MITO and Vartega Team Up to Create Unique Graphene-enhance Carbon Fiber Composite

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MITO Material Solutions has teamed up with Vartega, developer of recycled carbon-fiber composites, on a new composite material project. The two companies incorporated MITO's graphene-based materials into carbon fiber reinforced thermoplastics.

Vartega incorporated MITO's liquefied graphene into their Fenix fiber EasyFeed bundle products – now offered as Fenix Fiber+, which supplies excellent performance with recycled materials.

Because carbon fiber manufacturing is an energy intensive process, waste diversion is a big factor in improving its sustainability. Carbon fiber is typically made from polyacrylonitrile (PAN) precursor fiber that has been stretched and heated at high temperatures to first oxidize and then carbonize the material. These high temperatures coupled with PAN fibers traditionally coming from fossil fuels, means that carbon fiber has a considerable carbon footprint. By diverting waste carbon fibers from landfill, Vartega resets the material's embodied energy to zero. Vartega's recycled carbon fiber is 95% less energy intensive than virgin carbon fiber.

MITO's "liquefied graphene" is an aqueous graphene-based solution with functionalized surface chemistry on top of the graphene that allows it to be suspended into water which provides superior dispersion and the ability to integrate into different chemistries that are more water- based such as coatings, emulsions, and sizing chemistries such as Vartega's Fenix Fiber+.

Vartega's primary customers are thermoplastic compounders. These are the companies developing the materials and the formulations for their customers, which are injection molders, through to thermoplastic compounding, and the injection welders who are making

the parts for injection molders and OEMs.

The MITO team explored multiple surface chemistries to ensure that the carbon fiber and graphene additive would bond and work together. In the end, integrating the graphene additive directly into the sizing solution that was already being used was the best approach. MITO's team sent samples of its material to Vartega to test in their system. The first trial yielded fantastic results. Third party testing showed a 50% improvement in elongation and a 37% improvement in impact toughness.

Fenix Fiber+ addresses the needs of the composites industry for thermoplastic applications. Its easy-feed bundle format makes it very easy to use as a drop-in replacement for virgin fiber.

Read the original article on Graphene-Info.