

Tools for optimizing design, engineering, and manufacturing

A Whole New Approach to Composites Optimization

HAMPTON, Va.—The recently released Version 6.4.5 of Collier Research Corporation's HyperSizer composite structural analysis and optimization software is reported to not only run much faster; it's now based on a reconfigured core technology with built-in "intelligence" that is said to produce more accurate answers with less user input.

"We've developed a completely different approach that will make the general engineer's job easier, while providing reliable results much faster than before," said Collier Research President and founder Craig Collier, in a statement accompanying the release. "The software requires less input from the user to set up an optimization of, say, an aerospace structural component or a wind turbine blade. It looks at load magnitude and, from there, is able to configure itself automatically to do a pre-setup of the proper optimization parameters. This gives the engineer consistent, reliable results regardless of their expertise level."

The analysis engine of v6.4.5 takes advantage of today's high-performance computing technology to speed up runs by 200 to 400% across the board. Optional quick sizing and variable tuning capabilities are as much as 1000 times faster.

The wing box structure of a commercial aircraft is illustrated with FE sizing zones. HyperSizer software will size the stiffened wing cover to obtain optimum stiffener cross sections and detailed composite ply layup schedules. Image courtesy of Collier Research Corporation.

The new version now supports non-linear and dynamic load stepping Abaqus and Nastran FEA solutions. For the wind industry, weight/cost optimization has also been added to enable engineers to include the effects of material choices on tools, labor, and facilities, etc., when studying tradeoffs between carbon fiber and fiberglass.

"Today, many industries use composites," says Collier. "You read a lot about failure prediction and test certification, but I believe the fundamental issue has more to do with designing structures properly in the first place.

"For many engineers, a working knowledge of composite design and optimization will be an essential requirement for future product development," he adds. "If you really want organizations to be successful implementing composites, we're going to have to start making the process less complicated. This latest version of HyperSizer software is an important step in that direction."

The first-ever software commercialized out of NASA, HyperSizer is the flagship product of Collier Research Corporation (www.hypersizer.com). HyperSizer provides stress analysis and sizing optimization, reducing the weight of aircraft, space vehicles, wind turbine blades and other structures, whether designed with composite or metallic materials.

A New Multi-Disciplinary Design Experience for Mechatronics

"Smarter, Faster, Lighter" offers a new industry solution experience for high-tech products

VÉLIZY-VILLACOUBLAY, France—

Attempting to coordinate a company's mechanical, electronic, and software innovations is no easy task. But Dassault Systèmes is aiming to do just that with its recent launch of "Smarter, Faster, Lighter," which the company describes as "a new industry solution experience for high tech products." Based on Dassault Systèmes' 3DEXPERIENCE platform, the Smarter, Lighter, Faster industry solution experience is built to significantly improve the development cycle—from first concepts to first article manufacturing—by providing fine-grain information exchange and real-time collaboration between engineering teams.

Smarter, Faster, Lighter (<http://www.3ds.com/industries/high-tech/>) empowers engineers in a number of ways to enable full project visibility, efficient collaboration, and lower design and manufacturing costs. Among its offerings: a single place to maintain all electronic, mechanical, and software development data, from specifications, 3D models, and analysis results to manufacturing requirements; the ability to efficiently modularize and reuse existing designs while minimizing redundant product variations; and unified end-to-end design processes to retain and communicate the Voice of the Customer, from requirement definition to final product validation. It is also said to enable seamless, concurrent collaboration with partners and suppliers, while assuring perfect data consistency among different disciplines.

"The consumer electronics market is in a period of rapid evolution, and manufacturers are under tremendous competitive pressure to be the first to market with unique and differentiated products," said Monica Menghini, executive vice president, industries & marketing, Dassault Systèmes, in a statement. "However, a successful product quickly attracts copycat products from the competition. To stay

