

# HELIVS:MCT NOW WITH COHESIVE

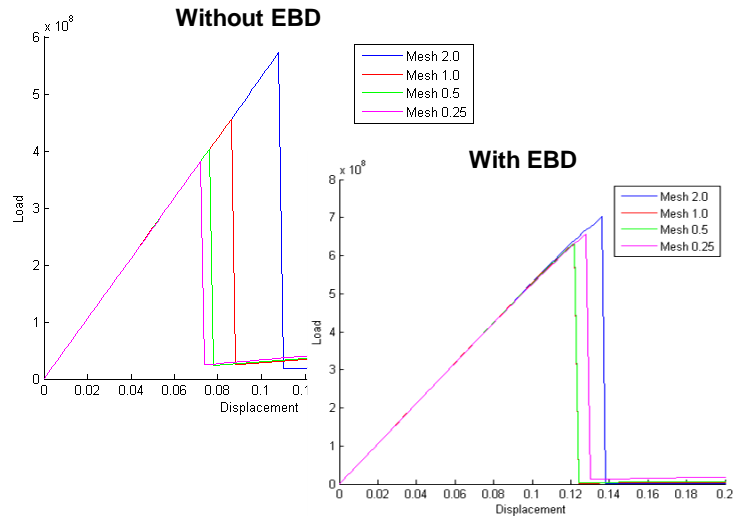
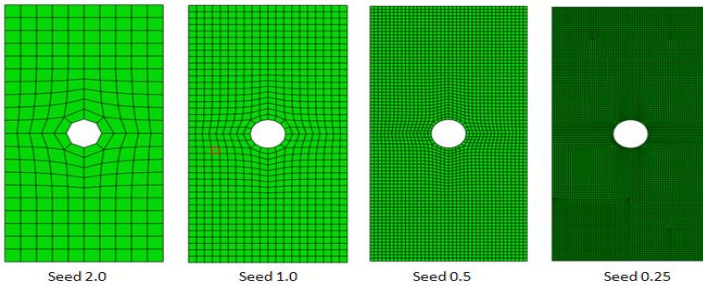
ADVANCED COMPOSITES SIMULATION | FIREHOLE COMPOSITES

## MINIMIZING MESH SENSITIVITY

Helius:MCT introduces **Energy-Based Degradation**, a powerful degradation scheme that accounts for element size and provides you the confidence and efficiency you require for your analyses.

### How does Energy-Based Degradation impact mesh sensitivity?

In this example, a progressive failure simulation was conducted to obtain a load vs. displacement curve for an OHT specimen with all plies oriented at 90 deg. The results are shown at right for the four varied mesh sizes shown below.



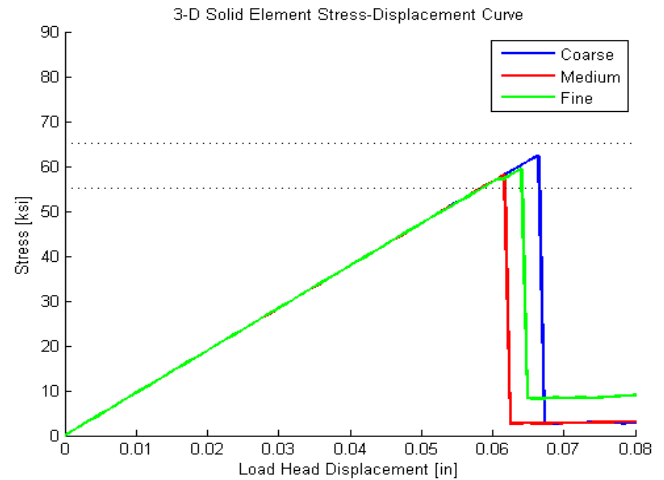
## RESULTS

Without EBD, the ultimate failure load varies as much as 30%. The variability is reduced significantly with the use of the EBD feature, demonstrating its ability to decrease mesh sensitivity.

Helius:MCT with EBD has been shown to reduce mesh sensitivity for both 2-D shell and 3-D solid elements, while accurately predicting the ultimate strength.

### HOW IS THIS POSSIBLE?

Many existing material degradation techniques do not take into account the amount or volume of material that is failed, resulting in progressive failure simulations that are heavily mesh-dependent. EBD allows the property degradation to change proportionally to element size, thereby conserving total energy during damage evolution and accounting for this volume.



### HOW CAN THIS POSITIVELY IMPACT YOUR DESIGN PROCESS?

Can you be certain that your progressive failure solution does not differ with varying mesh sizes? Concern over this variability often forces analysts to conduct a mesh sensitivity study to determine optimum mesh size. This is both expensive and time consuming.

**Helius:MCT with EBD allows you to minimize analysis time while retaining confidence.**

**EXPAND YOUR SIMULATION CAPABILITY**

