



CONSARC

An Inductotherm Group Company

Vacuum Heat Treatment Furnaces

VACUUM HEAT TREATMENT FURNACES



Vacuum Heat Treatment is now a well established practice in the aerospace (OEM and repair), land based turbines, automotive and tool industries.

The main advantages of this process are:

- Bright oxide-free finishes
- No carbonization or decarburization
- Fluxless brazing
- Controlled heating
- Repeatability
- No hazardous fumes or toxic waste

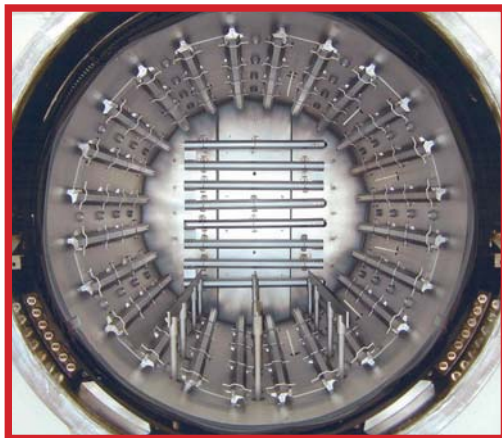
Consarc Vacuum Furnaces are recognized as industry standards in many specialised applications such as:

- Solution heat treatment and ageing of nickel based alloys
- Hardening and tempering of tool steels
- High temperature brazing
- Sintering of powdered metals
- Hydrogen sintering of honeycomb seals

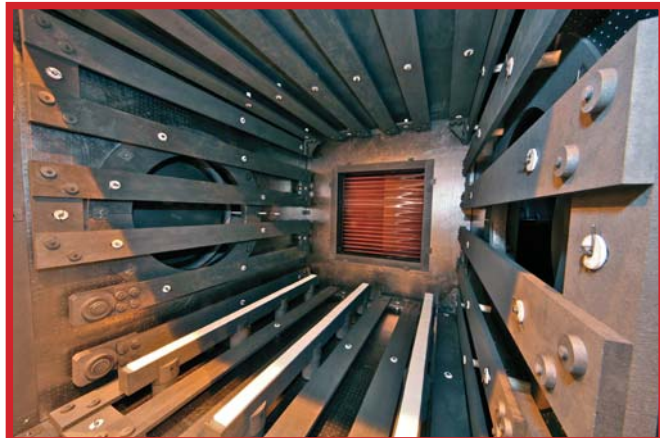
Consarc Vacuum Furnaces are also widely found in more general heat treatment applications such as bright annealing, stress relieving and tempering. Consarc manufacture a wide range of horizontal, bottom loading and top loading Vacuum Heat Treatment Furnaces. Consarc also offers the unique Clamshell split chamber furnace design with its inherent advantages of easy access for loading and maintenance. All furnaces can be engineered to meet a variety of customer requirements with working sizes ranging from 30 to 2000kg.

Hot Zone Design

Consarc offers graphite and metallic hot zones, with graphite being the heat treaters' preferred option for most processes due to its longer life, lower replacement cost and reduced power consumption. Composite hot zone constructions utilizing metallic, graphite and/or ceramic fibre materials, are also available to meet specific customer requirements.



Metallic Hot Zone

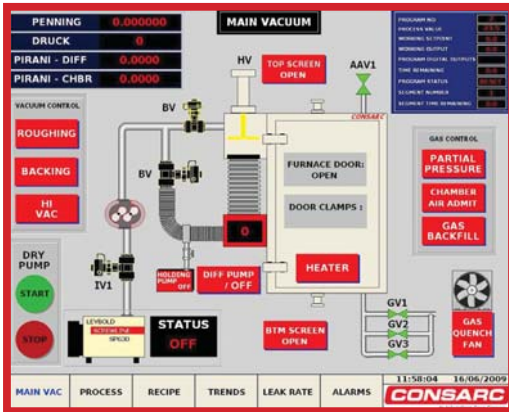


Graphite Hot Zone



Convection Heating

Fan assisted convection heating systems are offered for operation in the temperature range up to 750°C, where heat transfer by radiation is not at its most effective, particularly with densely packed loads. These systems allow faster heating rates leading to greater furnace efficiency in operations such as tempering and provide overall cycle time reductions in all heat treatment operations.



