (FAT) and Site Acceptance Test (SAT) protocols and reports
        f. Calibration certificates for all critical sensors and controllers.
    iii. Full installation, commissioning, training, and demonstration of performance under actual operational conditions shall be the responsibility of the supplier's qualified technical personnel.

B. COLD STORAGE CABINET SPECIFICATIONS

11. Cold Storage cabinet for raw materials storage
    Workspace dimensions of horizontal type cold storage
    i. Height: Minimum 1800 mm
    ii. Depth: Minimum 1000 mm
    iii. Width: Minimum 500 mm

The designated usable space shall remain free of obstructions to ensure unimpeded material placement, consistent airflow, and uniform thermal distribution throughout the entire specified envelope.

12. Temperature Operating Parameters
    i. Continuous Operating Range: From ambient conditions (approx. 25°C) up to -25 °C sustained without performance degradation.
    ii. Temperature Stability: ± 1 °C within the entire usable workspace.
    iii. Temperature Uniformity: Deviation across the chamber interior shall not exceed± 3 °C at any test point during steady-state operation, verified by multi-point thermal mapping.
    iv. The Cooling system shall be capable of delivering programmable with definable dwell/soak phases and repeatable thermal cycle precision.

13. Primary Chamber Construction
    i. Wall Panels: Fabricated from high-performance modular sandwich panels incorporating a rigid, PUF encapsulated between dual metallic facings, providing outstanding thermal retention, acoustic attenuation.
        a. lnner Face: Not less than I mm thick SS 304 austenitic stainless steel, fully welded and polished to industrial food/pharma-grade finish for corrosion

resistance, easy decontamination, and durability against repeated thermal cycling.

b. Outer Face: Minimum 1.2 mm thick CRCA or Mild Steel sheet, cold-rolled, chemically treated with anti-corrosive primer, and finished with an oven-baked epoxy-polyester or equivalent industrial powder coating for superior resistance to mechanical abrasion and environmental exposure.

ii. Provision shall be made for integrated cable routing, vacuum line penetration, sensor feedthroughs, and inspection access without compromising structural or thermal integrity.

14. Door Construction and Access Provisions
    i. Chamber shall be equipped with one or more full-surface flush-mounted access doors fabricated with identical construction methodology as the main wall panels, maintaining equivalent thermal insulation characteristics.
    ii. Doors shall be equipped with high-grade silicone rubber perimeter gaskets (or equivalent Low-temperature elastomeric seals) to ensure leak-proof closure.

15. Heating System Architecture
    i. The primary heat source shall comprise seamless SS 304 tubular heating elements incorporating a high-resistance 80/20 Nichrome wire core or better.
    ii. Total installed heating capacity shall not be less than 2 kW, configured for balanced single-phase Thirstier power supply to ensure even power draw and minimize electrical phase imbalance.
    iii. Heater banks shall be staged or proportionally controlled via solid-state relays or contactors to facilitate smooth temperature ramping.

16. Forced Air Circulation System
    i. The chamber shall deploy a robust forced convection system to ensure homogenous thermal distribution across the working envelope.
    ii. Recirculated air shall be channeled via a dedicated baffle wall plenum to optimize flow paths and minimize temperature gradients.
    iii. Airflow Pattern: Vertical downward flow through precision-perforated dual baffle walls positioned laterally for laminar air distribution and boundary layer management.
    iv. Blower Assembly:
        a. Minimum of single (I) industrial-grade radial blowers.
        b. Each blower drives by a minimum 1/2 HP motor.
        c. Blowers shall be capable of delivering sufficient volumetric flow
        d. Rotors dynamically balanced and vibration-isolated to ensure quiet, maintenance-free operation during prolonged thermal cycles.

17. Auxiliary Mechanical Cooling System
    i. The chamber shall incorporate a robust mechanical refrigeration package to facilitate rapid controlled cool-downs, stable thermal transitions, and precise environmental control during complex multi-stage curing programs.
    ii. Refrigeration unit shall comprise:
        a. Hermetically sealed compressors of Bitzer / Emerson / Danfoss make or internationally recognized equivalent, engineered for high reliability and

continuous industrial operation.

b. Environmentally compliant CFC-free refrigerant, meeting current international environmental protection statutes.
c. Air delivery and circulation designed to prevent condensation on product surfaces and promote maximum thermal uniformity.
d. Condenser shall incorporate solenoid-operated hot gas bypass and low-pressure control valves to enable compressor-friendly defrosting cycles, prolong compressor life, and support continuous duty usage.

18. Control and Automation Suite

i. Chamber shall be governed by an industrial-grade Programmable Logic Controller (PLC) interfaced with a full-color Touch Screen Human Machine Interface (HMI) for intuitive operator interaction.

ii. Functional Requirements:

a. Fully configurable ramp rates, soak dwell times, and controlled cool-down rates.
b. Real-time operating mode with elapsed time monitoring.
c. Integrated data acquisition system with RS 485/23·2communications interface for direct connection to external computing or SCADA networks.
d. Dedicated central data archiving unit with robust retrieval functionality.
e. Embedded ambient condition sensors with graphical trending.
f. Visual and audible alarms for deviation from programmable setpoints.
g. Over-temperature cut-off, over-current trip, and full system failsafe mode.
h. User authentication via minimum 4-digit password lockout to prevent unauthorized changes.
i. Intelligent self-diagnostic routines and event logging for predictive maintenance and process traceability.
j. Automatic power failure restarts with event log, ensuring process continuity.
k. Software featuring full audit 'trail, secure e-signatures, electronic data integrity, and user activity logging in accordance with regulated industry requirements.
l. Built-in UPS for protection of control and logging functions during power transients.

