

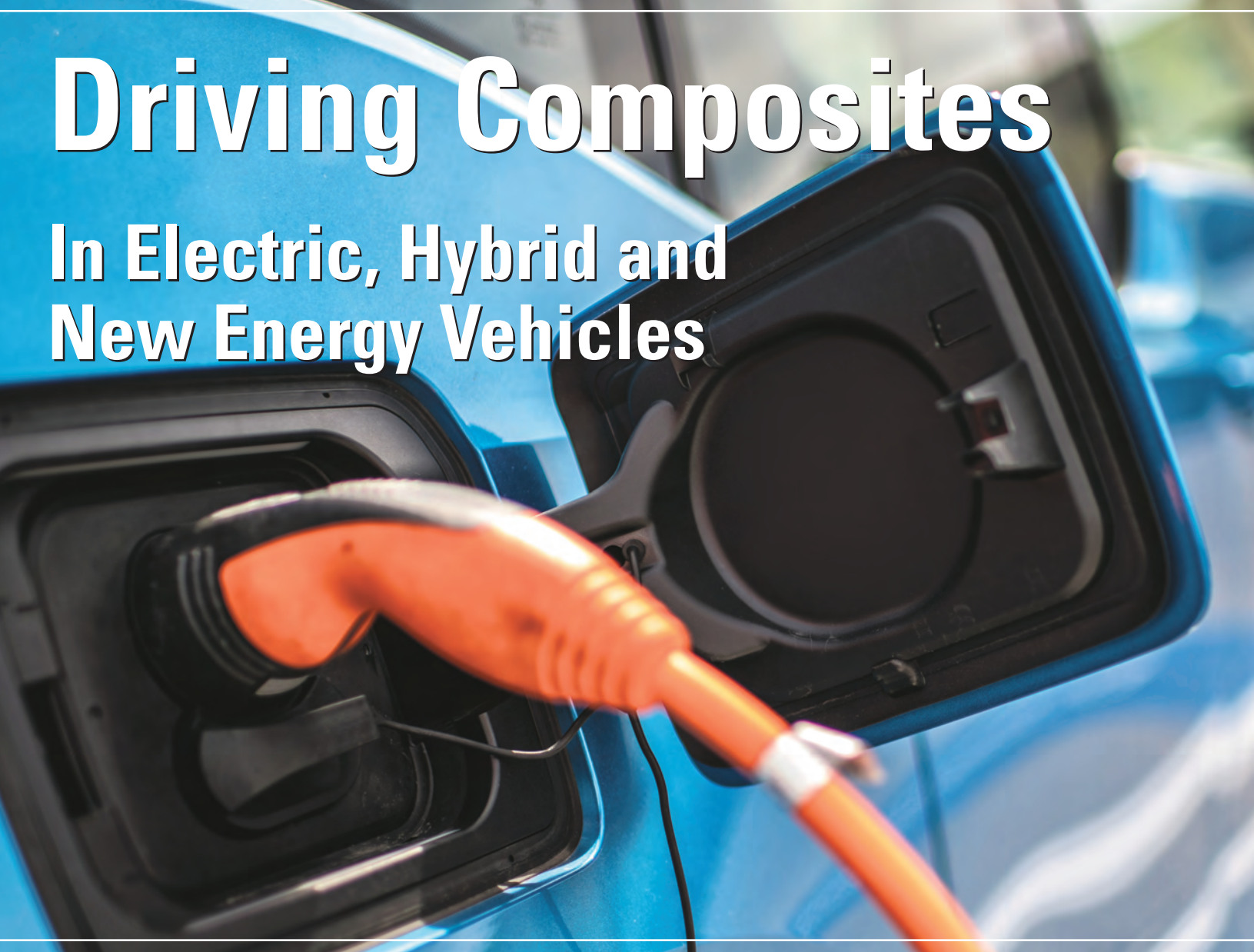


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# Driving Composites

## In Electric, Hybrid and New Energy Vehicles



# Composite Solutions For Electric, Hybrid and New Energy Vehicles

## SMC for EV and New Energy Vehicle Applications

The number of electric vehicles on the roads is skyrocketing. With the cost of ownership coming down, emission standards becoming more severe, and driving range always increasing, sales of electric vehicles – and investments in new energy technologies such as hydrogen – are expected to double in 2020, reaching 4 million new cars globally.

