

TPI Collaborates with WindSTAR to Leverage Machine Learning and Create a Digital Twin of the Wind Blade Manufacturing Process

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SCOTTSDALE, Ariz., Jan. 18, 2023 (GLOBE NEWSWIRE) -- TPI Composites, Inc., (TPI) (Nasdaq: TPIC), announced today that it has collaborated with WindSTAR, a National Science Foundation (NSF) funded Industry-University Cooperative Research Center, to design a composite manufacturing process based on a digital twin approach as released today in the [2022 WindSTAR Annual Report](#). The project leveraged machine learning (ML) using big data to serve as the digital twin of the blade manufacturing process. This ML framework provides real-time feedback during fabrication, results in reduced defects, and enables more efficient production of wind blades versus the current high computational costs of the physics-based models.

Stephen Nolet, Senior Director of Innovation & Technology for TPI, worked alongside student researchers and faculty from the University of Texas at Dallas, as well as technical experts from Olin Epoxy and Westlake Epoxy to develop a framework for the digital twin of the vacuum assisted resin infusion molding (VARIM) process. By applying an ML approach, the team achieved predictive accuracy of more than 95% with 100-times faster computation than the physics-based simulations.

Mr. Nolet states, "The primary value of utilizing a ML framework is leveraging historical results and data to inform current manufacturing at a pace that significantly reduces defects from occurring in a real-time production environment. Additionally, this technology allows users to create alternative manufacturing scenarios to increase production velocity in manufacturing operations while simultaneously reducing infusion related problems."

In the coming year, the WindSTAR research team plans to focus on scaling the technology to larger components with greater manufacturing complexity. The work will apply tools taken from Artificial Intelligence (AI) to find patterns in historical data and predict outcomes on full-scale wind blade components including blade shells.

TPI is an inaugural member of the WindSTAR I/UCRC Industrial Advisory Board and is looking forward to contributing to more exciting projects as it enters its ninth year of partnership together in 2023. The WindSTAR Center is operated jointly by the University of Massachusetts Lowell and the University of Texas Dallas and supported by 18 Industry members including TPI.

About TPI Composites, Inc.

TPI Composites, Inc. is a global company focused on innovative and sustainable solutions to decarbonize and electrify the world. TPI delivers high-quality, cost-effective composite solutions through long-term relationships with leading OEMs in the wind and transportation markets. TPI is headquartered in Scottsdale, Arizona and operates factories in the U.S., Mexico, Türkiye and India. TPI operates additional engineering development

centers in Denmark and Germany and global service training centers in the U.S. and Spain.

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Source: TPI Composites, Inc.