The Art And Science Of Thermoset Composites

IDI Composites® International

Ideas For Meaningful Results.

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Global Collaboration to Drive Material Technology Transfer

North America

China

FORTIUM™

High Glass Fiber Composites

Case Study: Global Technology Transfer

Replacing Metals With Composites

Pickup truck boxes have traditionally been made from steel or aluminum because of their high load bearing capabilities, but with that also came performance and appearance issues. OEMs, engineers and designers in North America began seeking solutions for a lighter weight and more durable material solution. Large, highly visible, and with relentless UV exposure, truck boxes presented a challenge for design engineers that composites, especially sheet molding compounds (SMC), are uniquely suited for. IDI Composites International (IDI) began developing a material that was strong, light weight, UV stable, and would maintain a high-grade appearance after heavy use.

Composite Truck Box

After extensive collaboration with OEMs and designers, IDI North America developed a new material for its Fortium line of high-glass content SMCs. This new formulation also offered high UV stability and a new Scratch Black technology. With Scratch Black, the material's color pigmentation permeates the entire part, resulting in scratches that are difficult to detect even under the harshest conditions.

The new Fortium material was chosen for a new, innovative truck box model in the North American pickup truck market.

Growing Demand Worldwide

Meanwhile, pickup trucks were gaining interest across the globe, especially in China. Automotive News China reported pickup truck deliveries in China were 414,000 in 2020, up from 304,000 in 2015. What's more, the China Association of Automobile Manufacturers forecasted annual pickup sales to double in five years, reaching 840,000 deliveries by 2025.

Looking to the model of North American auto makers, Chinese OEMs identified the composites truck box as a best practice to implement. IDI China became the go-to partner for this application and responded quickly with the Fortium material that had already been proven in the North American market.

Collaborative Technology Transfer Across Global Facilities

With six wholly-owned manufacturing facilities across the world, IDI is the only global manufacturer of SMC and has a well-tested technology transfer process for localizing materials for global applications. The process is centered around global collaboration with regional optimization. As it had in the past, the technology transfer process resulted in seamlessly bringing Fortium to the Chinese market. Recently, a new pickup truck model was launched with a Fortium pickup box.

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The Technology Transfer Process

Phase One: Product Presentation

When a need is identified by a customer, IDI quickly responds to present potential material solutions in the product portfolio that can be transferred, including material properties and applications. In the case of bringing Fortium to China, IDI presented the following information within one week of the initial discussion with the OEM:

- Fortium material overview and application study
- Material data sheet(s)
- Sample plaques to demonstrate the aspect after adding texture and Scratch Black technology

The result: The OEM said, "This is what we need!"

Phase Two: Technology Transfer

IDI's experience transferring material technology to new regions of the world informed the process used for the Fortium material and included the following steps:

1. Understand the customer's requirements
2. Transfer the base formulation
3. Identify the critical components of the material that must be maintained in order to meet the customer's requirements and manufacturing excellence
   - For critical components, IDI worked closely with its suppliers to localize the technology in China if it was not already available.
   - For less critical components IDI worked to qualify equivalent local sources.
4. Cross-test to validate that the localized solution can meet the customer's expectation:
   - Samples were produced by IDI North America, molded on textured parts in our supplier's technical center, and shipped to China. These samples were then compared to the localized material for direct evaluation.
   - Once satisfied, the localized material proceeded though full material approval to the end OEM specifications.
   - The localized solution was then validated a second time by comparing it to the North American sample material in the customer's molds.

Phase Three: Ramp Up and On-Going Support

Once a material is successfully transferred from one region of the world to another, the support does not stop there. IDI is committed to supporting global customers during the ramp up phase of their production. As IDI transferred the Fortium material to China and it was adopted for a pickup truck box program, there was continuous collaboration to hone the molding process and address questions.

IDI's Keys to Successful Technology Transfer

1. Wholly-Owned Manufacturing Facilities
IDI is able to control the manufacturing processes and material formulation in all six locations. Manufacturing is never outsourced or contract-based.

