

**COMPOSITE CRUSH SIMULATION – EMERGING  
TECHNOLOGIES AND METHODOLOGIES**

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**THEME**

Composites

**KEYWORDS**

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**SUMMARY**

In the quest to lower environmental impact while maintaining vehicle performance, automakers and aerospace companies are knocking on the same door – that is, increasing use of composite materials in order to reduce structural mass. It can be expected that material costs will drop considerably over the next few to several years, as the capacity to produce such materials begins to catch up with the growing demand. The benefits of using these materials are well-documented, including their substantial capacity to absorb energy in an impact scenario.

Composite structures generally behave much differently than their metallic equivalents in a crash event when subjected to large compressive and dynamic forces. Whereas a metal structure will typically undergo large plastic deformations to absorb the kinetic energy of the event, a well-engineered composite member subjected to large axial compression will pulverize in a progressive manner from one end to the other as the “crush front” moves along