Composite Solutions For The Transportation Industry

In the automotive and heavy truck market, designers are challenged to meet many different requirements. Parts must have the physical properties to handle the loads and environments of demanding vehicle applications. At the same time, they must be relatively lightweight, cost effective, and manufacturable in the time allowed by tight production schedules. In some cases, they must also have a pleasing appearance that will help attract buyers and differentiate a vehicle from its competitors.

A large and growing number of automotive and heavy truck designers are discovering the advantages of converting to thermoset composite materials. Consisting of fiber reinforcement in a polymer resin, thermoset materials such as bulk molding compound (BMC), sheet molding compound (SMC), and a new generation of Structural Thermoset Composites (STC®) are used for a wide range of automotive and truck parts, including exterior body panels, headlamp and tail light housings, interior structural and cosmetic components, and under-the-hood electrical and heat-shielding components.

Features of BMC, SMC and STC® make t

Light weight
High thermal stability
Excellent impact resistance
Aesthetic surfaces

Design engineers in the automotive and heavy truck industry face considerable challenges balancing material selection and controlling costs while retaining the physical properties needed in high-performance applications.

Truck Box

Composite Wheels

Thermoset Composites Custom Des

FORTIUM™
High Glass Fiber Composites

High Strength
Impact Resistant
Highly Moldable

Fortium™ is a series of composite materials reinforced with 40% - 65% discontinuous glass fiber. This high level of reinforcement imparts high strength and impact resistance to these composite materials. The discontinuous nature of the reinforcement allows these materials to be molded into complex geometries by compression molding processes.

The use of various thermoset resins, like polyester, vinyl ester, epoxy, and vinyl ester/urethane hybrids, imparts outstanding temperature resistance and toughness to these composite solutions. This choice of resins and various reinforcement levels also provides IDI Composites with a great deal of flexibility to optimize the cost and density of these composite materials putting them on par with aluminum and steel on a performance to weight basis.

ULTRIUM™
Carbon Fiber Composites

High Stiffness / Weight Ratio
Carbon Pre-Preg Compatibility
High Strength To Weight

Ultrium™ is a series of materials that raise the bar on stiffness as a function of weight. The carbon fiber reinforcement of Ultrium™ makes these materials well suited for complex geometric applications that require performance optimized high stiffness and low weight.

The ability to tailor the resin system (vinyl ester/urethane and epoxy are just two of the possible options) with carbon fiber provides application designers with the compatibility necessary to marry the Ultrium™ with carbon pre-pregs. This multi-material solution provides engineers with the high strength to weight ratios they have come to expect with a composite solution with the desire and need to push design geometries to the next level.

Body Panels & Liftgates • Heat Shields • Wheels • Forward Lighting • Battery Casings & Covers • Bumpers & Bumper Beam
Truck Boxes • Air Deflectors & Spoilers • Cylinder Heads & Valve Covers • Front-End Grill Opening Panels

hem ideal for the transportation industry:

Shorter cycle times
Heat resistance
Corrosion resistance
Parts consolidation

Manufacturers require materials that can withstand years of abuse without losing the physical properties needed to maintain proper performance. High temperatures, corrosive substances, and structural demands are a few of the ways these materials are stressed during normal use. Yet, they are expected to last for the projected life cycle of the vehicle, which can often be measured in decades rather than years.

The unique physical properties of thermoset composite bulk molding compound (BMC), sheet molding compound (SMC), and a new generation of Structural Thermoset Composites (STC®) make it the perfect alternative to die-cast metals for these applications.

Thermosets have a high strength-to-weight ratio and an excellent NVH (Noise Vibration Harshness) rating, making them effective in dampening normal harmonic vibration.

Many design engineers are discovering the advantages of switching to thermoset composites for both under-the-hood, and high visibility aesthetic applications.

Liftgate Outer Panel

EV Battery Cover

signed For Demanding Applications

ALLURALITE™
Lightweight Aesthetic Composites

Low Density
Paintable: E-Coat System Compatible
Lightweighting Without Sacrificing Performance Or Aspect

Alluralite™ materials are suitable for applications requiring a lightweight composite material with a high appearance grade. Alluralite™ offers a wide range of aesthetic, physical, mechanical, electrical, and thermal performance characteristics in the combinations needed to meet most product specifications.

Ideal for the EV and automotive industry, but suitable for applications across multiple industries, Alluralite™ combines the high strength of composite materials with an aesthetic finish suitable for use in exterior visible automotive applications, all while remaining incredibly lightweight compared to metal counterparts. These composite materials exhibit a minimal expansion characteristic and provide a suitable surface for adhesion and surface quality.

FLAMEVEX™
Flame Resistant Lightweight Composites

Flame Performance
Strength & Stiffness
Light Weighting
Dimensional Stability
Electrical Insulation

Flamevex™ materials are ideal for applications which require high fire resistance and high mechanical performance while also reducing weight and maintaining dimensional stability. Flamevex™ materials can be used for parts that must meet a range of fire resistance levels, from UL 94 V0 and 5VA to the stringent Chinese Standard G/BT 31467.3 tests (aka China Bonfire testing).

IDI's Flamevex™ series is especially well-suited for applications in the electric vehicle and new energy vehicle market. Ideal for applications such as an EV battery cover, Flamevex™ materials are highly flame-resistant SMCs with high mechanical properties and a low level of shrinkage, offering the ability to mold complex parts with dimensional stability for a lightweight solution.

IDI World Headquarters

IDI Composites International (IDI) is the premier global custom formulator and manufacturer of thermoset molding composites and compounds for OEMs, Tier 1s and molders. The company provides customized polyester/vinyl ester-based bulk molding compounds (BMC), sheet molding compounds (SMC), and a new generation of Structural Thermoset Composites (STC®) that are manufactured for the most demanding applications.

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GLOBAL LOCATIONS
GLOBAL SOLUTIONS

idicomposites.com

North America	Europe	United Kingdom	Asia/Pacific	Caribbean	Mexico
Noblesville, IN	Vineuil, France	Oldbury, UK	Shanghai, China	Aguirre, Puerto Rico	Mexico City, Mexico