



**SECO/WARWICK**

# VECTOR

Single-chamber Vacuum Furnace with Gas Cooling



# VECTOR

Single-chamber Vacuum Furnace with Gas Cooling



## INDUSTRIES

- / Aviation
- / Automotive
- / Machine
- / Tool
- / Energy
- / Nuclear
- / Electronic metallurgy
- / Commercial heat treatment
- / Specialty applications



## MATERIALS

- / Tool steels
- / Carburizing steels

- / HSLA
- / Alloyed steels
- / Stainless steels
- / Silloys and super alloys
- / Titanium and titanium alloy



## PROCESSES

- / Annealing
- / Brazing
- / Hardening
- / Low pressure carburizing & nitriding (LPC & LPN)
- / Normalizing
- / Solution heat treating
- / Sintering
- / Tempering

Vector is a single-chamber vacuum furnace using gas quench which can be used for wide variety of heat treating processes and applications. It provides important capabilities for producing high-uniformity in heat treated parts, high

consistency in workloads, and high speeds in batch processing with low consumption of power and process gases.

Vector high pressure gas quench furnaces are the ideal solution for heat treating. Vector is a vacuum furnace with round graphite hot zone. These furnaces can be used for most standard hardening, tempering, annealing, solution heat treating, brazing and sintering. Additionally, they can be used with SECO/WARWICK's optional patented vacuum-carburizing technologies (FineCarb®) and prenitriding (PreNit®) and the SimVac® process simulation package is included at no extra charge.

With hundreds of systems installed worldwide, SECO/WARWICK's high pressure quench furnaces have proven record of high performance technology.

The Vector is a single chamber horizontal vacuum furnace that complies industrial standards related to heat treatment equipment and has sold many hundreds of units worldwide. It comes with a full range of options and accessories for performing a wide range of functions for heat treaters and can be customized for special functions.



## FEATURES

- / Standard horizontal capacity from 200 to 2,500 kg and more (440 to 5,500 lbs).
- / standard vertical capacity: 1,500 kg (3,300 lbs) and 2,000 kg (4,400 lbs).
- / Graphite or metal hot zone with maximum vacuum of 10<sup>-2</sup> to 10<sup>-5</sup>/10<sup>-6</sup> mbar.
- / Quenching pressure: from 2 up to 25 bar.

- / Quenching gases: N<sub>2</sub>, Ar, He, H<sub>2</sub>.
- / The best operational features including uniform heating and quenching, ability to harden a wide range of materials and cross-sections.
- / ConFlap™ system supporting convection heating.
- / Optional equipment for vacuum carburizing technology: FineCarb® / PreNitLPC® and vacuum nitriding LPN.
- / Computer control system, operator-friendly.
- / AMS2750 specification readiness.




## OPTIONS

- / Furnace options.
- / Vertical orientation.
- / Graphite or metal hot zone.
- / Improved temperature uniformity.
- / Multi-zone temperature control.
- / Load thermocouples port and control.
- / High temperature operation.
- / High vacuum or ultra-high vacuum.
- / Low and cryogenic-temperature trap.
- / Partial pressure control.
- / Cooling gas flow direction.



## BENEFITS

- / Wide range of heat treatment processes and applications.
- / High speed cycles with high pressure gas quench.
- / Low consumption of energy, process gases and other utilities.
- / Environmentally friendly with low emissions of process gases.
- / Simple design, modular, fitted and adjusted to tasks and plant conditions.
- / Guaranteed quality and repeatable process results.
- / Predictive maintenance.
- / Remote control and monitoring.
- / Fast delivery and simple installation.
- / Customizable.



## SECO/WARWICK Invention Meets Reliability

SECO/WARWICK is the **1<sup>st</sup> Choice Supplier**  
of Solutions for Heat Treatment and Metallurgy.

We create innovative products that provide our customers with reliable, safe and environmentally friendly solutions for heat treatment and metallurgy and ensure the economic efficiency of their businesses. Expertise includes end-to-end solutions in 5 categories: vacuum heat treatment, atmosphere, and aluminum thermal processing, controlled atmosphere brazing of aluminum heat exchangers and vacuum metallurgy.

SECO/WARWICK Group, with 7 companies located on 3 continents, has customers in nearly 70 countries with more than 5000 deployed solutions. The company provides standard or customized state-of-the-art heat processing and metallurgy equipment and technologies to leading companies in the following industries: automotive, aerospace, electronics, tooling, medical, recycling, energy including nuclear, wind, oil, gas, solar and production of steel, titanium, and aluminum.

**SECO/WARWICK**

[WWW.SECOWARWICK.COM](http://WWW.SECOWARWICK.COM)