

CASE STUDY

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Specialized Railcar Design

Company Profile

North American Railroad services company that owns and operates shortlines.

Business Challenge

The customer designed and built a railcar to house a specialized laser scanner that measures clearances and ballast levels between the rails. Their original design had a 20% obstruction of the laser scan area. The customer approached BNSF Logistics to create a customized railcar design to secure and protect their laser scanner with the least amount of obstruction possible, while meeting unrestricted interchange railroad requirements.

Solution

BNSF Logistics used a wellcar design to transport the scanning laser. The major design challenge for this specialized railcar was minimizing scan interference of the laser while maintaining compliance with the Association of American Railroads (AAR) Manual of Standards and Recommended Practices (MSRP). Finite Element Analysis (FEA) was used for structural verification of the car design. By moving the laser slot closer to the trucks on the car, the laser interference was circumvented from the car itself and satisfied the AAR MSRP's requirements for car weight. Specific design considerations were incorporated to mitigate potential transportation damage to the laser containment housing while doubling as anti-theft control.

Process/Procedure

This design was completed successfully by developing a complete understanding of the customer's scanner car concept and purpose. A thorough review of AAR MSRP rules and forward-thinking design prior to completion ensured all of the customer's concerns were addressed. High level completed tasks were as follows:

- Worked with all primary parties to show value of collaboration
- Performed FEA to ensure structural integrity of the design
- Provided schematics to car builder for fabrication

After weeks of development, BNSF Logistics provided a well-engineered scanner car design that the customer will be able to use to safely and accurately measure clearances and ballast levels between rails.

Benefits Achieved

- Reduced overall laser obstruction by 0.4%
- Designed a railcar that is compliant with AAR's structural requirements
- Maximized the laser scan capabilities for the client