19. General Compliance for Cold Storage Cabinet

i. The entire system shall comply with relevant ISO /CE standards as applicable for industrial ovens, vacuum systems, and thermal processing equipment.

ii. Suppliers shall provide complete project deliverables including:

a. General Arrangement Drawings (GAD)
b. Detailed Electrical and Instrumentation Schematics
c. Piping and Instrumentation Diagram (P&ID)
d. Complete Operation, Maintenance & Service Manuals
e. Original Factory Acceptance Test (FAT) and Site Acceptance Test (SAT) protocols and reports
f. Calibration certificates for all critical sensors and controllers.

iii. Full installation, spares and tools as applicable, commissioning, training, and demonstration of performance under actual operational conditions shall be

the responsibility of the supplier's qualified technical personnel.

C. STANDARD REFRIGERATION UNIT

20. A standard refrigeration unit of not less than 400 liters for sample storage with a temperature range variation from
    a. At least 2 to 8° C of > 250 liters and
    b. At least -10 to 0° C of > 25 liters.
       Operative Power: 220 V AC, single phase

Terms & Conditions

1. **General Overview**

   This document outlines the terms and conditions (T&Cs) that apply to the procurement of Composite Curing Oven , which will be provided as part of this tender. All prospective suppliers must adhere to these T&Cs to participate in the tender process.

2. **Submission Guidelines**

   i) Submission Deadline: Bids must be submitted no later than 21 days from publication on the Ahmedabad University Portal. Late submissions will not be accepted.

   ii) Submission Format: All tender submissions must be made through a sealed copy to the Procurement Office, Ahmedabad University, Gate No. 2, Commerce Six Roads, Navrangpura, Ahmedabad – 380009.

   iii) Tender Validity: The tender must remain valid for a minimum of 60 days from the submission deadline.

3. **Technical Specifications**

   i) Product Requirements: Tenderers must provide a Composite Curing Oven that meets the specified technical and performance criteria outlined in the Technical Specifications Sheet (attached technical specifications).

   ii) The Supplier is responsible for ensuring that all equipment and material are delivered in full working order and meet the specified technical requirements.

   iii) The Supplier shall also provide any necessary training, documentation, or additional services as stipulated in the tender.

4. **Pricing and Payment Terms**

   i) Price Structure: The tender price must be inclusive of all costs, including but not limited to delivery, installation, training, and any other charges.

   ii) The bidder should submit an accessory one-year AMC proposal along with the commercial proposal.

   iii) Payment Schedule: The payment terms will be processed against satisfactory delivery and installation.

   iv) **The payment shall be processed through the Public Financial Management System (PFMS) Portal upon the receipt of funds from the Ministry of Textiles to Ahmedabad University.**

   v) Taxes: The price should be exclusive of any applicable taxes, which must be indicated separately.

5. **Delivery and Installation**

   i) Delivery Timeline: The Composite Curing Oven must be delivered within 12 weeks of the date of order confirmation.

   ii) Installation: The Supplier must be responsible for the installation of the Composite Curing Oven at the Composites Laboratory or at the dedicated space as instructed by the University.

6. **Inspection and Testing**

   i) Pre-Delivery Inspection: The Contractor must provide pre-delivery inspection and acceptance testing for the Composite Curing Oven .

   ii) Post-Delivery Testing: Upon installation, the machine must undergo functional testing to ensure it meets the specified technical requirements.

iii) Defects and Non-Conformance: If any defects or non-conformance to specifications are identified during testing, the tenderer shall correct them at their own cost.

7. Training and Documentation
   i) Operator Training: The tenderer must provide on-site training on the operation and maintenance of the Composite Curing Oven .
   ii) Documentation: The tenderer shall provide detailed user manuals, technical documentation, and maintenance guidelines in both hard copy and electronic format.

8. Warranty and Support
   i) Warranty Period: The Composite Curing Oven shall have a warranty period of One (01) year from the date of installation.
   ii) Warranty Coverage: The warranty should cover repairs, parts replacement, and labor for any defects in materials or workmanship.
   iii) Service Level Agreement (SLA): The Contractor must provide an SLA for post-installation support, including response times for maintenance and repairs.

9. Confidentiality
   i) Confidential Information: Both parties should treat all information shared during the tender process and contract execution as confidential.

10. Termination Clause
   i) The University reserves the right to terminate the Agreement without cause by providing 30 days written notice to the Supplier. In such cases, the University shall pay for any Goods delivered and accepted by the Buyer up to the date of termination.

11. Dispute Resolution
   i) Any disputes arising out of or in connection with this Agreement shall be resolved through amicable negotiations between the parties.
   ii) If the dispute cannot be resolved through negotiations, the parties agree to submit the dispute to Arbitration in accordance with the rules of Arbitration and Conciliation Act 1996.

12. Force Majeure
i) Impact on Obligations: Neither party shall be held liable for failure to fulfil obligations under this contract due to force majeure events.

13. Compliance with Laws and Regulations
   i) Legal Compliance: The Contractor must comply with all applicable laws, regulations, and standards governing the manufacture, delivery, and installation of the Ultrasonic Sealing Machine.
   ii) Environmental Compliance: The Composite Curing Oven must meet environmental standards and regulations related to energy consumption, material disposal, and recycling.

14. Governing Law
   i) Jurisdiction: This contract is governed by the laws of India, and any disputes will be resolved within the courts of Ahmedabad.