

Patent Developers Use AZORE® CFD to Design a Prevention System for Train Derailment

LIVONIA, MICHIGAN, UNITED STATES, December 6, 2021 /EINPresswire.com/ -- AZORE® CFD, a software tool used for simulating fluid flow, recently played a key role in the design and development of several new patents issued by the United States Patent and Trademark Office (USPTO). The patents demonstrate the benefits of numerical modeling in cases where multiple scenarios must be considered and extensive physical testing is difficult.

On February 16, 2021, the USPTO issued U.S. Patent Nos. 10,921,343 and 10,921,344 entitled "Systems and Methods for Converting Wind Pressure to Wind Velocity" and "Pressure Sensing Probe." On March 2, 2021 the USPTO issued U.S. Patent No. 10,935,564 entitled "Systems and Methods for Determining Wind Velocity."

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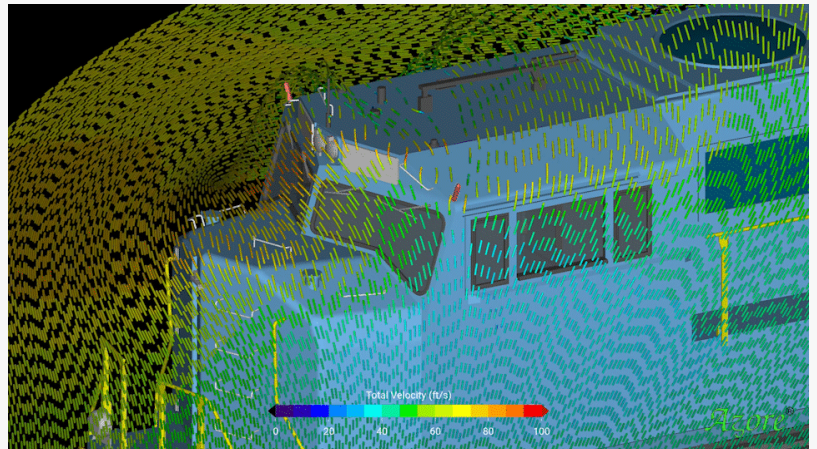
Paul Harris, Ph. D.

The patents were developed for use by a Class I North American Railroad and feature a system of probes that are mounted to a locomotive. The probes measure and communicate wind data to train operators, who can then make real-time adjustments that prevent train derailment. The patent authors exclusively used [AZORE CFD](#) for developing the new technology, performing simulations in the software to verify and fine-tune the probe's accuracy

and optimize its positioning on the vehicle.

“Azore was an asset in the development of the probe system, and we used it in multiple phases of the design process,” says Paul Harris, Ph. D., one of the patent authors. “The reason we chose Azore for this project is because it gives quick, accurate results at a lower price.”

AZORE CFD is a powerful diagnostic tool that can be used to simulate any number of fluid flow or



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heat transfer scenarios. In this case, the model was large, with over 60 million computational cells, so AZORE's affordable High Performance Computing (HPC) significantly reduced the simulation run time. This allowed the engineers to factor many different wind directions, wind speeds and train speeds into the design of the final product. This sort of complete information would be impossible to gain from physical testing protocols alone.

Engineers often use Computational Fluid Dynamics (CFD) software when designing new products or equipment. Because of the accuracy of software like AZORE CFD in simulating fluid behavior, design features can be tested in a virtual environment even before a prototype is made. It can also be used to fine-tune an existing design or system prior to start-up or implementation. CFD has many practical applications in industry, including HVAC, aerodynamics, duct/pipe flow, thermal management and chemical reactions.

About AZORE® CFD

AZORE CFD is a practical, affordable software tool that CFD analysts can trust. For the past 14 years, AZORE has provided accurate flow simulations for a wide range of industries, from manufacturing to energy. It is known for its ease of use, advanced polyhedral solver, and flexible licensing plans that meet the needs of today's organizations.

AZORE CFD is currently offering [free 30-day trials](#) of both its Basic and Advanced packages, which customers can download at www.azorecf.com/trynow

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