

HFL-EQ Series

Vacuum Heat Treating & Brazing Furnace

Features and Benefits

- Horizontal, front loading design with hinged front door for easy, convenient unobstructed loading/unloading of work loads and fixtures
- Autoclave locking ring closure eliminates door seal problems
- Work zone sizes:
 - 18" W x 14" H x 24" D 500 pound capacity
 - 24" W x 24" H x 36" D 1500 pound capacity
 - 36" W x 36" H x 48" D 3000 pound capacity
 - 48" W x 36" H x 72" D 5000 pound capacity
 - 48" W x 48" H x 72" D 5000 pound capacityOther sizes available as required
- Energy efficient graphite insulation for high temperature applications up to 2500°F
- Thin curved graphite resistance heating elements for uniform radiant heat up and cool down
- High performance external gas quenching for rapid cooling at positive pressures up to 15 PSIG (2-bar)
- Fully automated and programmable industrial controls package
- Designed for easy maintenance and minimal downtime

Solar Manufacturing designs and manufactures vacuum heat treating and brazing furnaces with a focus on energy efficiency and durability. As a team of specialists with many collective years of experience in vacuum furnace and hot zone design, we are committed to our objectives of providing vacuum furnaces with the lowest cost of ownership achieved through state-of-the-art materials, high performance operation and robust design.

Solar Manufacturing is part of Solar Atmospheres, Inc., a progressive company and one of the largest independent commercial heat treaters in the USA. This background affords us a distinct advantage in the industry to assist you in choosing the right vacuum furnace for your application.



Specifications

The HFL-EQ model is a horizontal front loading, external quench, vacuum heat treating and brazing furnace generally designed for high production commercial and captive heat treating shops. It is a high temperature, high vacuum, batch type furnace with electric resistance heating elements.

Hot Zone

- Operating temperature: 2400°F
- Maximum temperature: 2500°F
- Temperature uniformity: approximately $\pm 10^\circ\text{F}$
- Hearth: molybdenum support pins and graphite rails
- Heating elements: curved graphite bands
- Insulation: four (4) layers of 0.5" high purity graphite felt
- Hot Face: 0.040" thick Flex Shield carbon fiber reinforced graphite foil sheet
- Insulation and heating elements are mounted on a heavy duty stainless steel support structure

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Vacuum Chamber

Double wall, water cooled, horizontal front loading vacuum chamber. Hinged front door with pneumatically operated, autoclave-type locking ring to permit the furnace to safely quench at positive pressures up to 15 PSIG (2-bar). Oversized water inlets and outlets assure maximum water flow.

Gas Quenching System

The external gas quench system provides the lowest resistance, highest efficiency gas flow in the industry. An appropriately sized motor drives a high-speed radial fan to recirculate the quench gas straight through the water-to-gas heat exchanger and then into the hot zone at high velocity. The tapered graphite gas nozzles are specifically directed at the work load for optimum cooling.

Vacuum Pumping System

- Mechanical Pump: Edwards Stokes
- Vacuum Booster Blower: Edwards Stokes
- Diffusion Pump: Varian
- Holding Pump: Alcatel
- High Vacuum Valve: Right angle poppet valve

Power Supply

Hunterdon VRT or Magnetic Specialities angle fired SCR power supply; 460 volt/3 phase/60 Hertz

Control Cabinet and Instrumentation

All industrial controls and instrumentation are housed in a suitable NEMA 12 control cabinet. The SolarVac 3000 interactive control system enables the operator to monitor, control, record and display information graphically to quickly understand the status of the furnace.



- Programmable Logic Controller: Allen-Bradley MicroLogix 1500
- Programmable Controller: Honeywell Model DCP551
- Overtemperature Controller: Honeywell Model UDC2500
- Graphic Video Recorder: Eurotherm Model 6180 utilizing a 12" color touch-screen monitor
- Operator Interface: Allen-Bradley PanelView Plus 1500 utilizing a 15" color touch-screen monitor
- Vacuum Gauge Controller: Televac MC300
- Control Thermocouples: Type "S"
- Work Thermocouples: Type "K"

Standard Optional Equipment and Energy Saving Options

- ConserVac energy saving pump control system
- ElementGuard off-line element protection system
- Variable frequency drive for quench motor
- Dedicated rail guided load truck; manual or powered
- Gas backfill reservoir
- RA330 and molybdenum work grids and multi-tier fixtures

Additional options are available upon request.

For more information or to request a proposal, contact the vacuum furnace specialists at Solar Manufacturing.



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