Press Release

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On the path to industrialization of the pultrusion process

Fiber-reinforced chassis for light commercial vehicles

- **Sustainable solution with polyurethane resin**
- **High productivity through continuous production**
- **Simple assembly, superior crash performance**

The manufacture of vehicle parts made of composite materials instead of steel is a lightweight and therefore sustainable solution that reduces fuel consumption and CO_2 emissions. This also applies to commercial vehicles such as trucks, which are used heavily on a daily basis. Carbon Truck & Trailer GmbH (CarbonTT) designs truck chassis from carbon fiber-reinforced composites and has the know-how and various IP rights to manufacture and assemble them.

The lightweight components also enable commercial vehicle manufacturers to meet the increasingly rigorous European Union limit values," explains Gerret Kalkoffen, Chairman of the Board of CarbonTT. "Logistics companies can use the vehicle to transport larger loads and thus operate more efficiently. In electric mobility, the lightweight chassis compensates for the weight of the battery and at the same time features simpler assembly and superior crash performance."

Continuous production from polyurethane resin

At K 2019 plastics trade fair from October 16 to 23, Covestro will showcase such a composite component. It can be produced continuously by pultrusion with a Baydur® PUL polyurethane (PU) matrix system. "With this system, we are pushing boundaries by providing a number of advantages over conventional materials," says Benedikt Kilian, Project Manager for Process Development in the Polyurethanes segment at Covestro. "The material properties of the end part also meet stringent OEM specifications while enabling a lighter structure. Within

seconds, the Baydur® PUL low-viscosity system penetrates millions of carbon fibers perfectly and enables CarbonTT to achieve significant productivity gains."

The profile design of the composite part was developed and optimized by CarbonTT to meet the mechanical requirements, achieve maximum weight reduction and minimize costs. Covestro supports CarbonTT with its Baydur® PUL system and with its expertise in optimal pultrusion processing. Pultrusion runs have been successfully performed to demonstrate the benefits of the PU system and are being expanded.

The pultrusion process is a continuous process that can be automated to a high degree and is currently in the process of achieving industrial application. This makes it possible to produce differentiated and complex composite parts extremely efficiently, especially if a suitable polyurethane resin is used.

Beneficial process properties
Compared with other resin systems used for pultrusion, Baydur® PUL has superior component and processing qualities. The superior mechanical properties of parts with a PU matrix enable customers to develop thin profiles and, where possible, use less complex fiber reinforcement. The viscosity of the system is also very low with high reactivity, which allows customers to produce very efficiently at high throughput rates.

About Covestro:
With 2018 sales of EUR 14.6 billion, Covestro is among the world's largest polymer companies. Business activities are focused on the manufacture of high-tech polymer materials and the development of innovative solutions for products used in many areas of daily life. The main segments served are the automotive, construction, wood processing and furniture, and electrical and electronics industries. Other sectors include sports and leisure, cosmetics, health and the chemical industry itself. Covestro has 30 production sites worldwide and employs approximately 16,800 people (calculated as full-time equivalents) at the end of 2018.

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