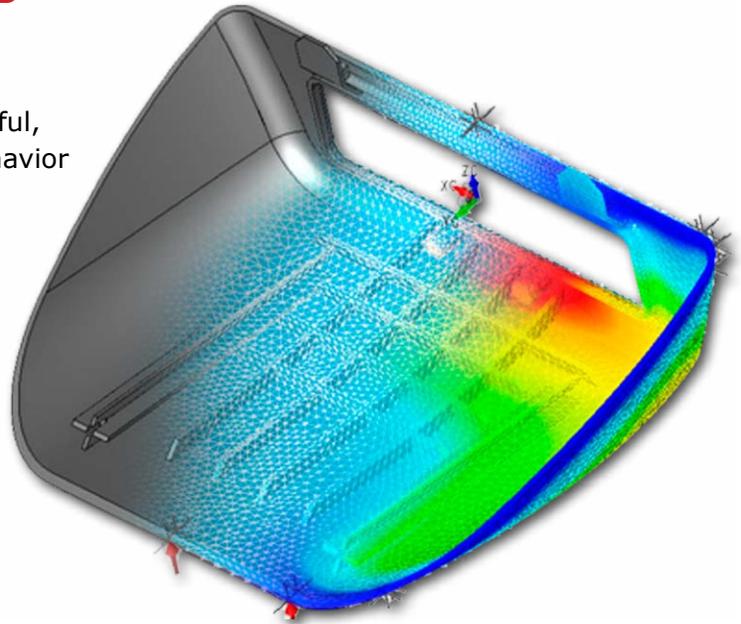# KEYCREATOR® ANALYSIS

Simple, Fast and Accurate Results for the Simulation Novice
Fast and Accurate True Multi-Physics for the Simulation Analyst
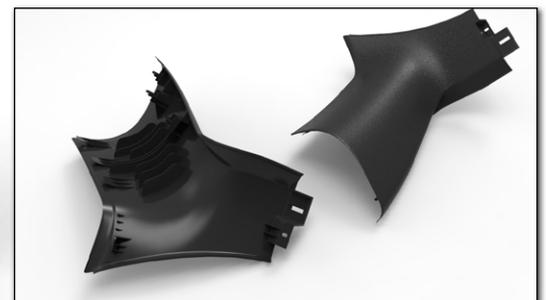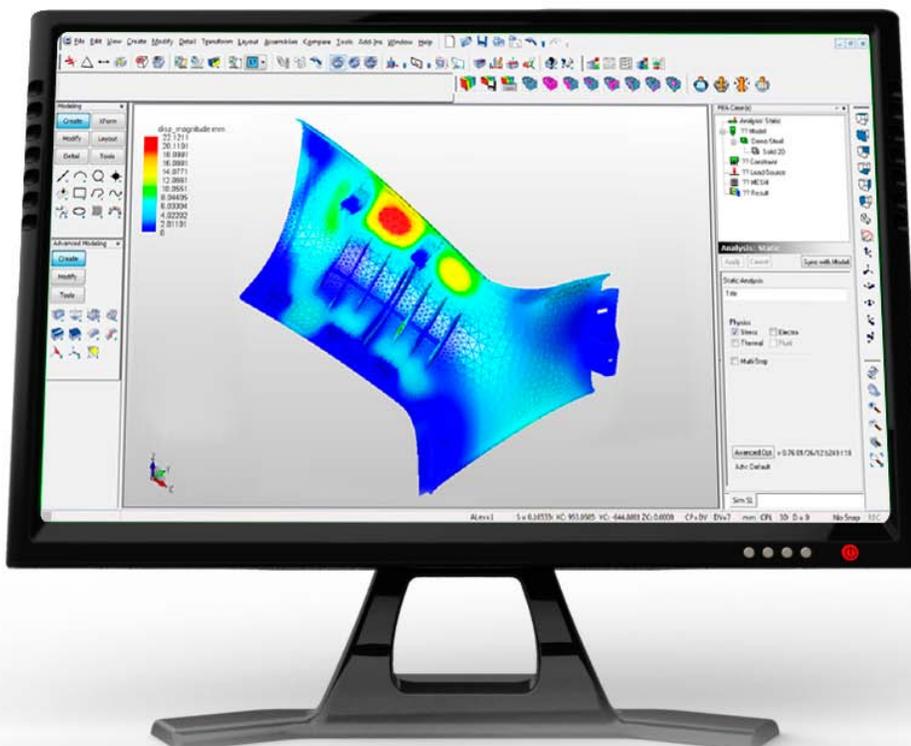## The Simplicity and Speed of Direct CAD