Electric and new energy vehicles come with unique challenges for designers. Take for example an EV's battery enclosure. Due to the level of power required for the electrical powertrain, the size of the pack can be over 2 square meters with 25 to 30 centimeters of depth. Due to its size, proximity to the source of energy, and the need for a perfect seal and complex shape, designers must find a material solution which can perform to the highest fire resistance standards, offers high mechanical performance, and simultaneously reduce weight.

That's why IDI Composites International has developed FLAMEVEX™: a series of highly flame-resistant SMCs with high mechanical properties and a low level of shrinkage, offering the ability to mold complex parts with dimensional stability from a lightweight solution.

### FLAMEVEX™ SMCs provide the ideal solution for:

1. Flame Performance
2. Strength
3. Light weighting
4. Dimensional stability

While steel or aluminum are often used for their high structural performance and high temperature resistance, they remain an expensive solution due to the complex shape and the need for anticorrosion treatment. Plus, steel and even aluminum add significant weight which can be a serious limitation for electric and new energy vehicles.

More and more OEMs are replacing steel and aluminum battery enclosures with IDI's FLAMEVEX™ composites. Doing so, they can eliminate up to 35% of the housing weight and realize cost reductions of up to 65% by reducing secondary operations.



EV Battery Cover

## Flame Performance

FLAMEVEX™ materials are not traditional thermoset composites. Other solutions claim high levels of fire resistance by increasing the thickness of the part, but this adds unnecessary weight. With FLAMEVEX™, IDI is advancing SMC to previously unknown fire performance levels without compromising thickness, strength, or moldability.

Working with our OEM and Tier 1 partners, IDI's FLAMEVEX™ materials have been used on battery packs which have passed the stringent Chinese Standard GB/T 31467.3 (aka China Bonfire test) tests at thicknesses as low as 2.5 mm (with lower thicknesses in development).

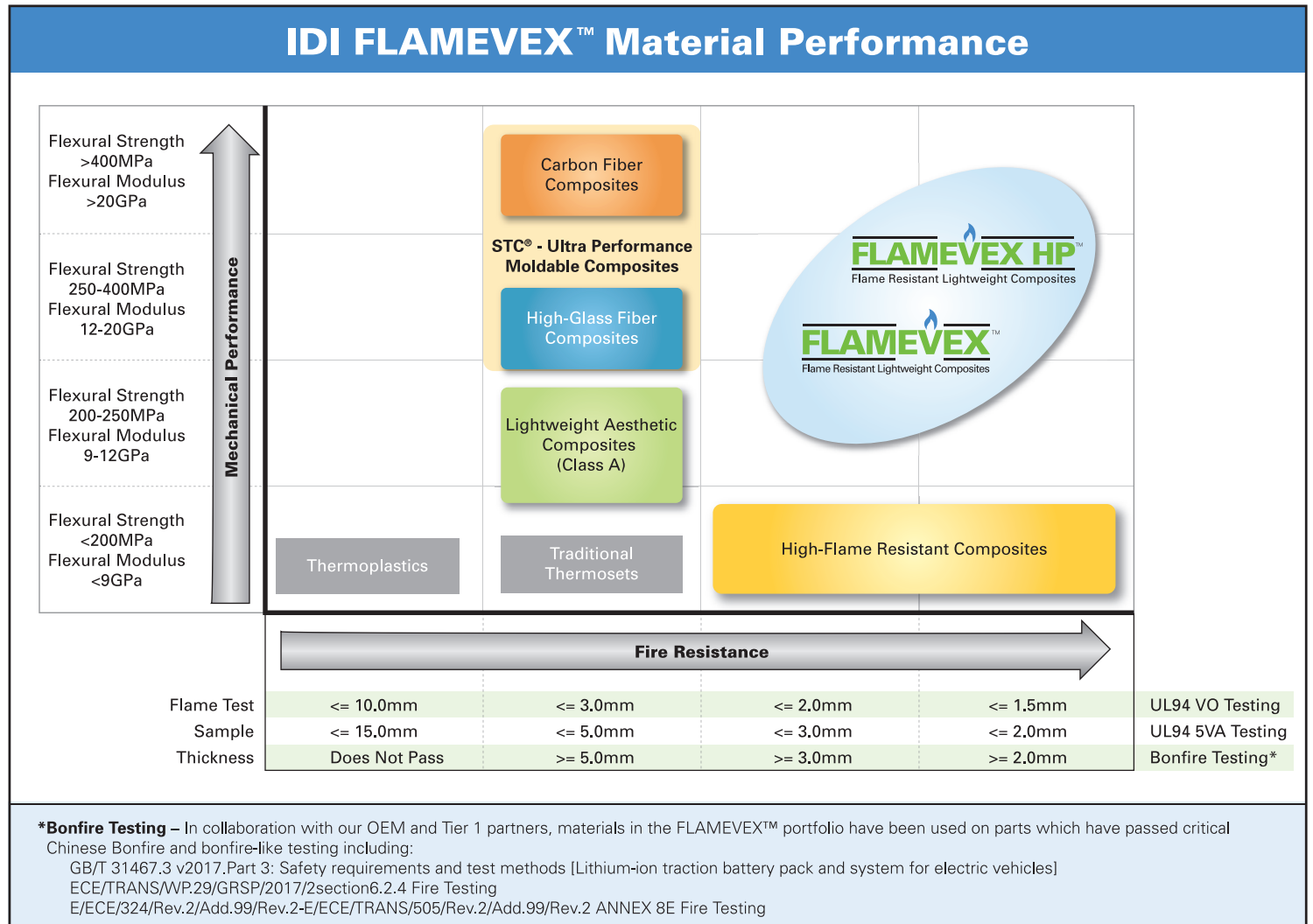
IDI's FLAMEVEX™ materials offer a range of flame performance levels that can be tailored to an OEM's requirements. From UL 94 V0 and 5VA to the Bonfire testing levels, we work with customers to identify the flame performance level best suited for their application.

