



Achieving Compliance and Operator Protection: Virtual Validation of Heavy Machinery Cab Design

The design and validation of heavy machinery cabins play a crucial role in ensuring the safety of operators. AllyGrow performed a comprehensive assessment of a heavy machinery cab design for a renowned cab manufacturer.

This enabled the cab manufacturer to make informed design improvements and confidently move towards physical prototyping and testing, ensuring a safe and robust heavy machinery cab.

With our expertise, we optimize designs for efficient production, ensure precision and compatibility, validate performance through virtual simulations, and facilitate a seamless transition to production

Our Engineering Design services, including DFM, DFA, and DFS checks, we optimize designs. We also provide precise Geometric Dimensioning and Tolerancing (GD&T) Plans to maintain consistency and compatibility in designs.

Furthermore, our Engineering Proto Release process ensures a smooth transition from design to production, guaranteeing a seamless launch of innovative mobility solutions.

Overview

Industry: off-Highway Vehicles

Location: EU

Challenge: Virtually validate a heavy machinery cab design ensuring compliance with international safety standards. This involved evaluating falling object protection, rollover protection, impact resistance, diagonal impacts, occupant protection, & structural rigidity to enhance operator safety.

Solution:

- **Falling Object Protection:** strength and structure were assessed to determine its ability to withstand impacts from falling objects.
- **Rollover Protection:** structure and stability were evaluated to ensure occupant safety during rollover accidents.
- **Roof and Rear Wall Strength:** Specific loads were applied to test the cab's ability to withstand them without compromising occupant safety. Adequate space inside the cab was verified.
- **Diagonal Impact Performance:** Tests conducted on the cab's A pillar examined its resistance to impacts from different angles.
- **Component Rigidity Evaluation:** The cab's mounts, bunks, floor, and roof rigidity were assessed under specified loads to identify any deformations or damage that could pose risks to operator safety.

