# CASE STUDY WIND TURBINE UNIVERSAL RAILCAR

## Company Profile

40-year-old wind turbine manufacturer supplying 101 GW of renewable energy worldwide.

### Business Challenge

The customer wanted a plan and fixture designs to swap parts without hot work while transporting multiple wind turbine components on an 8-axle railcar. Wind component fixtures and securement designed to meet or exceed AAR OTLR's requirements and accommodate the following wind component combinations:

• Nacelle/Drivetrain

• Nacelle/Hub

- Drivetrain/Hub
- Drivetrain/Drivetrain
- Hub/Hub/HubNacelle

#### Solution

BNSF Logistics engineers invented a way to quickly load and unload railcars without welding using universal fixture plates. Bolts and fixture plates quickly connect interchangeable securement fixtures. In addition, each 8-axle railcar was fitted with storage boxes for fixtures, hardware, and accessories. As a result, transporting empty railcars to a new location for loading is cheaper because no attached fixtures exceed non-dimensional shipment requirements.

#### Process / Procedure

BNSF Logistics completed the product design by fully understanding e customer's needs and AAR's OTLR's requirements.

- o Worked closely with OTLR Customers to create a satisfying, easy-to-operate product design.
- Performed securement calculations to meet AAR OTLR's requirements
- Completed and submitted figure loads to the AAR OTLR committee.

#### **Benefits Achieved**

- Developed an innovative universal car securement strategy for transporting different combinations of wind components
- Minimal loading and unloading time and labor
- o Submitted figure loads to the AAR OTLR committee
- Met and exceeded customers' expectations.



# **Unparalled Renewable Energy Expertise**

With decades of experience pioneering rail transport solutions and coordinating logistics for more wind turbine components than any other rail logistics company in North America, BNSF Logistics is the go-to expert in the wind energy sector.

As a multimodal logistics firm, we provide a mode-neutral approach to planning the transportation for wind components, with a focus on designing cost-efficient and environmentally responsible solutions. Our patented transport fixtures are designed to be efficiently returned and reused, and have revolutionized wind energy transportation by allowing increasingly larger blades to move safely via fuel-efficient rail routes.





