

**SECO/WARWICK**

INVENTION MEETS RELIABILITY



# G-QUENCH

Advanced steel hardening process simulator

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## ADVANCED STEEL HARDENING PROCESS SIMULATOR

A process simulator is a solution for determining the hardness of a hardened material before treatment. A simulation model is one that allows the user to accurately determine the hardening curve and to predict the hardness of the material after the process, depending on penetration into the component. Based on the defined hardening parameters, its time and effects are determined, as well as the structure of the material.



### G-QUENCH GIVES YOU: :

- / A simulator of hardening processes of tool steels for cold and hot work,
- / Simulations of the correctness of the hardening process, without the costs associated with material tests,
- / An examination of the influence of various parameters on process results (e.g. inert gas pressure and type, cooling rate, charge type),
- / Reports from performed simulations, and availability of multiple steel grades under various standards (PN, DIN, AISI, GOST and others),
- / The ability to run simulations based on a mathematical model, online data from the furnace or external data.



### G-QUENCH PROVIDES:

- / Visualizations of the hardening curve with marked areas for obtaining martensite, pearlite or bainite,
- / Examinations of the behavior of a particular steel under different process conditions,
- / Calculations of the time required to carry out the hardening process and achieve the required parameters, determining the  $\alpha$  and  $\lambda$  coefficients, the cooling rate and the predicted material hardness, recreating previous simulations,
- / A determination of the chemical composition for specific steels, performing simulations based on data from various sources.



### ADVANTAGES OF G-QUENCH: :

- / Reduction of production costs through better selection of process parameters,
- / Savings in process media by reducing process duration,
- / Access to an extensive database of processed materials,
- / Improved production efficiency, reduced reject rates.



SECO/WARWICK is a technological leader in innovative heat treatment furnaces. 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 has 9 companies located on three continents with customers in nearly 70 countries. The company provides standard or customized state-of-the-art heat processing equipment and technologies to leading companies in the following industries: automotive, aerospace, electronics, tooling, medical, recycling, energy including nuclear, wind, oil, gas, and solar and production of steel, titanium, and aluminum.