

ACMA / ACA Study on Composites for Hybrid Electric Vehicles

David Dyke

Meridian Automotive Systems / Automotive Composites Alliance

ABSTRACT

A newly published study by the Automotive Composites Alliance (ACA), a division of the American Composites Manufacturers Association (ACMA), shows that composites make better sense for hybrid-electric vehicles than steel or aluminum. This is because no competitive material/process combination offers more possibilities to reduce weight, lower tooling investment and part costs, and provide opportunities for parts consolidation and reduction or elimination of secondary-finishing operations.

Although produced in modest volumes by only a few of the world's automakers at the present, hybrid cars and light trucks are predicted to exceed 1-million units annually within 4 years. To understand the opportunities this presents better, the ACA decided to benchmark a hypothetical hybrid sedan to evaluate where composites could best be used and determine the benefits such a conversion could offer automakers. The study focused on 7 key applications where the authors felt that composites (specifically sheet-molding compound (SMC)) could have the greatest impact: battery modules, underbody floor pans, trunk compartments, decklids, hoods, fenders, and supports for front and rear bumpers.

The study's shows that composites are especially well-suited for hybrids, where every kilogram of weight saved conserves batteries for longer driving ranges and improves fuel economy. Additionally, the tooling and part savings possible with composites are particularly attractive for low-to-mid volume vehicle builds and can help offset the higher costs of hybrid vehicles' dual battery-storage systems and liquid-fuel engines.