

# Specifications

1. **Overview / Scope:** Department of general Services (DGS) will be ordering an Electric Duel Chamber Heat Treatment Furnace to be delivered to and installed at Thaddeus Stevens College of Technology 599 Chesapeake Street Lancaster, PA 17602. Any shipping and installation charges must be factored into the unit cost of the item. Bid pricing should be a unit price for one unit.
2. **Eligibility:** In order to be eligible for award, a bidder must comply with the following:
  - A. bidder must be the manufacturer of the products being offered, or be an authorized representative reseller or distributor of the manufacturer's products
  - B. Bids must be received on time and completed in its entirety
3. **Method of Award:** An award will be made to the lowest responsive, and responsible bidder.
4. **Documents to be returned with bid:**
  - A. Cover letter with contact information of Representative with knowledge of this procurement
  - B. Documentation of machine being proposed with specifications such as owner's manual
  - C. Lobbying Certification and Disclosure Form
  - D. Reciprocal Limitations Form
5. **Specification:**
  - A. Products must meet all requirements and be equal to or exceeding quality and specification.
  - B. All items provided resulting from this IFB must be NEW, and not demonstrator, rebuilt, reconditioned refurbished, remanufactured or used in anyway.
  - C. Quantities listed are estimated. Each piece of equipment must possess the features listed to follow the program curriculum at Thaddeus Stevens Collage:
    1. Electric Duel Chamber Heat Treatment Furnace (Quantity 1)
      - CHAMBER: 9" H x 9" W x 12" L (Both Chambers)
      - OVERALL: 82" H x 29" W x 38" L (Approximate)
      - VOLTAGE: 208/1/60 POWER: 8 KW
      - MAX TEMP: 2100 F (Upper Chamber) and 1200 F (Lower Chamber)
      - HEARTH LEVEL ABOVE FLOOR: 47" H (Upper Chamber) and 29.5" H (Lower Chamber)
      - APPROX. ATMOSPHERE CONSUMPTION: 16 to 20 CFH at 5 PSIG
      - FURNACE SHELL - Constructed of 12 gauge sheet steel reinforced with structural steel members

## Upper Chamber

- UPPER CHAMBER INSULATION - A minimum of 5" of multilayered insulation consisting of 2.5" low iron 2300 F insulating brick and 2.5" 1900 F mineral wool block
- HEARTH PLATE - A 1" thick hearth plate to the floor insulation and form a flat working surface.

- THERMOCOUPLE - A Type (K) thermocouple assembly in ceramic protection tube mounted through the roof of the furnace.
- DOOR SWITCH - A microswitch to automatically shut off power to the heating coils when door is open.
- DOOR - A counterweighted vertical lift door operated via a hand crank. The door shell must be continuously welded with a 3/4" square gasket around the door perimeter to seal against the furnace faceplate with swing type wing bolts and clamping handles.
- ATMOSPHERE PORTS - An inlet pipe mounted through the rear wall and an adjustable exhaust port with gas cock located on the front left side of the furnace shell to exhaust the atmosphere and avoid a build up of pressure inside the chamber
- Honeywell DC120 1/16 DIN high limit digital controller, magnetic contactor and thermocouple for automatic furnace shutdown in the event of a high temperature excursion.

#### **Lower Chamber**

- INSULATION - A minimum of 4.5" of insulation consisting of 2.5" low iron lightweight firebrick and 2" 1900 F insulation block.
- HEATING ELEMENTS - Heavy gauge wire of low watt density design mounted in monolithic holders are located along both side walls external to the alloy liner.
- ALLOY LINER - A 16 gauge stainless steel liner to form the work chamber and direct the air circulation in a horizontal pattern and isolate the heating elements from the work chamber
- FAN - A recirculating alloy fan V-belt driven by a 1/6 h.p. motor to direct air over the heating elements and through the work chamber in a horizontal air flow pattern providing uniform temperature throughout the work area.
- DOOR - Horizontal swing type door with 5" of insulation and cam lock to insure a positive brick to brick seal.
- THERMOCOUPLE - A 14 gauge Type (K) thermocouple assembly mounted through the back wall of this chamber in the airstream between the liner and elements for rapid sensing of chamber temperature.

#### **MISC**

- Honeywell DC2500 1/4 DIN microprocessor based digital time proportioning temperature controllers with separate indication for setpoint and furnace temperature. Controller accuracy +/- 0.25% of span (Typical +/- 1 digit for display.) A single setpoint heat ramp up to 4.25 hours is provided.
- Control switches (One per chamber)
- Fan switch for the lower chamber.
- Set of terminal blocks, instrument and fan motor fuses.

- ATMOSPHERE FLOWMETER - In-line meter which manually sets and indicates the atmosphere flow rate. Complete with frame, glass tube, scale, ball float and knob adjustment. Mounted and piped to furnace inlet ready for low pressure atmosphere supply.
- REGULATOR - Two stage regulator to reduce high pressure atmosphere supply to low pressure suitable for connection to atmosphere inlet (5 – 11 PSI).
- Set of power and element terminal blocks
- Control transformer to provide 115 volts for control circuit.
- Amply rated magnetic contactors.

**Questions / Inquiries:**

All questions about this IFB must be submitted by email to Chasity Beward at [cbeward@pa.gov](mailto:cbeward@pa.gov). Questions must be submitted no later than seven (7) days prior to bid closing. Questions submitted by any other means will not be accepted.