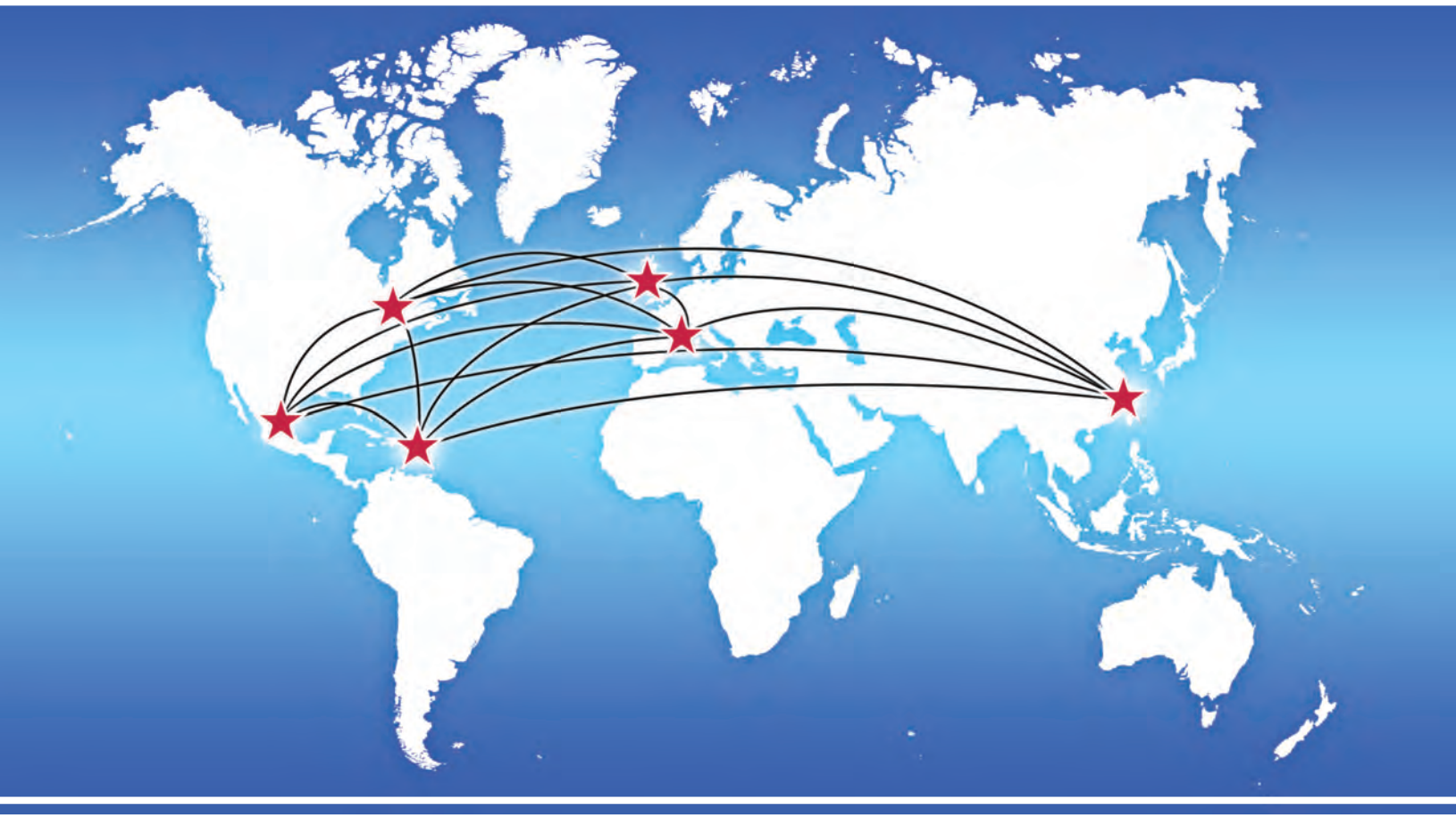
2. Strategic Supplier Relationships
IDI has developed strong relationships with raw material suppliers in each region of the world.

3. Response Time
IDI's teams in each region of the world are empowered to respond quickly to market needs and are closely connected to one another, enabling information to flow efficiently and without roadblocks. Initial information to transfer Fortium to the Chinese market was provided within days.

4. Collaboration at our Core
Collaboration is one of IDI's core tenets. The technology transfer process is collaborative at every step, even after the product is launched.

Global Technology Transfer

Worldwide, strategically located and wholly-owned manufacturing facilities enable IDI Composites International to transfer material innovation and product technology to support global OEMs, Tier 1s and molders.



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The 3i Composites Technology Center is the research and development division of IDI Composites International, with locations in both North America and Europe. Due to increased demand from OEMs, Tier 1s and molders for stronger, lower density and higher performing materials, the 3i Technology Center was founded to meet these industry-wide demands.

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GLOBAL LOCATIONS GLOBAL SOLUTIONS

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