Controls

Consarc furnaces are supplied as standard with an adjacent free standing control cabinet which houses the PLC based control system and all necessary instrumentation. The furnace can also be upgraded with fully configured PC based supervisory control systems. Consarc control and monitoring equipment are designed to meet the strict requirements on temperature uniformity and system accuracy for NADCAP, AMS2750D compliance.



Transfer / Loading Systems

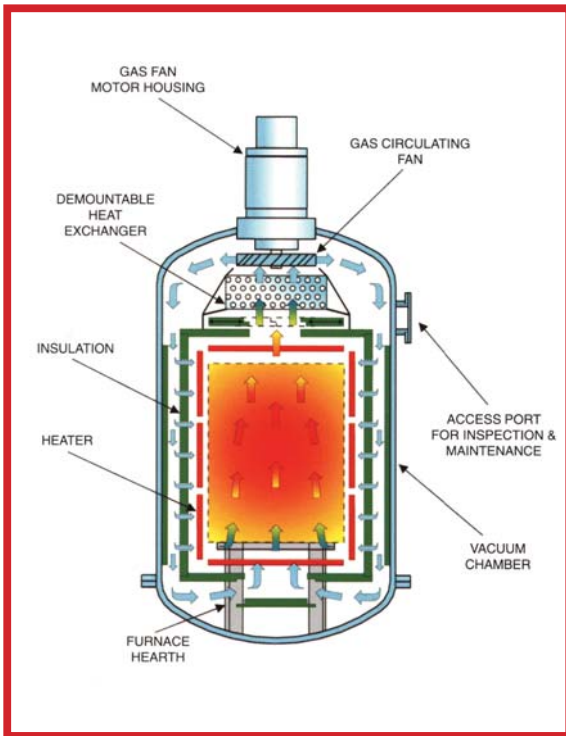
Consarc can supply a fully integrated loading system to manipulate the charge from its dedicated storage area to a position inside the furnace for processing and from the furnace to its dedicated storage after processing. These systems are designed in a range of standard sizes to accommodate a wide variety of working load weights and geometries. The load systems can be fully automated, semi-automated or manual depending on the user preferences. Consarc can provide either a dedicated transfer system on fixed guide rails or a flexible transfer system for manoeuvring the load to other areas of a factory.



