News Release

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Tepex dynalite from LANXESS for innovative lightweight design project

- **BMBF project FuPro receives Materialica Award**
- **Fiber composite modular system with Tepex organic sheets**

Cologne – The endless fiber-reinforced thermoplastic composite material Tepex dynalite from LANXESS has made a major contribution to the success of the FuPro project of the Federal Ministry of Education and Research (BMBF). At the international trade fair for mobility 4.0 “eMove360° Europe” in Munich, Germany, the project received the Gold Materialica Award in the “Surface & Technology” category. The abbreviation FuPro stands for “Design and process development for functionalized multi-component structures with complex hollow profiles”.

Seat back rest with structural component made from Tepex dynalite

In the research project’s innovative fiber composite modular system, organic sheets, fiber composite hollow sections and injection molding compounds were combined to form highly integrative multi-component structures. Using the case of a belt integral backrest the high application potential of the technology was demonstrated. The organic sheets used here are made from the semi-finished product Tepex dynalite 102-RG600 based on roving glass fabric and a polyamide 6 matrix. The LANXESS subsidiary Bond-Laminates in Brilon, Germany, manufactures these very lightweight yet highly resilient fiber composite semi-finished products.

The Materialica Award was already presented in 2014 and 2017 for products in which the innovation leader Tepex was used. In both cases, the corresponding components are now being employed in series production.

The FuPro project

Within FuPro, an interdisciplinary team from industry and science developed a novel technology that integrates continuous fiber composite hollow profiles into hybrid organic sheet metal injection molding structures. The project involved the Institute for Lightweight Engineering and Polymer Technology (ILK) at Dresden Technical University and Brose Fahrzeugteile GmbH & Co. KG as well as the companies Arburg, AUMO, DITF Denkendorf, Elring Klinger, GK Concept, gwk, Schmalz, PHP Fibers and Werkzeugbau Siegfried Hofmann.

The objective of the FuPro research project was to develop and analyze a novel, large-scale production process for multi-component structures made from complex fiber-reinforced plastics (FRP) hollow profiles, organic sheets and injection molding compounds. The aim is to achieve a level of process, structural and functional integration that goes far beyond classic design methods and thus to achieve significant weight reductions in vehicle structures.

Lightweight design as a key technology

Lightweight design is a key technology that is an essential prerequisite for resource-efficient mobility. Highly integrative multi-component engineering methods – i.e. a combination of torsion- and flexurally rigid hollow profiles, flat construction elements and complex node structures – are particularly promising for the realization of highly loadable lightweight structures. In addition, the use of FRP allows the individual components to be optimized according to the force flow. Thermoplastic FRP are predestined for mass production applications in the automotive industry, since cycle times of less than one minute are usually achieved in component production.

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specialty chemicals and plastics. LANXESS is listed in the leading sustainability indices Dow Jones Sustainability Index (DJSI World and Europe) and FTSE4Good.

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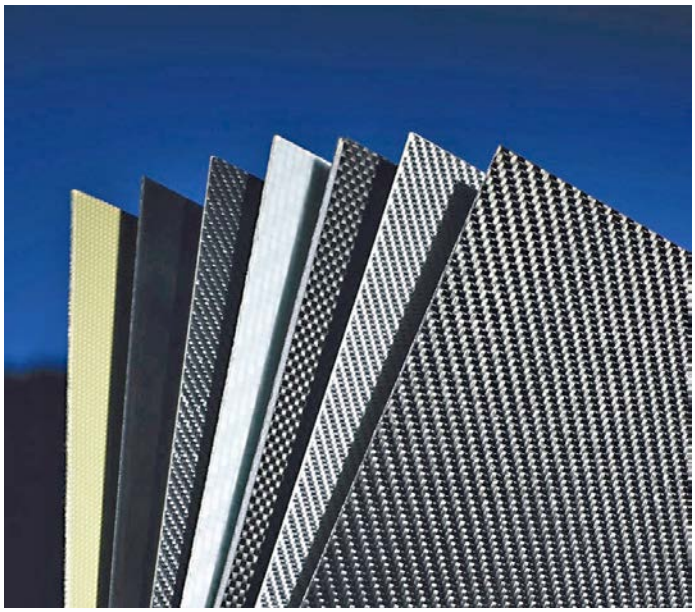
Image



Semi-finished products of the continuous fiber-reinforced thermoplastic composites of the Tepex brand from LANXESS are ideal for structural lightweight design. As Tepex dynalite 102-RG600 they were also employed in the award-winning BMBF project FuPro. Photo: LANXESS AG

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