Press Release

NEi Software Presents Paper on Progressive Ply Failure Analysis Software for Composite Engineers at SAMPE 2009 Conference

Westminster, CA. 1 May 2009 – NEi Software (NEi) will present a paper at the Society for the Advancement of Material and Process Engineering (SAMPE) Conference, May 18-22 in Baltimore, MD by Barton McPheeters, Senior Application Engineer, entitled, “Progressive Ply Failure Analysis for Composite Structures”. The paper will demonstrate this failure analysis technique with several models and illustrate the benefits that can be gained from this type of analysis for fiber reinforced composite plastics (FRP). NEi Software, a global leader in the development of Finite Element Analysis (FEA) and engineering simulation software, will also host a booth (#812) to demonstrate features of its new PPFA™ (Progressive Ply Failure Analysis) simulation technology. The software reveals how damage cascades through a structure after failure of the first composite ply providing designers a more comprehensive picture of a structure’s behavior. In this way, engineers can better assess conditions like reserve load capacity, potential for catastrophic failure, load redistribution, and conditions for ultimate failure. These considerations can lead to more optimal designs and more appropriate physical testing protocols.

The image is a screenshot of a composite wind turbine analysis using NEi Nastran finite element analysis (FEA) software. Complete support for engineering analysis of composites is provided with features like advanced Failure Criteria, Progressive Ply Failure Analysis (PPFA™) easy definition of material properties, and solution visualizations capable of pinpointing specific ply problems.

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In addition to PPFA, NEi Software's provides full support of composite analysis in its NEi Nastran product with features such as:

- Advanced Failure Criteria which use NASA Langley's LARC02 and Puck's first-ply-failure criteria
- 3D Composite Elements which permits 2D parameters to be extended to 3D or direct 3D orthotropic entry
- Determination of ply delaminations by using 3D Composite Elements
- Stability Index for sandwich structures reveals facesheet failure modes of wrinkling, dimpling and crimping
- Max/Min Plots helps to find critical load cases when numerous test cases are analyzed, for example, aerospace landing, launch, and temperatures
- Stress checks in thin adhesive lines in complex bonded composite joints
- Post processing results provide visual images that pin point problems down to specific plies and their elements
- Easy definition and entry of composite material properties into the 3D model including ply angles, layers, and stacking sequence, projection of curved coordinate systems to simulate fiber orientation in complex structures
- Capability for a wide variety of composite materials and fabrication methods including hand lay-up of fiber cloth, filament winding, tapes, pre-pregs, honeycomb structures, and resin transfer molding.

About NEi Software

NEi Software is a world leader in Nastran Finite Element Analysis (FEA), engineering simulation, and virtual test software. Engineers gain insight with digital prototypes, images, contour plots, graphs, and animations of linear and nonlinear structural stress, deformation, dynamics, vibration, kinematics, impact, heat transfer and fluid dynamic (CFD) simulations. The website features case studies in aerospace, automotive, maritime, petroleum, medical, and consumer products with demonstration videos, webinars, tutorials, class schedules, and options for evaluation.
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