exaSIM™ - Ultra Powerful Simulation For Machine Operators and AM Designers

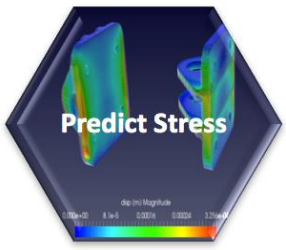
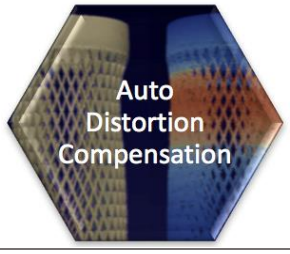
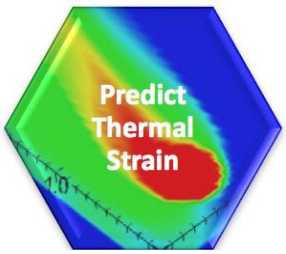
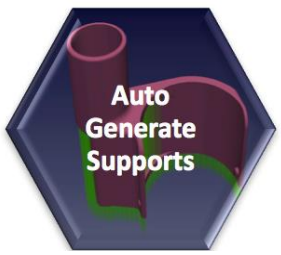
Providing unparalleled predictions of:

- Final part geometry
- Layer-by-layer stress and distortion
- Potential blade crash
- Optimal stress-based support structures
- Distortion compensated STL files

exaSIM™ simulations are based on exact scan vectors from a build file or user-defined scan patterns

Why use exaSIM™?

- Reduce trial-and-error experiments
- Mitigate uncertainty
- Accelerate production
- Generate more accurate price quoting
- Reduce build failures for laser powder bed fusion

	• exaSIM generates practical scientific solutions to residual stress, distortion and build failure, enabling you to achieve part tolerances the first time and avoid build failures without iterative physical trial-and-error experimentation • Simulation predictions are driven by reading metal AM machine build files and performing a full-scale thermal analysis utilizing the exact scan vectors used to build a part
	• Gain insight into how your part will distort during a build • Visualize and evaluate the effects of your assumptions on distortion and residual stress for as-built parts, enabling you to select successful part orientations and support strategies • Visualize the differences between the original un-deformed geometry and the final deformed geometry before and after removal from supports
	• Gain early insight into how stresses will accumulate during the build • Predict stress trends, final residual stress, and maximum stress locations throughout the build • Visualize layer-by-layer stress accumulation throughout the build • Visualize high strain regions and potential blade crash locations via color maps
	• Predicted distortion of a component is automatically passed to a distortion compensation model providing you with an STL file that is pre-distorted to compensate for process generated distortion, thus creating conforming parts in one try
	• Predict thermal strain, based on a full-part thermal analysis, scan vector by scan vector • Predict anisotropic effects based on scan orientation within thermal strain • Calculate strain patterns using either: Uniform Assumed Strain, Scan Pattern Strain, or Thermal Strain options
	• Predict maximum residual stresses that your supports must withstand • Support structures are automatically generated based upon an algorithm which varies the support density to carry these maximum residual stresses • Resulting support structure is provided to you in an STL file format