

Internal Quench HFL-IQ SERIES



Vacuum Heat Treating & Brazing Furnace

Energy Efficient
Graphite Insulation¹

2500°F
Max Temperature

2400°F
Max Operating Temperature

±10°F
Temperature Uniformity
(1000°F-2200°F)

2 Bar
Quench Pressure Capability

SolarVac®
Interactive Controls



The HFL-IQ model is a horizontal front loading, internal 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. All aspects of form, fit and function are designed for easy maintenance and minimal downtime.

For a detailed price proposal with equipment specification,
contact Sales at sales@solararmfg.com or call 267-384-5040.

 PROUDLY MADE IN THE USA

THE BRIGHTEST SOLUTIONS THROUGH INGENUITY

HFL-IQ Series

Specifications



Hot Zone

At the heart of every one of our furnaces is the robust, energy efficient graphite insulated hot zone for process temperatures up to 2500°F.

Operating temperature: 2400°F

Maximum temperature: 2500°F

Temperature uniformity: $\pm 10^\circ\text{F}$

AMS 2750E compliant

Survey temp points at

1000°F / 1500°F / 2100°F

Ring Insulation¹ : four layers of 0.5" thick high purity rayon graphite felt

Door & Rear Head Insulation¹ : five layers of 0.5" thick high purity rayon graphite felt

Hot Face: one layer of 0.075" thick CFC²

Heating elements: rugged segmented, curved graphite bands or continuous ML Molybdenum bands

Hearth: graphite support pins and graphite rails³

Support Structure: insulation and heating elements mounted on a heavy duty 304 stainless steel fabrication with heavy duty, back up shields of 0.090" thick

¹ Refractory metal radiation shielded hot zones are available

² Other hot face options are available such as graphite foil or graphite FlexShield

³ Other hearth configurations are available:

Molybdenum support pins and molybdenum rails

Molybdenum support pins and graphite rails

(left) This photo displays a typical graphite insulated hot zone with several rear gas exit baffles.

Work Zone Sizes Available

Model HFL-2624-2IQ:

18"W x 14"H x 24"D

500 pound capacity

Model HFL-3836-2IQ:

24"W x 24"H x 36"D

1500 pound capacity

Model HFL-5748-2IQ:

36"W x 36"H x 48"D

5000 pound capacity

Model HFL-6672-2IQ:

48"W x 36"H x 72"D

6000 pound capacity

Model HFL-7472-2IQ:

48"W x 48"H x 72"D

7500 pound capacity

Vacuum Chamber

Designed for long years of dependable service, our horizontal front loading vacuum chamber is double-walled for water cooling. The front door is hinged for convenient unobstructed loading/unloading of workloads and fixtures.

The pneumatically operated, door closure mechanism is an autoclave-type, rotating locking ring to ensure safe and convenient operation. Oversized water inlets and outlets to allow maximum water flow and ease of drainage. The furnace chamber is designed to operate in deep vacuum as well as safely quench at positive pressures up to 15 PSIG (2 bar).

Vacuum Pumping System

Mechanical Pump: Edwards Stokes Microvac rotary piston

Booster Blower: Edwards Stokes direct drive

Diffusion Pump: Varian/Agilent

Holding Pump: Pfeiffer Pascal Series

High Vacuum Valve: Pneumatically operated, right angle poppet valve

Gas Quenching System

The new and improved, high performance, internal gas quench system provides the lowest resistance, highest efficiency gas flow in the industry for rapid cooling at pressures up to 15 PSIG (2-bar). An appropriately sized motor⁴ drives a computer balanced fan to recirculate the quench gas straight through the water-to-gas heat exchanger and then into the hot zone at high velocity. The unique tapered graphite gas nozzles are positioned to direct quench gas at the work load for optimum cooling.

If in the unlikely event it is ever necessary to access or remove the heat exchanger or quench motor or fan wheel, all components can be easily serviced through the rear motor housing instead of removing the entire hot zone from the front door.

Power Supply

Hunterdon Transformer VRT power supply or Magnetic Specialties, Inc. SCR power supply

⁴ Motor horsepower ratings will vary dependent upon the model and the desired heat treat process results

Instrumentation & Controls Automation

Fully automated and programmable interactive controls. All instrumentation and controls are housed in a suitable NEMA 12 industrial enclosure. The SolarVac[®] interactive control systems enable the operator to monitor, control, record, and display information graphically to quickly understand the status of the furnace.

SolarVac[®] 3000

Operator Interface: Allen-Bradley PanelView Plus 6 Model 1500 with 15" color touch panel

FactoryTalk[®] View ME supervisory-level HMI software package

Programmable Logic Controller: Allen-Bradley MicroLogix 1500 utilizing RSLogix 500

Recipe Controller: Honeywell Model DCP551

Temperature Controller: Honeywell Model UDC3500

Overtemperature Controller: Honeywell Model UDC2500

Graphic Video Recorder: Eurotherm Model 6180A with 18 channels utilizing a 12" color touch screen

Vacuum Gauge Controller: Televac MC300

Control & Over Temp Thermocouples: Type "S" with ceramic protection tube

Work Thermocouples: Type "K" Refrasil insulated, compensated wire

Optional alternative HMI systems available:

SolarVac[®] 4000

Operator Interface: Allen-Bradley PanelView Plus 6 Model 1500 with 15" color touch panel

FactoryTalk[®] View ME supervisory-level HMI software package

Programmable Logic Controller: Allen-Bradley SLC505 utilizing RSLogix 500

SolarVac[®] 5000

Operator Interface: Industrial PC with an advanced 21.5" TFT color touch panel; Intel Quad Core CPUs; Windows[®] 7 OS

Wonderware InTouch 2014 R2 supervisory-level HMI software package

Programmable Logic Controller: Allen-Bradley SLC505 utilizing RSLogix 500

Equipment and Energy-Saving Options

ConserVac[®] energy-saving control system

ElementGuard off-line heating element protection system

Variable Frequency Drives (VFD) or soft-start motor starters are available in place of across-the-line motor starters for optimum quench motor performance.

Dedicated rail guided load truck; manual or powered

Gas backfill reservoir

Recirculating Water Cooling system

RA330 and molybdenum work grids

**Additional options are available upon request.*



HORIZONTAL
CAR BOTTOM

VERTICAL
BOTTOM LOADING

SOLAR
SUPER QUENCH

INTERNAL
QUENCH

EXTERNAL
QUENCH

THE MENTOR

HCB

VBL

SSQ

IQ

EQ

MIO

Process Applications

Hardening | Stress Relieving | Normalizing | Brazing | Annealing
Tempering | Carburizing | Nitriding | Sintering | Hydriding/De-hydriding

Industries Served

Aerospace | Commercial Heat Treating | Power Gen | Aircraft Engines
Heat Transfer | Powdered Metals | Automotive | Medical | Tool & Die



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🌐 solarmfg.com



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