CASE STUDY

AUTOTURN®

Keep Those Trucks Rolling Down The Road

Special Transport vehicles need AutoTURN

By Chris Johns, Transoft Solutions

A reliable and trusted software solution is crucial for confirming that specialized trucks can navigate difficult site access road geometry on any project. Simulating a vehicles' path provides immediate feedback to an operator, which might illustrate the need to widen roadways in sharp radius curves. Visualization might also identify potential problems such as conflicts with road geometry, signage, structures, trees, cut slopes, and utilities. This important information in the operators' hands helps reduce the risks of injuries, damaged equipment, delayed delivery time, and increased costs. Vestas Wind Systems, the world's leading wind turbine manufacturer, collaborated with Transoft Solutions to analyze vehicle paths of specialized transport truck and trailer configurations.

Transoft Solutions' flagship software package, AutoTURN, has been an industry-leading application for swept path analysis for over 20 years. Within the vehicle libraries of AutoTURN are 6 specialized vehicle configurations allowing the creation and simulation of independent rear-steering systems critical to the maneuvers Vestas required in their projects. These include a 19-axle heavy hauler trailer, a Wind tower trailer (or Schnabel trailer), a Wind blade trailer, a Beam transporter I and II and a Booster trailer. AutoTURN allowed engineers from Transoft and Vestas to evaluate the swept path envelopes of both the vehicle body and the cargo on specific transportation routes, potentially preventing damage to the load or surrounding structures.

In February 2012 a series of driving tests were performed in a Vestas works yard. A driving course was built to replicate the critical roadway geometry of the planned access road for the complex terrain required in the project. GPS coordinates from key points on the tractor, trailer and loaded blade were recorded. Using AutoTURN and AutoCAD software, the swept path of the simulated vehicle matched the swept path of the field test vehicle accurately, with variances consistently less than 30 centimeters.

"AutoTURN was born from the Master's thesis of our CEO, Milton Carrasco," says Steven Chan, Transoft Solutions' Senior Product Engineer. "From the very beginning, our focus has been on ensuring that our tool accurately simulates vehicle paths. The result from the Wind Transport field test gives us confidence to stand by our product."

Three hundred and sixty degree turns and figure-eight maneuvers were also performed during the field test to determine the mechanical limitations of the vehicle. These properties were entered into the AutoTURN vehicle model to ensure that simulations were realistic and would not exceed the mechanical limits of the vehicle.

Transportation engineers have relied on AutoTURN for decades to accurately visualize turning radii, transition curves, super elevation and lateral friction in all types of roadway, highway and site design projects. Because AutoTURN is based on the standards (e.g. FGSV, RVS, VEGVESEN) there is virtually no guesswork when it comes to the analysis. AutoTURN ensures the standard for safety and reliability that all engineers require is met. ■

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