

MENTOR®

ALL-METAL HOT ZONE

Vacuum Heat Treating & Brazing Furnace

CARBON FREE
All-metal Shielded

MAX TEMP
2500° F

MAX OPERATING TEMPERATURE
2400° F

TEMPERATURE UNIFORMITY
±10°F, (1000°F – 2200°)

WORK ZONE SIZE
12" x 12" x 18" Deep

GAS QUENCH PRESSURE
2 Bar

SOLARVAC®
Automation and Control Systems

ONE YEAR WARRANTY
Factory Start-up and Testing



COMPACT, ECONOMICAL, PRODUCTION FURNACE

The Mentor®, model HFL-2018-2IQ, is a compact, horizontal, front loading, internal quench vacuum heat treating and brazing furnace. It is designed to accommodate small to mid-size work loads in an efficient and economical manner. It is a high temperature, high vacuum, batch-type furnace with electrical resistance heating elements. The Mentor® is mounted on a single, portable platform for easy shipment and maneuverability.

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



Mentor[®]

Specifications



Hot Zone

The all-metal radiation shielded design offers a solution for processing requiring a carbon-free work zone and engineered for unsurpassed performance.

Work Zone: 12"W x 12"H x 18"D
250 pound capacity

Maximum temperature: 2500°F

Operating temperature: 2400°F

Temperature uniformity:
±10°F AMS 2750F compliant

Survey temp points:
1000°F / 1500°F / 2100°F

Door & Rear Head Insulation:

Seven layers of high purity molybdenum for an ultra clean processing environment

Hot Face:

.015" thick high purity molybdenum/lanthanum

Heating Elements:

.025" thick x 3.5" wide molybdenum/lanthanum, with riveted current compensators

Hearth:

Work support posts, caps, and rails are molybdenum/lanthanum

Support Structure: Insulation and heating elements mounted on a heavy duty 0.090" thick 304 SS fabrication

Hot Zone Power Supply

MSI² SCR Zero-angle fired power supply, Rated at 65KVA
460 volt /3 phase /60 Hertz

²Magnetic Specialties, Inc. (MSI) is a Solar Atmospheres affiliate company.

Vacuum Chamber

All stainless steel double-walled and water cooled. The front door is hinged for convenient, unobstructed loading/unloading of workloads and fixtures. The door is bolted to safely quench at positive pressures up to 2 bar (15 PSIG). Oversized water inlets and outlets allow maximum water flow.

Gas Quenching System

The internal gas quench system provides the lowest resistance, highest efficiency gas flow in the industry. The 7.5 HP quench motor drives a high-speed turbine 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 positioned to direct quench gas at the work load for optimal cooling

