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FastRTM Project Successfully Demonstrates Rapid Manufacturing of Complex, Net Shape, Structural Composites Using Hexion Fast-Cure Epoxy System

COLUMBUS, Ohio – March 6, 2018 – A unique, automated production platform developed by a French industry consortium – and utilizing an epoxy resin system from Hexion Inc. (“Hexion” or the “Company”) – has demonstrated the feasibility of manufacturing large, net-shape composite parts at industrial scale. It offers a model for automotive manufacturers seeking to integrate weight-saving structural composites into their mass production vehicles.

The fully automated manufacturing platform, developed by the French FastRTM consortium led by the Institut de Recherche Technologique – Matériaux, Métallurgie et Procedes (IRT M2P), consists of a press, modular tooling, high pressure injection machines, temperature-controlled flow tube technology, two 6-axis robots, online monitoring and control, and a fast-cure resin system from Hexion. Together, the equipment and materials enable an innovative process called compression resin transfer molding (C-RTM).

In this two-step process, Hexion’s resin system – EPIKOTE™ Resin TRAC 06170 / EPIKURE™ Curing Agent TRAC 06170 / HELOXY Additive TRAC 06805 – is injected into a mold with a preform, a preliminary fiber shape, when the press is slightly open, allowing for partial impregnation. Then, a compression stroke presses the resin through the preform for complete impregnation. This allows for very fast resin injection and curing – from 15 seconds to one minute – and less than two-minute part-to-part production.

“Hexion is proud of the contribution we have made to the success of the FastRTM project, which closed in December,” says Ann Frederix, Senior Vice President, Epoxy Specialties. “In its last year, the consortium achieved some major milestones, including a final, successful mass production session.”

This final manufacturing session demonstrated:

- Automated production of 100 large (1m²), complex, net shape glass fiber reinforced plastic structural parts in two-minute part-to-part cycle times
- Curing times as short as one minute per part
- No need for machining or trimming post-production

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• Part perforation prepared at the preforming step and maintained during injection step (no need to drill holes for assembly following part production)
• Simulated “start and stop” with no adverse reactions in the process
• Consistently high-quality parts with excellent mechanical performance and uniform impregnation (no fiber distortion, dry spots or unfilled resin at ends)

The epoxy thermoset composite parts made with the Hexion resin system can also be recycled or recovered at the end of their useful life via mechanical recycling, thermal recycling, and chemical recycling.

The FastRTM project was led by the IRT M2P, a research center which brings together industrial and public research entities to accelerate innovation and develop key technologies, based on public-private cointvestment and partnership. The FastRTM consortium members included: Renault s.a.s., the Faurecia Group, the Hutchinson Group, Hexion, the Chomarat Group, Arkema Inc., Composite Integrity by Institut de Soudure Group, Pinette Emidecau Industries (PEI), Compose Tools, and the Societe d’Industrie et de Service Electrique (SISE).

Hexion will continue to collaborate with industrial leaders on automating, accelerating and improving the production of preforms with Hexion binder systems, through another French-based consortium, the FastFORM project.

The complex demonstrator part produced as part of the FastRTM project, along with a real-life automotive inner deck lid demonstrator, will be on display in Hall 6, Booth G52 at the JEC show in Paris, March 6 to 8.

About the Company

Based in Columbus, Ohio, Hexion Inc. is a global leader in thermoset resins. Hexion Inc. serves the global wood and industrial markets through a broad range of thermoset technologies, specialty products and technical support for customers in a diverse range of applications and industries. Hexion Inc. is controlled by investment funds affiliated with Apollo Global Management, LLC. Additional information about Hexion Inc. and its products is available at www.hexion.com.

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