The Analysis options within KeyCreator provide powerful, fully-integrated FEA capabilities for simulating the behavior of a design under various types of loading. Studying 3D models with FEA offers dramatic product quality improvements and cost reductions by narrowing in on optimal designs before physical prototyping and testing begin. KeyCreator Analysis uses an uncomplicated interface designed for engineers, as well as FEA experts, and handles large problems with breakthrough speed and accuracy.
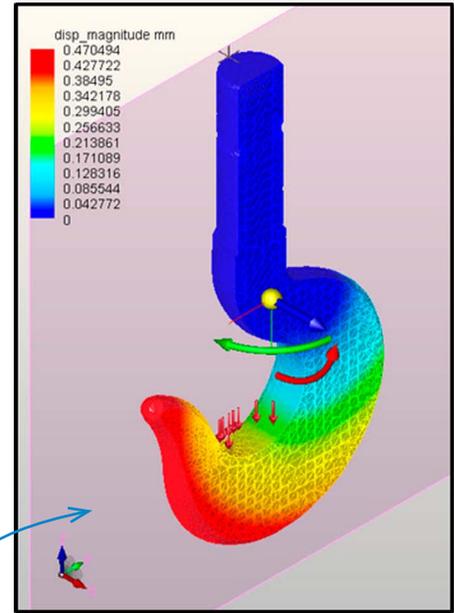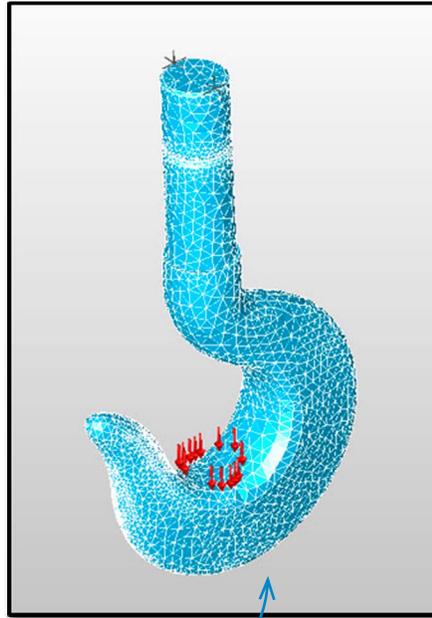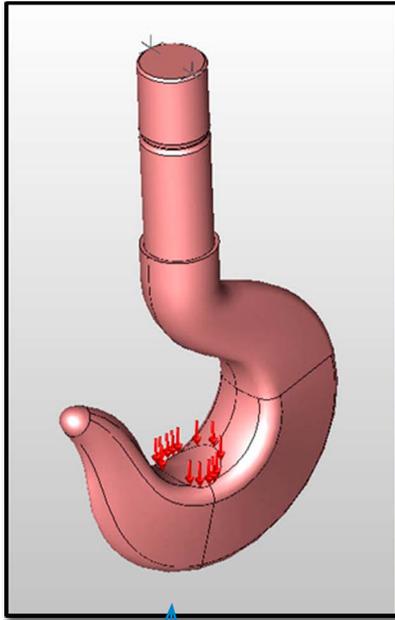
Simple Interface

The simplified and intuitive interface allows KeyCreator users to start setting up analysis problems with their own or imported models in minutes. The Analysis Window provides a natural step-by-step flow of setting up a problem for analysis and quick visualization of all pertinent information. The full integration of analysis data with the KeyCreator model and access from within the KeyCreator interface allows users to maintain familiar methods, easily organize projects, and avoid data exchange problems. Solid models assigned to a simulation remain editable with regular KeyCreator functions and a synchronization function automatically re-applies loads, constraints, and meshes to the updated solid.

disp_magnitude mm
0.470494
0.427722
0.38495
0.342178
0.299405
0.256633
0.213861
0.171089
0.128316
0.085544
0.042772
0

Boundary conditions, loads, meshing, and result animations and contours are all displayed within the KeyCreator graphics viewport supporting standard view functions such as dynamic cutting planes and rotation.

Advanced Solver Technology

KeyCreator Analysis provides significant speed and accuracy advantages which allow engineers to perform more design iterations in less time. The proprietary Strain-Enriched Finite Element Analysis (Sefea) method provided is truly breakthrough FEA technology, utilizing low-order tetrahedron elements to achieve results virtually equivalent to legacy methods employing large numbers of 2nd-order tetra or brick elements. The low number of nodes supports significantly faster solving and use of less system resources due to the fewer equations to be solved. Use of low-order tetrahedron elements supports use of fast automatic meshing, saving hours of complex mesh setup and refinement. Using fewer system resources than traditional FEA allows KeyCreator users to solve more complex problems and spend time less time simplifying models.

The solver was also written from the ground-up to properly handle fully-coupled simultaneous multiphysics and the latest multi-processor technology. Fully-coupled multi-physics processing provides a major advantage for strongly coupled problems such as nonlinear large deformation, Joule heating, conjugate heat transfer, electrostatic-stress contact, and complex material nonlinear dependency.

Packages

	KeyCreator Analysis Packages				
	Linear Static	Simultaneous	Simultaneous with Dynamics	Simultaneous Expert	Simultaneous Expert with Dynamics
Loading					
Acceleration	✓	✓	✓	✓	✓
Rotation	✓	✓	✓	✓	✓
Mechanical (Force & Pressure)	✓	✓	✓	✓	✓
Thermal (Heat, Radiation, Convection)		✓	✓	✓	✓
Electrical (Current or Dielectric)				✓	✓
Analysis					
Static	✓	✓	✓	✓	✓
Dynamic		✓	✓	✓	✓
Modal		✓	✓	✓	✓
Buckling			✓		✓
Frequency			✓		✓
Material					
Linear	✓	✓	✓	✓	✓
Eleastic/Plastic				✓	✓
Rubber/Foam				✓	✓
Processor					
Full Multithreading	✓	✓	✓	✓	✓
Support of 3+ CPUs, 9+ threads	✓	✓	✓	✓	✓
Special					
SEFEA Mode	✓	✓	✓	✓	✓
Stress Stiffening			✓		✓
Automatic Contact				✓	✓
Large Deformation				✓	✓
Arc-Length Load Marching				✓	✓

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