## IDI has the Experience & Expertise

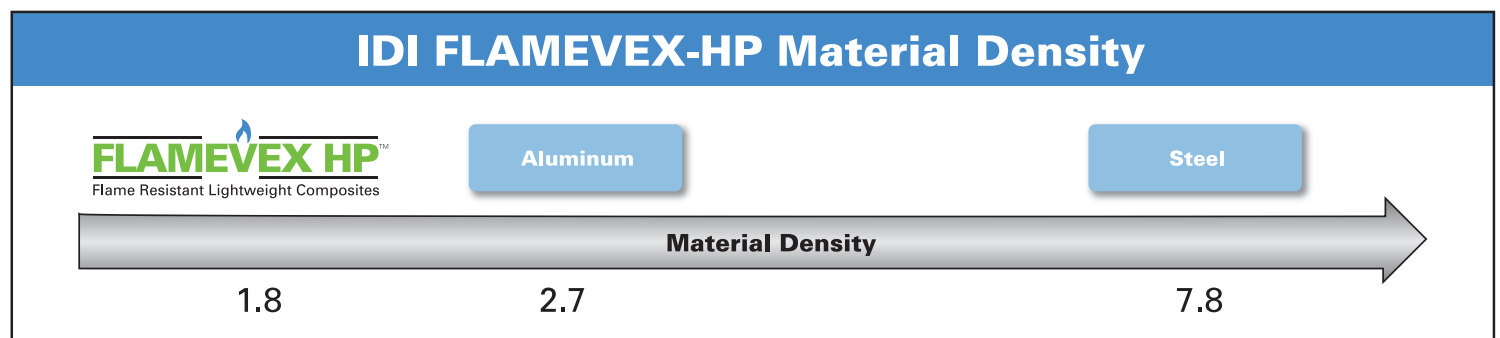
With a global portfolio of materials, IDI has collaborated with numerous OEMs and offers the experience and expertise needed in order to optimize the material performance and processability required for EV applications such as the battery cover.

The landscape of requirements is always changing. With materials in mass production, we have worked with OEMs and Tier 1s to meet evolving flame performance targets. Our materials are in mass production with OEMs and Tier 1s, proving consistent results.

