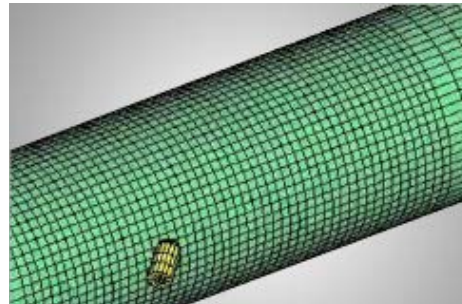
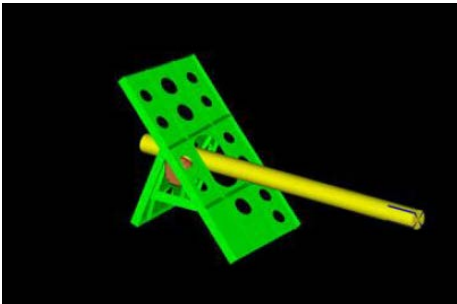
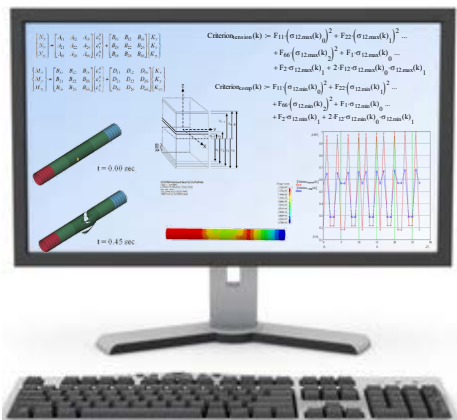


## LIGHTWEIGHT COMPOSITE DRIVESHAFT



### BACKGROUND

In support of the U.S. military's ongoing critical need to make combat vehicles (particularly air systems) lighter while simultaneously maximizing their survivability and operational performance, SURVICE and partners Automated Dynamics Corporation (ADC) and Chesapeake Testing have developed and tested a ballistic-tolerant composite helicopter driveshaft that matches the performance of existing aluminum driveshafts at a significant weight reduction.



**PROBLEM** – Ballistic-tolerant drives shafts that weigh less than traditional metallic shafts are necessary to enhance combat vehicle performance, both from a damage-tolerance and vehicular performance aspects.

**GOAL** – Develop a composite helicopter driveshaft with equivalent performance to the existing aluminum driveshaft for 15% less weight.

### RESULTS

- Demonstrated ballistic tolerance with a 33% weight reduction over existing aluminum component.
- Demonstrated torsion requirements that exceeded those specified for the composite driveshaft.

- Demonstrated ballistic tolerance that exceeded that of the aluminum drive shaft as measured by the post-damage torsion capability.
- Gained flexibility in frequency property control through tailoring the fiber orientations in the laminate

### POTENTIAL APPLICATIONS

- Helicopter driveshafts
- Other air, ground, and sea combat vehicle driveshafts