Vacuum Pumping System

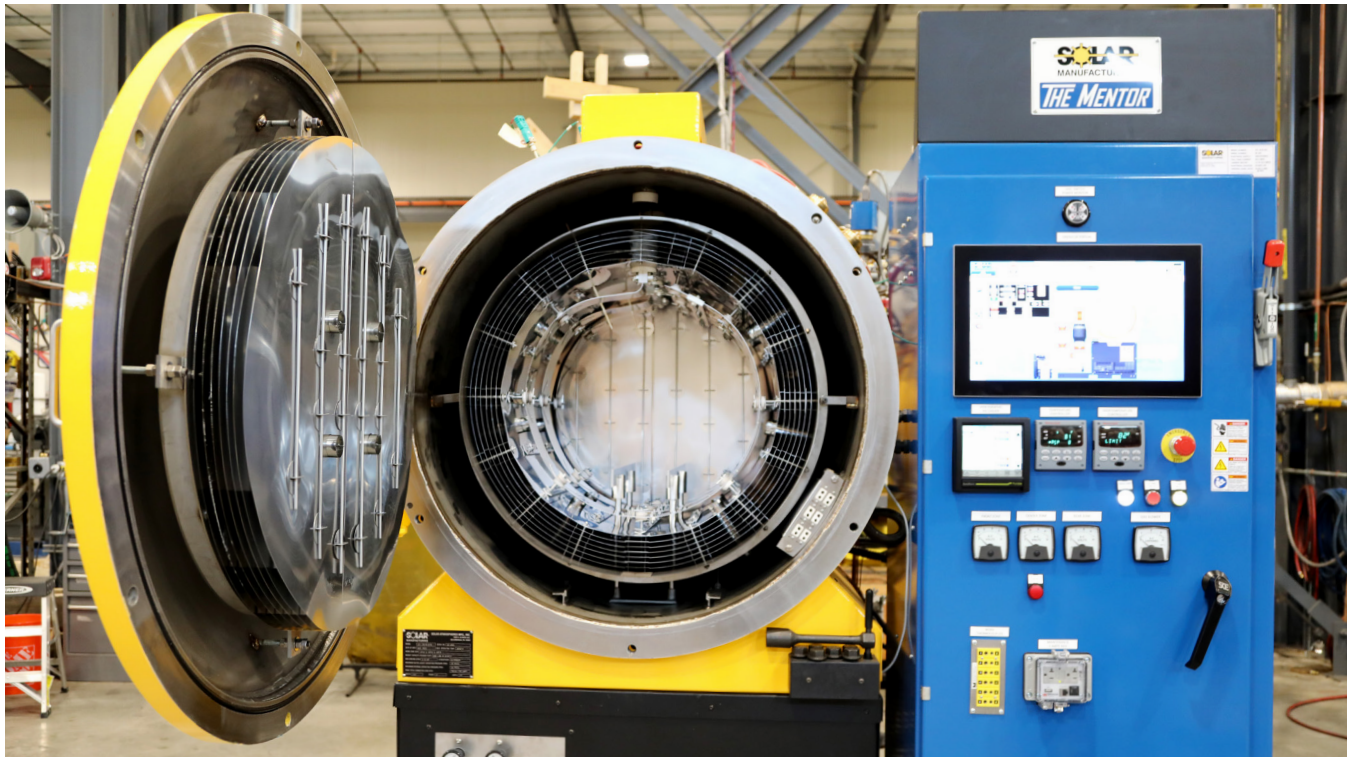
Mechanical Pump: High capacity 2-stage rotary piston pump with oil mist filter

Diffusion Pump: Varian/Agilent VHS-6 6"

Holding Pump: High capacity rotary vane pump

High Vacuum Valve: Right angle poppet valve

Partial Pressure System:
3-gas (N₂, Ar, & H₂)



Automation and Controls Instrumentation

SolarVac® Essentials

The SolarVac® automation and controls system enables the operator to program, control, monitor, record, and display information graphically to quickly understand the status of the furnace. The industrial instrumentation is housed in a NEMA 12 enclosure.

Programmable Logic Controller: Allen-Bradley CompactLogix PLC (1 MB)

HMI Operator Interface:

Industrial PC with Intel Atom CPU and Windows® 10, a 18.5" HD color touch display utilizing Wonderware InTouch supervisory-level HMI software package

Graphic Recorder: Eurotherm Model 6100A, with 18 channels and a 12" color touch display

Vacuum Controller: Televac active gauge heads

Overtemperature Controller:

Honeywell Model UDC2500

Control & Over Temp Thermocouples: Type "S"

Work Thermocouples: Type "K"

ElementGuard off-line heating element protection system

Equipment Options

- Manually operated work-loading truck
- Gas backfill reservoir
- Recirculating water cooling systems
- Work grids
- Operating temperature of 2800°F with a maximum temperature of 3000°F

All Solar Manufacturing furnaces and replacement hot zones are designed for long life, easy maintenance, minimal downtime, and low cost of operation.

Not only is each furnace fully tested prior to shipment, a Factory Service Engineer starts-up and field tests after installation. Every Solar Manufacturing furnace carries a full one (1) year warranty on new furnaces and hot zones.

*HORIZONTAL
CAR BOTTOM*

*VERTICAL
BOTTOM LOADING*

*MENTOR® &
MENTOR® PRO*

*INTERNAL
QUENCH*

*EXTERNAL
QUENCH*

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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**Give us a call to learn
more about our vacuum
furnace ingenuity.**