

HELIOUS:MCT 4.0

ADVANCED COMPOSITES SIMULATION | FIREHOLE COMPOSITES

NOW WITH COHESIVE

LIGHTER, STRONGER, MORE EFFICIENT DESIGNS.
GET BETTER ANSWERS WITH HELIOUS:MCT™

Built as an enhancement to commercial finite element packages, Helius:MCT replaces traditional analysis methods with superior technology and can efficiently improve the accuracy of composite structural analysis.

Improved Technology

Traditional modeling methods treat composite lamina as a homogeneous solid with uniform properties throughout. Helius:MCT is based on Multicontinuum Technology – a unique method which determines stresses and strains for the composite's fiber and matrix constituents. In doing so, the MCT methodology provides an unsurpassed combination of accuracy and efficiency for determining damage initiation and predicting damage propagation.

Improved Confidence

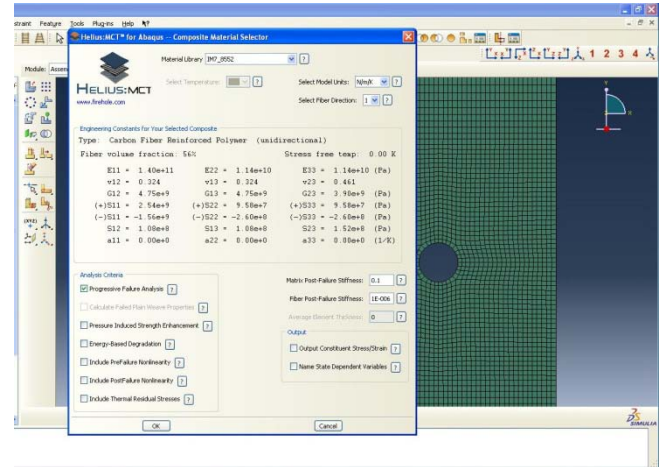
A first ply failure approach to composites analysis based on traditional failure theories often results in unreliable simulation predictions. Results may vary from underestimating the onset of damage to grossly over estimating it. Using a Helius:MCT progressive failure analysis, consistently reliable simulation results for composite structures are achievable and proven through extensive validation. This reliability gives confidence to composites engineers allowing them to make better decisions.

Capabilities

- ✓ Extracts stresses & strains for the fiber & matrix through multiscale analysis
- ✓ Predicts failure based on fiber or matrix stresses
- ✓ Progressive failure analyzed by means of intuitive material degradation scheme
- ✓ Enables material nonlinearity inclusion for both pre and post failure regimes
- ✓ Captures pressure-induced strengthening
- ✓ Stores and manages material library using the Helius Material Manager
- ✓ Supports a wide variety of 2D & 3D elements

New in Helius:MCT v4.0:

- ✓ Extends convergence technology to cohesive elements for accurate and efficient modeling of delamination
- ✓ Reduces mesh-dependency through use of energy-based damage law



"A simple, robust and predictive simulation tool, able to accurately identify the failure and the post-failure behavior of general composite structure was an analyst's dream until now. The innovative Firehole multi-scale approach provides an outstanding value to our customers because of its proven effectiveness and sound physical basis."

—Simone Ragionieri,
General Manager, SmartCAE

Features & Benefits

- ✓ Seamlessly integrates into Abaqus/CAE and ANSYS platforms for easy adoption
- ✓ Results are easy to interpret
- ✓ Uses industry-standard material data
- ✓ Provides robust convergence through the Intelligent Discrete Softening Method (IDSM)
- ✓ Permits quick and easy conversion of legacy models
- ✓ Includes clear, comprehensive, easy to understand documentation
- ✓ Backed by responsive, real-time support from development team

For more information about Helius:MCT, visit us at www.firehole.com.