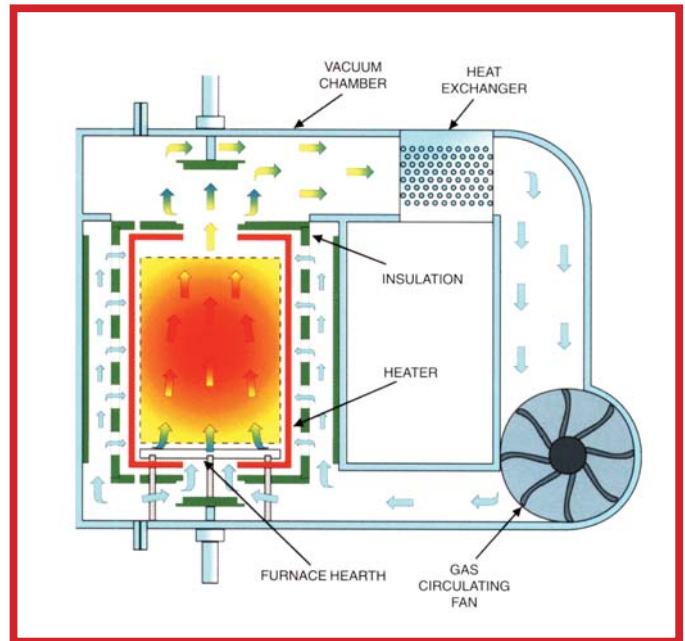
Gas Quenching

Gas Quench systems are available to meet process requirements ranging from fan assisted cooling to rapid, uniformly controlled "Multiflow" high pressure quench operations. Quench rate in a vacuum furnace is directly related to both the pressure and the velocity of the cooling gas. Consarc exploits both these factors by using high velocity "Multiflow" gas at pressures of up to 10bar. The latest design technology in compact copper heat exchangers are used in combination with a high capacity gas quench turbine blower, utilizing a water cooled motor designed for use in vacuum/pressure environments. Rapid quenching at high pressure to meet specified metallurgical properties ensures that superior cooling rates are achieved when heat treating material such as tool steels, die steels and high alloy steels. This high speed cooling also produces reduced cycle times with a consequent increase in furnace production levels.

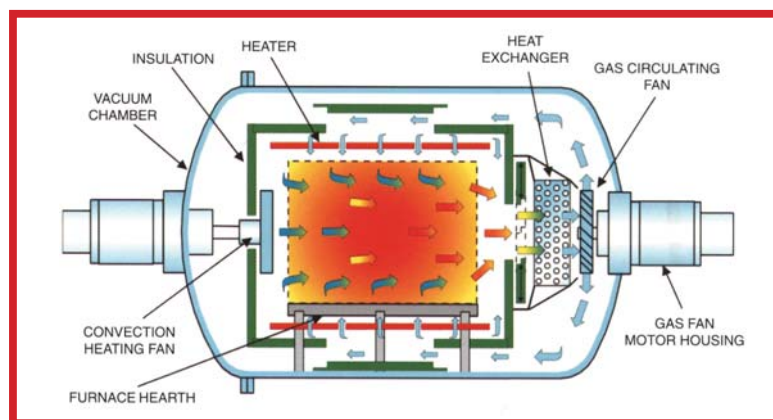
Typical Bottom Loading Quench Arrangement



Typical Clamshell Quench Arrangement



Typical Horizontal Quench Arrangement



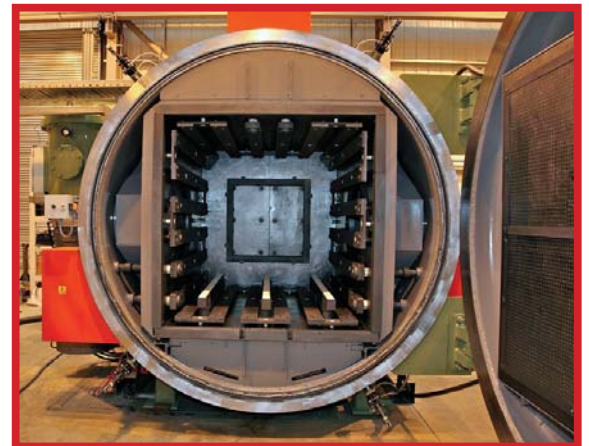
Clamshell Furnace - Standard Sizes

Model No.	Work Size (mm)	
	Diameter	Height
FVS 32-45-51	450	510
FVS 42-61-76	610	760
FVS 51-76-76	760	760
FVS 56-100-100	1000	1000
FVS 56-122-137	1220	1370
FVS 56-160-120	1600	1200
FVS 56-160-150	1600	1500



Horizontal Furnace - Standard Sizes

Model No.	Work Size (mm)		
	Width	Height	Length
FH 60-45-60	600	450	600
FH 60-60-90	600	600	900
FH 76-76-90	760	760	900
FH 76-76-122	760	760	1220
FH 90-76-122	900	760	1220
FH 90-90-122	900	900	1220
FH 100-100-100	1000	1000	1000
FH 100-100-150	1000	1000	1500



Custom Sizes available on request.

Bottom Loading Furnace - Standard Sizes

Model No.	Work Size (mm)	
	Diameter	Height
FVB 86-122-150	1220	1500
FVB 96-150-150	1500	1500
FVB 96-150-180	1500	1800
FVB 96-180-180	1800	1800
FVB 106-200-200	2000	2000



Top Loading Furnace - Standard Sizes

Model No.	Work Size (mm)	
	Diameter	Height
FVT 18-25-25	250	250
FVT 32-45-60	450	600



Custom Sizes available on request.



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