



Vacuum Furnace

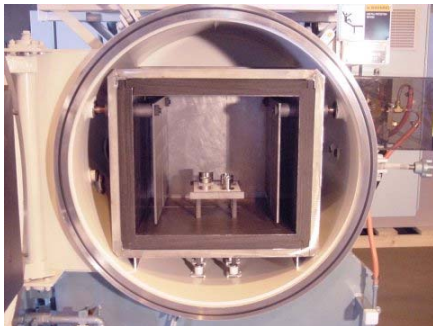
Lab, R & D and small production applications



Standard High Temperature Vacuum Laboratory Furnace

SECO/WARWICK horizontal, front loading vacuum lab furnaces are designed for sintering, heat treating and brazing in vacuum or partial pressure inert atmospheres. Model V40-18/12 is designed for an operating temperature of 1800 degrees C, and a maximum temperature of 2200 degrees C. Designed for an operating vacuum level of 10 microns or better, the furnace is equipped with a 12 inch x 12 inch x 12 inch rigid graphite fiberboard hot zone and graphite plate heating elements.

The SECO/WARWICK high temperature design is unique in that it incorporates graphite heating elements and hot zone. Graphite materials provide the best furnace performance at high temperature, and are cheaper and more reliable than refractory metals. The furnace is fully automatic in operation utilizing a PC/PLC with capacity for precise temperature control and the ability to monitor all operations.



Close up of hot zone with graphite plate elements; 200 pound load hearth rating at 2200°C

Fast Facts

- Chamber: 36 inch diameter x 28 inch long
- Uniform Zone: 12 inch x 12 inch x 12 inch, graphite heating elements, graphite insulation
- Pumping System: 30 cfm mechanical pump/240 cfm booster pump
- Power Supply: 50 kva, 460/3/60
- Cooling System: Inert gas backfill, natural convection
- Control Instrumentation: PC/PLC, overtemperature control
- Vacuum Instrumentation: Mini Convectron gauge

Case Study

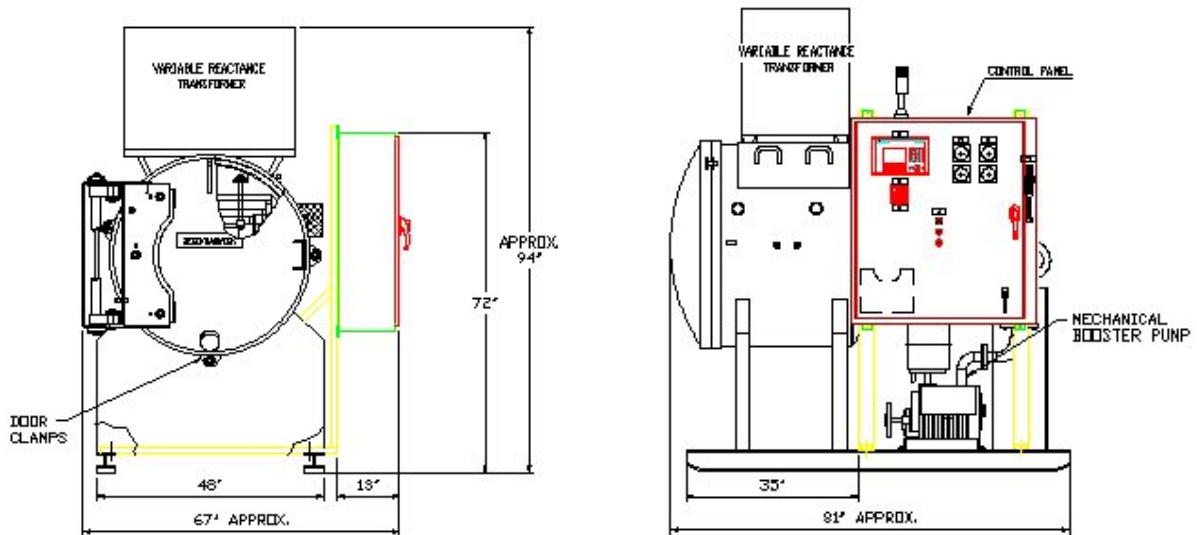
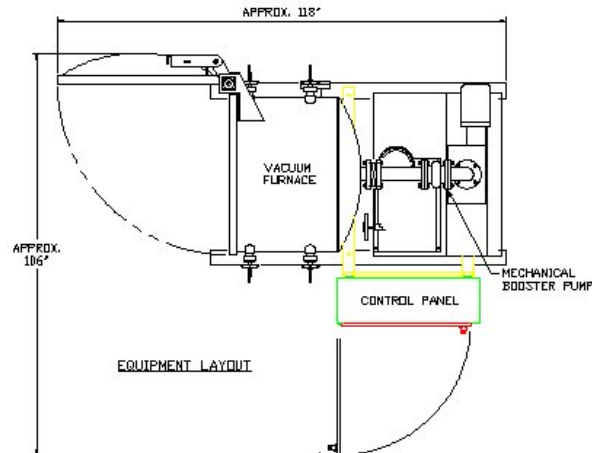
Penn State University commissioned the model V40-18/12 Vacuum Lab Furnace for their sintering lab at University Park, PA. Studies of sintering behavior in a variety of materials, such as cemented carbides, borides and various high temperature metallic alloys are conducted with high temperature imaging equipment.



Overall Furnace viewed from the water manifold side

Special valved ports allow a view of the work pieces on the hearth at furnace environments up to 2200 degrees C and partial pressures up to 10 Torr. High intensity light is strobed into the furnace through one port while a specially calibrated camera on another port captures the image. This equipment will allow real time optical studies of sintering shrinkage, as it occurs, over a wide variety of conditions. This provides unique new opportunities for advancing the science of powdered materials processing.

Furnace Layout



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The latest design, materials and equipment specifications should be obtained from the company before any reliance is placed on the enclosed since changes may occur due to product improvement.