Press Release

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Communications

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Turbine installation latest milestone in Covestro's mission to commercialize polyurethane infusion resin

First wind turbines with polyurethanes from Covestro

Covestro, a global leading supplier of high performance polymer materials, has put into operation its first wind turbines with wind blades made using polyurethane infusion resin. The successful installation marks the latest milestone in Covestro's mission to commercialize polyurethane infusion resin as a key material that will help to shape the new generation of longer, stronger wind blades demanded by the wind power industry.

The spar cap and shear web of the 55.2 meter-long blades for the 2MW wind turbine were fabricated with polyurethane infusion resin from Covestro. The model is WB113-PU. This turbine was installed recently at a wind farm in Tieling, Liaoning Province, Northeast China, operated by Liaoning Datang International New Energy Co., Ltd.

Covestro developed this polyurethane infusion resin solution for wind blade manufacturing to meet the growing demand for taller, longer wind blade designs that can stand up to the stresses that taller turbines can face. The development process involved the participation of Covestro R&D teams around the world and is enabled by close collaboration along the value chain including blade manufacturers, turbine manufacturers, glass fiber producers, machine suppliers and blade designers.

Julien Guiu, Vice President Industrial Marketing APAC, Polyurethanes Business Unit, Covestro, said, "The successful installation of the pilot turbine in Northeast China is recognition of the strengths of our polyurethane infusion resin and demonstrates that it is ready for use in operational wind blades. We hope that

this gives a strong signal to our industry partners to manufacture and install longer, stronger wind blades."

New turbine blades must undergo extensive independent testing to obtain all relevant certificates. To meet the demand for wind blades that can operate for long periods in harsh conditions, Covestro thoroughly tested the performance of the wind blades used in the turbines, and they successfully passed the static test and fatigue tests both edgewise and flapwise conducted by China General Certification.

Wind turbine rotor blades are typically made out of fiberglass reinforced resin through vacuum infusion technology. The successful use of polyurethane composite for manufacturing large-scale wind turbine rotor blades suggests that the polyurethane resin itself features superior mechanical properties and anti-fatigue performance. There are also benefits to production processes in the wind blade factory, with a faster curing process and better processing properties that can deliver higher levels of productivity.

In addition to the installation of its own commissioned wind blades in Northeast China, Covestro also partnered with one of China's leading wind turbine manufacturers to develop another 2.2MW turbine with 59.5 meter long blades, whose spar cap, shear web and blade root were fabricated with Covestro's polyurethane infusion resin. The turbine has been installed in South Central China.

Julien Guiu notes, "With two wind turbines now installed at wind farms across China, we are able to test the operational feasibility and stability of the wind blades in different wind conditions. This will provide valuable data that can inform new blade designs, and take us to the next stage in contributing to the advancement of renewable wind energy."

About Covestro:
With 2017 sales of EUR 14.1 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 16,200 people (calculated as full-time equivalents) at the end of 2017.

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