

SECO/WARWICK

UniCase Master

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Single-Piece flow case hardening



UNICASE MASTER

Destinated for aerospace, automotive, transmission and bearing industry. Case hardening by low pressure carburizing (LPC) and high pressure gas quenching (HPGQ).

HIGH PRODUCTION EFFICIENCY

- / Lean Manufacturing Compatible.
- / Compact and economical solution.
- / Throughput up to 1 million gears per year.

OUTSTANDING QUALITY

- / Precision and ideal repeatability of case hardening results for every single piece 4D Quenching for minimal distortion.
- / Single-piece monitoring reporting and inspection.

BENEFITS AND SAVINGS

- / Minimize final machining costs.
- / Eliminate batch material handling logistics.

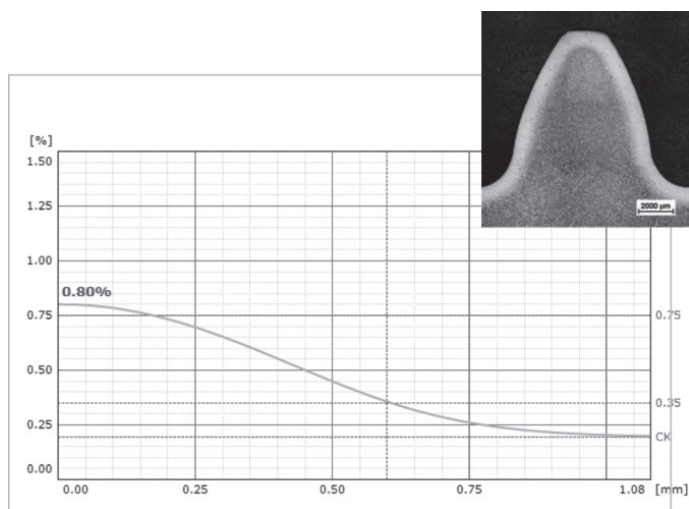
- / Eliminate fixturing costs and energy consumption.
- / Eliminate oils, chemicals and washer systems.
- / Eliminate fire and explosion hazards.
- / Flexible production, ondemand start-up and shutdown.
- / Fully automated, continuous operation.
- / Clean, environmentally friendly technology.
- / Apply cutting edge LPCand HPGQ technologies.
- / System flexibility and adaptability.

GENERAL

- / Working zone (O x H) - 200 x 50 mm / 8"x2"
- / Max load weight - 4.0 kg / 9.0 lbs
- / Number of positions - 15 (per process chamber)
- / Tact time - 30 s

HEATING

- / Operating temperature - 1100°C / 2012°F
- / Heating power - 96 kW
- / Heating zones 4D - 9

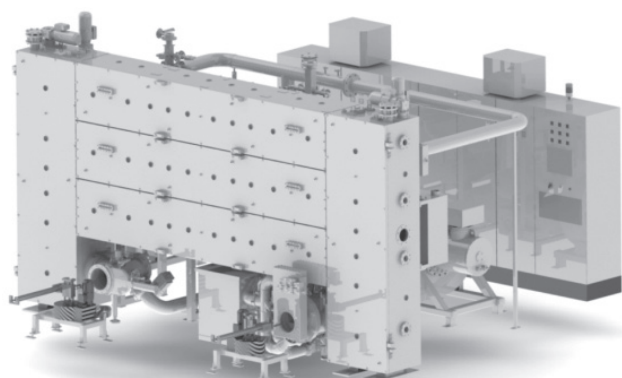


QUENCHING

- / Pressure - 10 bar
- / Gas flow pattern - Nitrogen 3D + rotation

VACUUM

- / Operational vacuum - 10^{-10} mbar
- / Leakage - 10^{-3} mbar* l / s
- / Mechanical pump - 2 x 200 m³ / h / 118 cfm
- / Root pump - 2 x 1000 m³ / h / 600 cfm



UTILITY

- / Electrical power - 150 kW
- / Cooling water - 6 m³ / h 26 gpm 2 bar
- / Acetylene Nitrogen - 151 / min / 9 cfm
- / Footprint - 10 bar 5,5 x 5,5m / 18 x 18 ft
- / High - 3,2 m / 10,5 ft





SECO/WARWICK

Invention Meets Reliability

SECO/WARWICK is the **1st 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.

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