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DANTE Solutions, Inc. is pleased to announce the release of DANTE 5.0, the most advanced heat treatment simulation software from DANTE Solutions. Included in DANTE 5.0 are several new features designed to describe the physics of steel heat treatment more accurately; they include:

- **Carbon Separation Model:** This model describes the rejection of carbon as the steel transforms to ferrite from austenite. The additional carbon then enters the surrounding austenite matrix, increasing the local hardenability of the steel.
- **Carbide Decomposition Model:** This model describes the decomposition of primary carbides during heating processes. The amount of total carbon (carbon in the matrix and carbon in primary carbides), carbon in primary carbide form, and a carbide size factor are defined as initial conditions to the model. The carbon and carbide values can be uniform throughout the material or as a profile, as from a carburizing process. The carbon in carbide form will enter the matrix during heating and soaking at high temperature, increasing the carbon in the austenite matrix and the hardenability of the steel. The decomposition rate is a function of time, temperature, and carbide size factor.
- **Residual Stress Relaxation Model:** This model describes the relaxation of residual stresses during heating and holds at high temperature. The model is intended to predict stress relaxation during a stress relief processing step, annealing step, normalizing step, or during the austenitizing process. The relaxation rate is a function of time, temperature, and stress.
- **Alloy Composition Variation Modeling:** DANTE 5.0 introduces the ability to model slight variations in steel alloy composition and its effect on the material's hardenability. The model is intended to capture the variation witnessed in production. The model affects the transformations to ferrite, pearlite, and bainite.
- **Liquidus/Solidus Latent Heat Model:** This model describes the latent heat released as a steel transforms from the liquid state to the solid state and the latent heat absorbed as a steel transforms from the solid state to the liquid state. The model is intended to be used when modeling any phenomena involving a melt pool, such as welding or additive manufacturing.
- **Abaqus Plug-In:** DANTE Solutions has developed an Abaqus Plug-In designed to aid in DANTE model setup. The Plug-In includes means to define material, initial conditions, boundary conditions, and much more. Abaqus users no longer need to manually modify input files! The entire DANTE model can now be easily constructed within Abaqus CAE using the DANTE Plug-In.
- **DANTE Utility GUI's:** DANTE Solutions has developed Graphical User Interfaces (GUI's) for all of its utilities offered to aid in material, model, and process development. Please contact a DANTE Solutions engineer for more information on the type of utilities offered.
- **MatSim Utility:** DANTE Solutions latest utility combines the power of the DANTE phase transformation models into an easy to use utility. Predict volume fraction of phases from defined heating and cooling rates, plot temperature-strain curves, and much more. Please contact a DANTE Solutions engineer for more information.

Several bugs were removed from the software, improving stability. Several mathematical algorithms were also modified, improving convergence and robustness. DANTE 5.0 is now available for installation. Please contact your DANTE Solutions representative to obtain your copy today!

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