Jacob J. Wicks

Staff Consultant

Mr. Wicks is a staff engineering consultant who specializes in machine design and equipment manufacturing. His experience in the design, fabrication, and testing of MoW equipment provides an insider perspective into the heavy equipment industry. MoW equipment including Hi-Rail excavators and backhoes, dedicated rail machines such as tie cranes, and specialized attachments for the rail industry. Additional experience Mr. Wicks has designing custom options for utility vehicles provides specialized expertise in over the road equipment too.

Mr. Wicks specializes in design for manufacturing of heavy equipment. A specific focus is added to welded and bolted joints throughout all members of a machine or mechanism. Mr. Wicks has been developing and practicing his skills in solid modeling, prototyping, finite element analysis, and machine design in real world applications since graduating university.

Education

BS, Mechanical Engineering. University of Nebraska-Lincoln. 2019

Licenses & Certifications

- E.I.T. State of Missouri, EI-2021005424

Positions Held

Engineering Systems Inc., Omaha, Nebraska

- Staff Consultant, 2025 – Present

Ceres – Omaha Rail Service, Omaha, Nebraska

- Mechanical Engineer, 2022 – 2025

Altec Industries, Saint Joseph, MO

- Product Engineer - Specialty Products, 2021 – 2022
- Applications Engineer - Final Assembly, 2019 - 2021

Continuing Education

- Sigmetix GD&T Fundamentals

Contact Information

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ESi Omaha

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Omaha, NE 68110

Areas of Specialization

- SolidWorks
- Finite Element Analysis (SolidWorks Simulation, ANSYS)
- Hydraulic Systems
- Original and Reverse Engineering Design
- Design for Manufacturing:
  - CNC laser/plasma cutting
  - Press Break and Rolling Forming
  - Welding
  - Milling and Turning
  - Simple 3D Printing
  - Line Boring
  - Assembly

- Blodgett Design of Welded Connections
- CSWA SolidWorks CAD Design Associate
- IFPS Mobile Hydraulic Mechanic

Professional Affiliations/Honors

- AREMA American Railway Engineering and Maintenance-of-way Association – Member 2025

Project Experience

Machine Design & Manufacturing

Facilities tear down and assembly rail cart

Dedicated rail-bound tie crane chassis and hydraulic layout

Structural attachment of Larue D97 to Caterpillar 335

Railroad panel mover attachment for medium excavator

Demolition claw attachment for medium excavator

Prototype design of trail slip form paving machine

Haul truck custom material containment cover

Wire reel load/unload mechanism attached to light duty truck chassis

Winch installation to medium and heavy-duty trucks in bumper and between frame configurations

Tension measuring system for a fiber optic cable pulling vehicle

Towing device for medium and heavy-duty trucks between 15-to-100-thousand towing capacities

Material transportation structures of highway vehicles to carry multiple wooden or concrete telephone poles

Machine Testing Experience

Fiberglass to steel sheeve connection – Force distribution

Towing device of highway trucks 30-to-90-thousand-pound capacities

Peer Reviewer

“Feasibility Study on Low-Cost Monitoring of Train Abnormalities Using Rotor Frequency Information from Traction Motors,” Michihiro Yamashita, INNOVA Rail Conference, December 2025.