

MENTOR® PRO

Vacuum Heat Treating & Brazing Furnace

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

ENERGY EFFICIENT
Graphite Insulation

MAX TEMPERATURE
2500°F

MAX OPERATING TEMPERATURE
2400°F

TEMPERATURE UNIFORMITY
±10°F (1000°F – 2100°)

WORK ZONE SIZE
18" x 18" x 36" Deep

GAS QUENCH PRESSURE
2 Bar

SOLARVAC® ESSENTIALS
Controls and Automation Systems

ONE YEAR WARRANTY
Factory Start-up and Testing



MENTOR® PRO



267.384.5040
sales@solarmfg.com

solarmfg.com

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

MID-SIZED, ECONOMICAL, PRODUCTION FURNACE

The Mentor® Pro, Model HFL-3036-2IQ, is a horizontal, front loading, mid-sized, vacuum heat treating and brazing furnace generally designed and developed to accommodate mid-size furnace loads in an efficient and economical manner. It is a high temperature, high vacuum, batch-type furnace with electrical resistance heating elements. The Mentor® Pro is mounted on a portable platform for easy shipment and maneuverability. Designed for heat treating processes such as hardening, brazing, stress relieving, normalizing, annealing, tempering, sintering, homogenizing, degassing, diffusion bonding, and creep forming.

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



Mentor® Pro Specifications



Hot Zone

At the heart of every one of our vacuum furnaces is the robust, energy efficient graphite insulated hot zone.

Work Zone: 18"W x 18"H x 36"D
1,000 pound capacity

Maximum temperature: 2500°F¹

Operating temperature: 2400°F¹

Temperature uniformity: ±10°F

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

Hot Zone Insulation¹:
Six layers of 0.5" thick high purity rayon graphite felt

Hot Face:
One layer of 0.045" thick FlexShield

Heating Elements:
Curved, segmented graphite bands

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

¹ Higher temperature rated hot zones rated for 3000°F is available

Hot Zone Power Supply

MSI² SCR power supply rated at 75 KVA 415/460 volt/ 3 phase/50 or 60 Hertz

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

Vacuum Chamber

Carbon steel, double wall, water cooled, horizontal front loading vacuum chamber. Autoclave locking ring, front door allows the furnace to safely quench at positive pressures up to 2-bar. Oversized water inlets and outlets assure maximum water flow.

Gas Quenching System

The internal gas quench system provides the lowest resistance, highest efficiency gas flow at positive pressures up to 2-bar. A 50 HP 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 specifically directed at the work load for optimum cooling.

Vacuum Pumping System

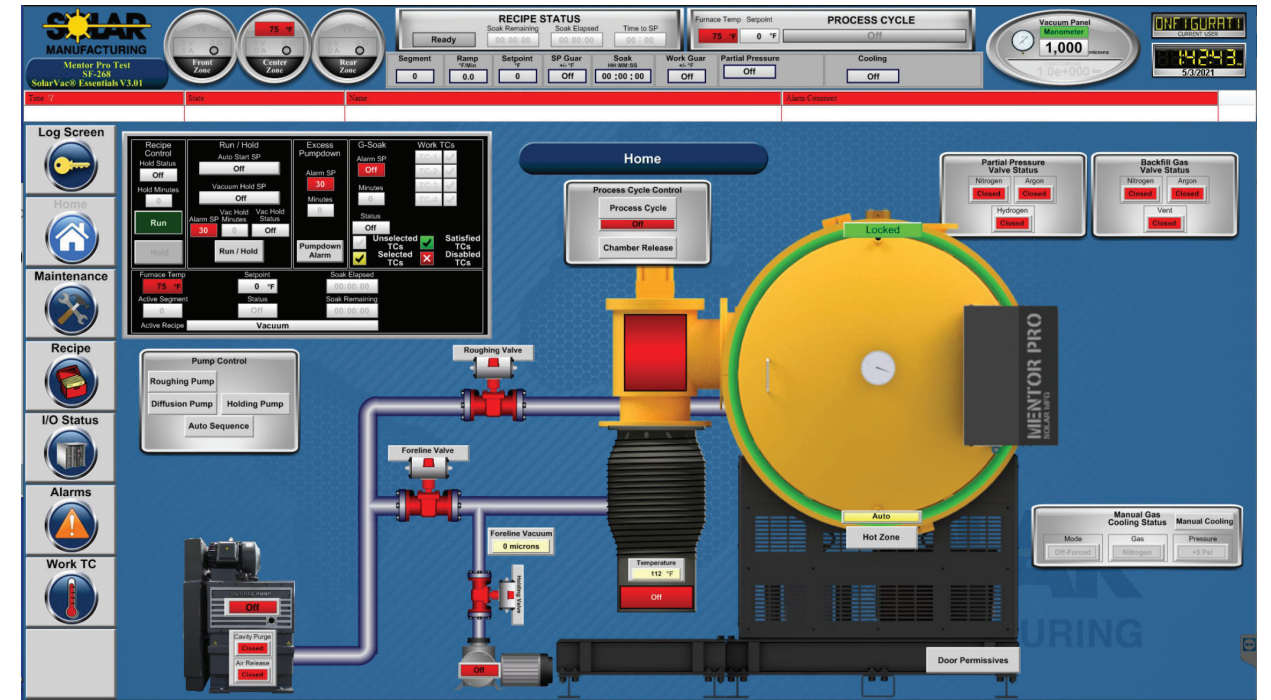
Mechanical Pump: High capacity, 2-stage, rotary piston pump

Diffusion Pump: Varian HS-10-10"

Holding Pump: High capacity rotary vane pump

High Vacuum Valve: Right angle poppet valve

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



Controls and Automation Instrumentation

SolarVac® Essentials

The SolarVac® Essentials is a PLC based control system with operator interface, recipe storage, alarm management, and data acquisition functions. Enables the operator to monitor, control, record, and quickly understand the status of the furnace operation. All controls and instrumentation are housed in a suitable NEMA 12 control cabinet.

Programmable Logic Controller: Allen-Bradley CompactLogix

HMI Operator Interface: Industrial PC with Intel Atom CPU and Windows 10. Wonderware InTouch supervisory-level HMI software package. 18.5" HD color touchscreen monitor mounted on a robust swing arm.

Graphic Recorder: Eurotherm Model 6100A with 18 channels and a 6" color touch screen display.

Vacuum Controller: Televac with active gauge heads

Overtemperature Controller: Honeywell Model UDC2500

Control & Over Temp Thermocouples: Type "S"

Work Thermocouples: Type "K"

Element ground protection system

Equipment Options

High temperature graphite insulated hot zone for 3000°F operation includes Type "C" TCs, boron nitride insulators

All-metal (molybdenum) shielded hot zone

Gas backfill reservoir

RA330 and molybdenum work grids

Recirculating water cooling systems

Workload truck - manual

Oil mist separator

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 and hot zone carries a full one (1) year warranty.