

Compact

Vacuum Furnace

- *innovation*
- *performance*
- *reliability*

Why Compact?

- Pump down time to operational vacuum less than 15 min
- Temperature uniformity better than $\pm 6^{\circ}\text{C}$ | $\pm 10^{\circ}\text{F}$
- Meets requirements of AMS 2750E class 2
- Efficient convection heating in lower temperatures
- Designed for hardening of tool and other steels in gas under pressure of 15 bar
- Perfect for hardening of slender elements
- Hardening and tempering in one cycle
- Process control with load thermocouples
- Meets requirements of NADCA, FORD and GM heat treatment specifications
- Controlled cooling, isoquench, interrupted quench, marquenching and austempering available
- Built-in simulator G-Quech Pro for hardening of tool steel
- Pre-installed package of recipes for selection heat treatment parameters depending on grade of steel and part geometry
- Smart control system enabling the reduction of the power consumption
- Motor supply circuit protected against spikes during startup phase

Processes:

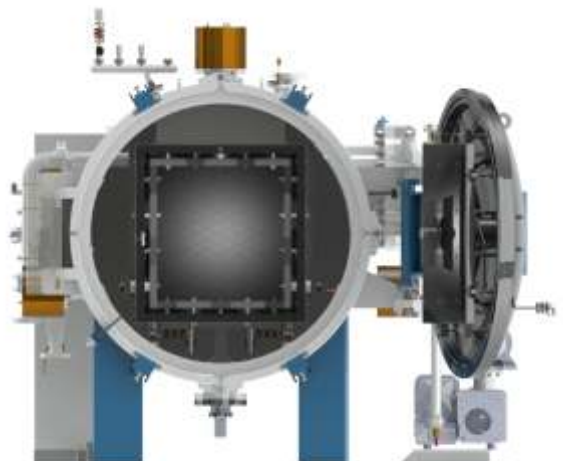
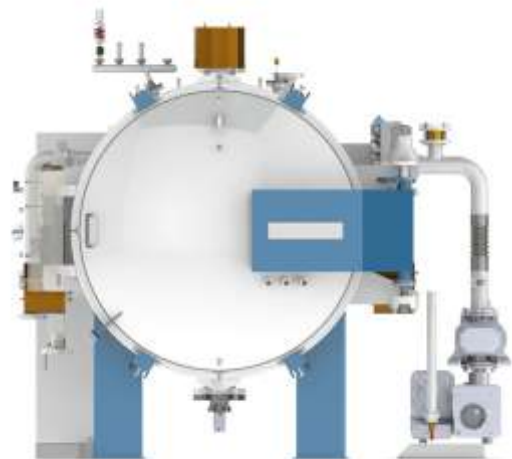
- Brazing
- Annealing
- Hardening
- Solution heat treating
- Sintering
- Tempering

Materials:

- Tool steels
- HSLA
- Alloyed steels
- Stainless steels
- Alloys and super alloys
- Titanium and titanium alloy

Industries:

- Aviation (NADCAP)
- Automotive
- Machine
- Tool
- Medical
- Nuclear
- Energy
- Electronic
- Metallurgy
- Commercial heat treatment centers
- Special



Options dedicated for the Compact Vacuum Furnaces

Single chamber, horizontal vacuum furnace with graphite rectangular hot zone and integrated, directional gas cooling. High pressure gas quench 15 bar with controlled and isothermal cooling (interrupted quench, austempering, martempering). Meets NADCA, FORD and GM requirements for dies heat treatment.

Options variety

- 2 or 15 bar cooling gas pressure
- Partial pressure control
- Convection heating
- High vacuum
- Casted metal fixture
- Carbon composite fixture
- Closed loop water cooling system
- Gas buffer tank
- Noise protection of the pumping system
- Inlet gas dew point measuring system
- Temperature uniformity frame
- Time-dependent spare parts set

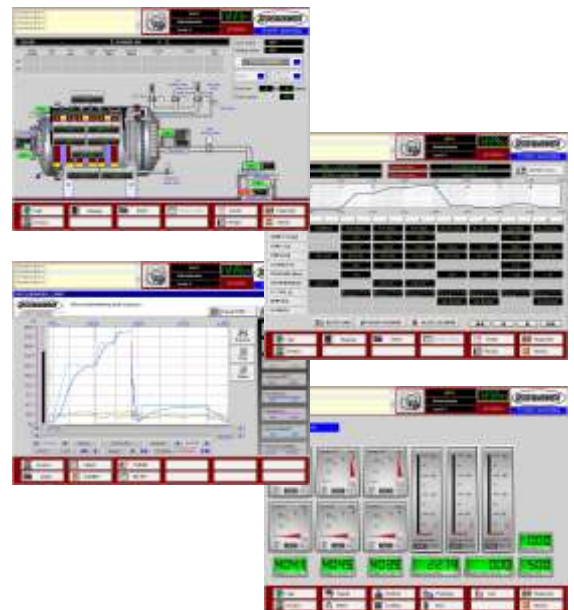
Dedicated auxiliary equipment

- Manual loader
- Electrical loader



Control system advantages

- Fully automated furnace operation controlled by PLC
- Auto and semi-auto operational mode
- Intuitive window type operation panel
- Monitoring of process parameters
- Visualization and animation of furnaces operation
- Programming processes
- Recording of process parameters and events
- Batch reporting
- Alarming and warning locally and remotely
- Predefined process recipes database
- Energy optimization programming
- Simulation of quenching
- Preventive maintenance program and real time scheduling
- Remote communication, monitoring and control
- Connection to external network
- Data storage



Technical date

Uniform zone WxHxL	Max load	Operating temperature	Convection heating	Temp. uniformity	Heating power	Max. cooling pressure	Operating vacuum
mm	kg lb.	°C F	°C F	°C F	kW	bar abs	mbar Torr
22/24 400x400x600 16"x16"x24"	300 660	150 – 1350 300 – 2460	to 750 1380	+/-6 +/-10	70	2 or 15	range 10 ⁻² (option 10 ⁻⁴)
35/36 600x600x900 24"x24"x36"	800 1760				110		
50/48 900x900x1200 36"x36"x48"	1500 3300				220		



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