## Fire Resistance + Strength: Filling the Void

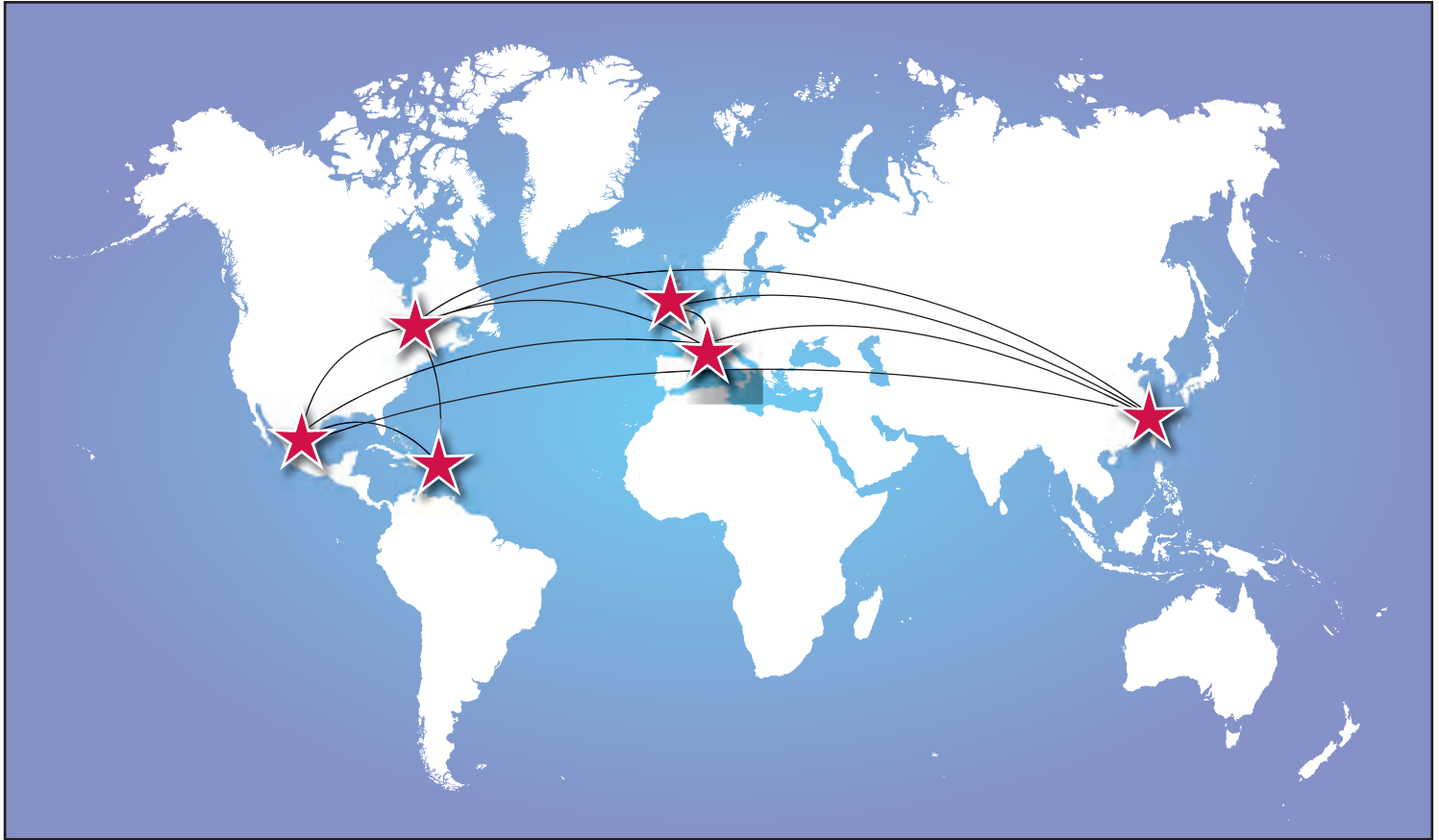


With FLAMEVEX<sup>TM</sup> IDI offers a material solution which combines fire resistance with high mechanical performance. Until now, designers have had two options: choose a structural thermoset composite for strength and gain fire resistance by adding thickness or choose a high-flame resistant composite with mid-range mechanical properties. FLAMEVEX<sup>TM</sup> are a series of materials which can be used for structural and semi-structural applications without compromising on flame retardancy or thickness.



The need to extend the range of electric and new energy vehicles means more and more need for lightweight solutions. At 1.8 density, FLAMEVEX<sup>TM</sup> materials are far lighter than metal alternatives.

Worldwide and strategically located manufacturing facilities enable us to transfer material innovation and product technology to support global OEMs.



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Noblesville, Indiana USA



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**Technology Center**  
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3/2020



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