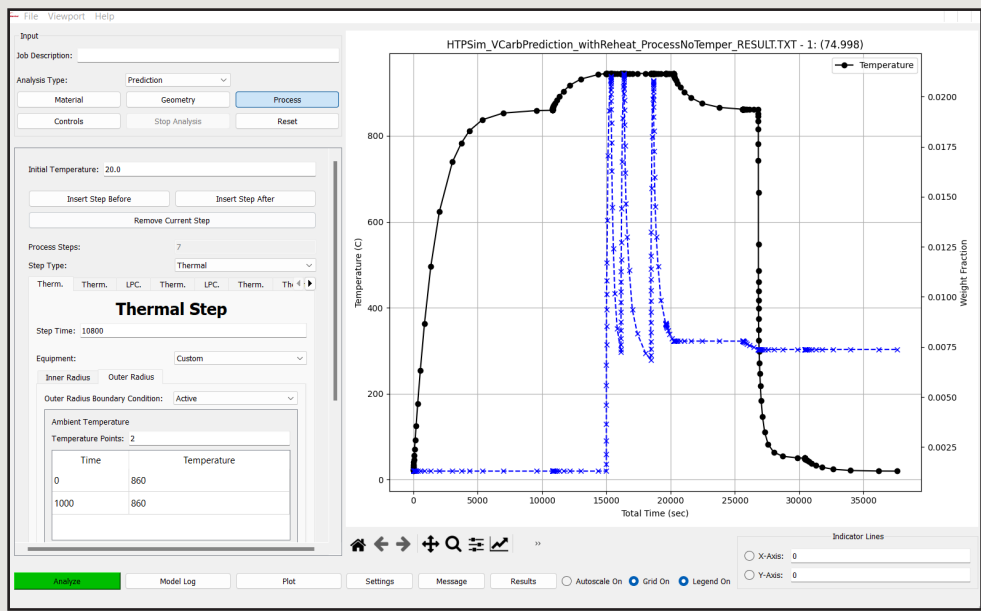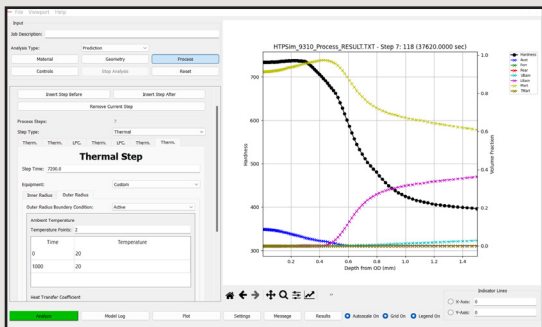# dante°
HTPSim

HTPSim is easy to use

- Part section size is simplified to equivalent size, and the FEA model is built in the background
- Equipment can be selected when setting up the process to avoid the procedure of applying boundary conditions

HTPSim uses the well-validated material models of full DANTE FEA package

HTPSim can be used easily to check the following effects on part responses

- Part geometry (section size)
- Material grade (variation of chemical composition)
- Heat treat equipment (different equipment or variation of equipment behavior)

Many more process can be modeled with HTPSim, like deep freeze, tempering, artificial aging, and more!

The latest DANTE standalone software utility tool is now available for industry use!

Heat Treat Process Simulator is capable of 1-D (ring or cylinder) finite-element analysis for carburizing (gas and LPC), nitriding, and thermal processes. HTPSim can be used for process design, process optimization, and process troubleshooting. The user interface provides areas to define the Material, Geometry, Process, and Controls.

INPUTS

Material: Materials are chosen from a dropdown menu. Changes to total carbon and nitrogen, carbide/nitride information, and grain size and alloy composition can be applied.

Geometry: Define an inner radius or outer radius dimension. A 1-D geometry is created and meshed in the background without the need for complicated meshing software.

Process: Define a variety of processes; from LPC and gas carburizing, to nitriding and any thermal process which can be defined using heat transfer coefficients and ambient temperatures.

Controls: Allows for activation/deactivation of specific models (carbide precipitation, tempering, etc.) and selection of SI or Imperial units.

OUTPUT

Line plots can be generated based on a single point anywhere through the geometry thickness over time (time-history plot) or on a single point in time over some distance from the ID or OD (path plot). Output variables include Temperature, Hardness, Phase Volume Fractions, Carbon/Nitrogen (including carbides/nitrides), and Carbide Size. All output variables can be plotted on a primary and secondary vertical axes, and an export tool quickly saves the relevant data to a *.csv file.