

## Case Study

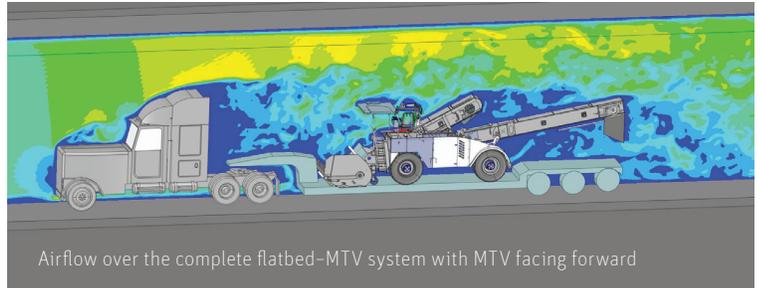


**ANSYS**® + Astec

*"I was surprised at how well the results of Discovery Live matched up with those from ANSYS Fluent. We have seen significant time savings due to Discovery Live."*

**Andrew Hobbs**  
Chief CFD/DEM Engineer  
Astec, Inc.

## Discovery Live Paves the Way for Rapid Simulation Results

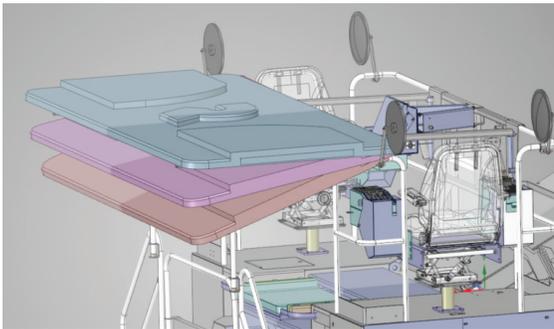


Airflow over the complete flatbed-MTV system with MTV facing forward

Roadtec, Inc. manufactures material transfer vehicles (MTVs) that enable nonstop, noncontact road paving. The MTVs are delivered to job sites on flatbed trucks that can reach speeds of 70 mph. Depending on the flatbed operator, the MTVs may be loaded facing forward or backward. To design a safety restraint system that would protect both front- and back-facing MTVs, engineers had to model the airflow patterns associated with both configurations.

### Challenges

Orientation on the flatbed also impacts airflow around an MTV's components, all of which must be evaluated under a multitude of conditions.



ANSYS Discovery Live quickly modified the canopy angles and analyzed the resultant forces.

For example, Roadtec's engineers needed to test a shade canopy — at various angles and under a variety of wind conditions — to ensure the canopy would remain in place during transport. They used ANSYS Discovery Live for this safety testing, because they could quickly modify the

geometry, change input parameters, and determine subsequent forces in a faster timeframe.

### Technology Used

ANSYS Discovery Live  
ANSYS Fluent

### Engineering Solution

The instantaneous results in Discovery Live showed that the forces on the canopy — when

analyzed in isolation — differed significantly when paired with the geometry of the flatbed. The complete-system view, which included the shapes of the flatbed and the MTV and the location of the canopy, showed that other components were deflecting air up into the canopy and, as a result, producing different forces. By including the rest of the geometry of the flatbed, engineers got a much better picture of what was happening to the canopy during transport.

### Benefits

- The forces and results shown in Discovery Live matched those shown in ANSYS Fluent.
- Discovery Live complemented Fluent well, allowing for very quick turnarounds in solving problems where the fidelity and full capabilities of Fluent were not required.
- Fluent offered Roadtec access to a range of turbulence, multiphase and reacting models that are invaluable in solving the many CFD applications at Roadtec.
- Discovery Live's move tool made it easy to adjust canopy angles and change the MTV orientation.
- Learning the software and running several iterations took about one-and-a-half days.

### Company Description

Founded in 1972, Astec Industries designs, engineers, manufactures and markets equipment and components used primarily in road building and related construction. Roadtec Inc., an Astec Industries company, specializes in building cutting-edge asphalt paving equipment.

### ANSYS, Inc.

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