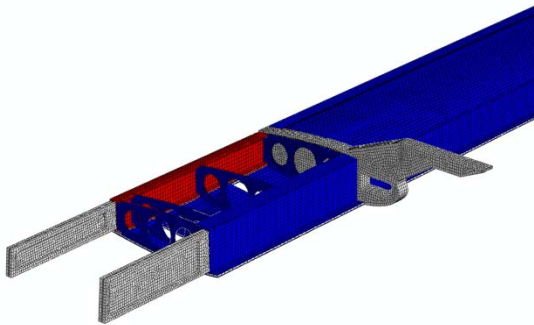




## Enable Better Engineering Decisions with Helius:MCT

### IN THIS ISSUE:

### A Look at Assessing Damage Tolerance of an Aircraft Wing

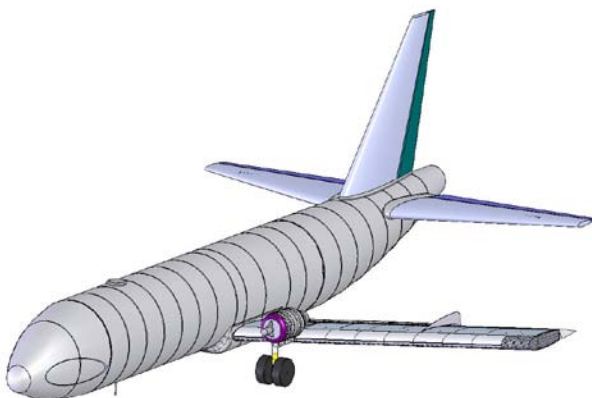


Helius:MCT is an add-on for Abaqus™ and ANSYS™ that is specifically designed to enhance the finite element analysis of composite materials.

Its progressive failure capability enables the prediction of initiation *and* propagation of matrix/fiber failure, providing a useful tool for evaluating damage tolerance in composite parts.

## Example Scenario: The “Survivability Requirement”

A structural analysis team is asked to look into an aircraft’s wing deflection under a worst case loading scenario. In addition to an extreme loading condition, the response of the wing after a structural component has been damaged needs to be understood so that the wing will meet a predefined survivability requirement.



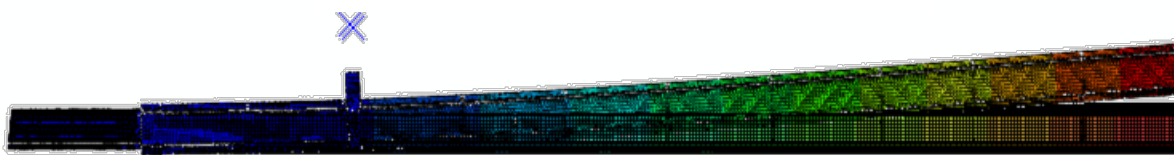
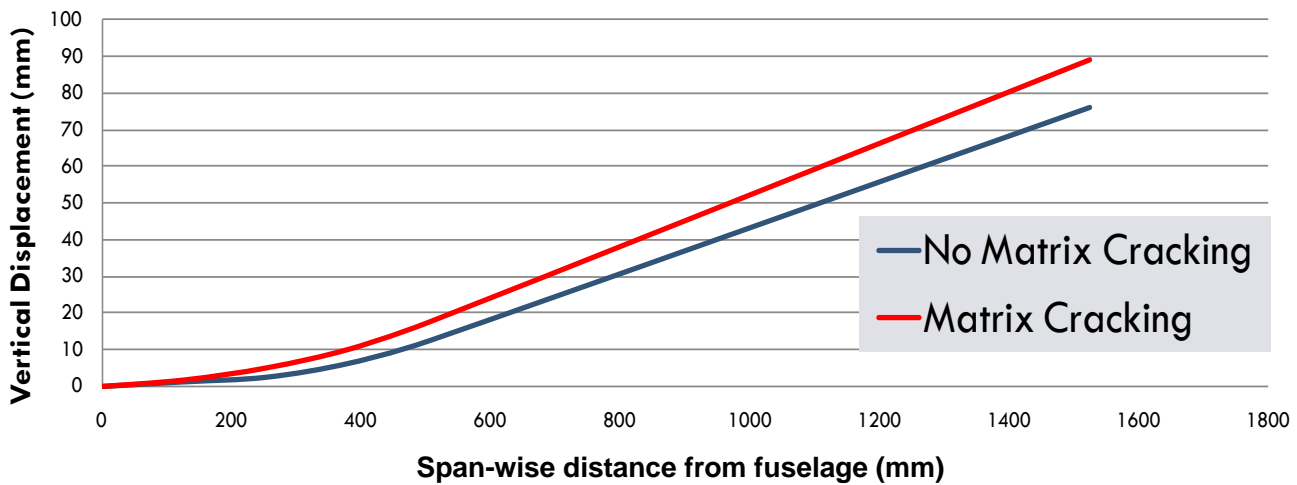
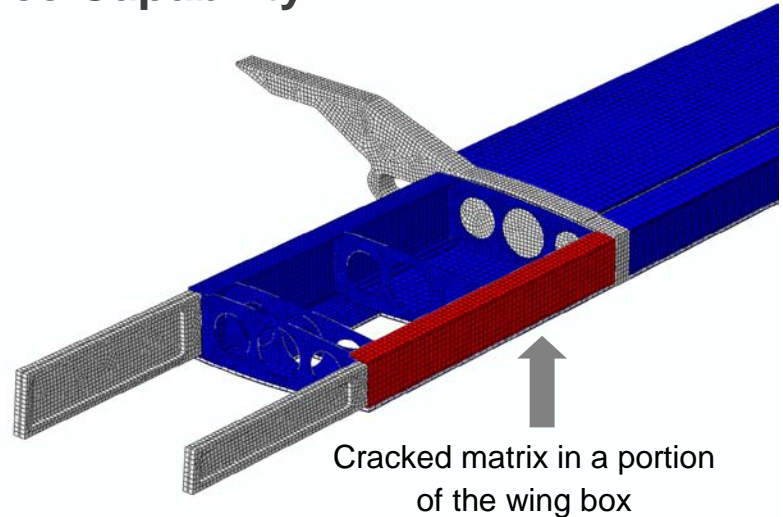
**Can this wing-damaged aircraft land after a subsequent extreme load?**



## Helius:MCT Damage Tolerance Capability

The Helius:MCT methodology allows for an initial damage state to be prescribed to a region of a FEA model.

In this case, the analyst is able to define the prescribed damage – caused by a bird impact or lightning strike for example – by selecting the specific sub-component and defining matrix or fiber damage. The analyst may also quickly determine the wing assembly's sensitivity to damage by alternately simulating damage to other areas.



### Results:

After conducting a progressive failure analysis using an initial damaged region, it can be seen how *matrix cracking* near the fuselage impacts the stiffness of the wing. With this information, the analyst can determine how resulting displacement might cause a loss of lift, flutter and vehicle stall.