



Parallel Systems Publicly Introduces Its First Ground-Up Design with Second Generation Autonomous Battery-Electric Rail Vehicle, Setting the Path for Customer Testing on U.S. Railways

Parallel is bringing the second generation rail vehicles to real-world customers with plans to integrate into the existing rail network alongside conventional freight trains

Los Angeles--(September 12, 2023), [Parallel Systems](#), a company founded to create autonomous battery-electric rail vehicles, today publicly introduced its second generation vehicle, which is planned to be used with customers in pilot testing on existing rail networks in the U.S. and internationally. Key to Parallel's latest rail vehicle is the opportunity to safely test core technologies and operational concepts on corridors shared with conventional freight trains.

With this second generation rail vehicle, Parallel is conducting critical testing to verify the system's ability to use the general rail network. The company is developing its tools and software so railroad customers can operate Parallel vehicles from their existing dispatching and train control systems.

"Testing this vehicle generation and supporting systems is a critical step in our product development to inform our commercial product," said Matt Soule, Co-founder and CEO, Parallel Systems. "With less than 3% of the 143,000 miles of U.S. railway occupied by active trains at any given moment, there's immense opportunity to shift freight from the overburdened trucking industry to rail. In addition to addressing the truck driver shortage, converting 100,000 trucking miles to Parallel's rail zero-emissions vehicles would eliminate up to 175 tons of carbon dioxide from the atmosphere."

Parallel's clean sheet vehicle design is optimized for the unique characteristics of a fully modular freight movement system, for improved integration and safety. Parallel's new rail vehicle helps the company refine performance and reliability as it works to finalize its product offering. The most notable visual update is a spanning structure that connects each end of the railcar to accommodate a standard sized shipping container. Parallel plans to offer a portfolio of solutions and this allows the company to test the new architecture that is well-suited for international markets, and is more cost effective.

The second generation vehicle includes both autonomous and remote operation features. While initial pilot tests will operate under supervision at all times, the autonomous system will be installed, learning and improving as Parallel further develops its autonomous capability.

Currently, Parallel Systems has produced three second generation vehicles, with three more in production and more are expected to follow. Parallel is working with real-world customers to bring the second generation rail vehicles to existing rail networks in the U.S. and internationally. The vehicles have been undergoing control, telemetry, traction, brake and dynamics testing since November 2022 at Parallel's Southern California test track. Track-worthiness testing will be conducted with [MxV Rail](#), a wholly-owned subsidiary of the Association of American Railroads, in Pueblo, Colorado in 2024.

Parallel will commence platoon demonstrations with the second generation vehicle later this year. Each Parallel railcar is individually powered and they form platoons of up to 50 cars to reduce energy consumption and efficiently use rail network capacity. The platooning is fully automated, the railcars don't need to hook or unhook, they simply move close to each other and then initiate contact through bumpers to form platoons. Once contact is made, each vehicle maintains a set force with the one in front by regulating tractive effort. The small air gap and pushing action through railcar bumpers reduces overall aerodynamic drag of the platoon, improving energy efficiency.

Parallel's second generation autonomous battery-electric rail vehicle is being built to the following specifications:

- **Propulsion system:** Battery-electric traction motor powertrain.
- **Autonomous system:** Fully autonomous, with bi-directional camera-based perception system.
- **Payload capacity:** Up to 70,000 lbs. / 58,000 kg. (with a single stack container).

Parallel was awarded [\\$4,438,897](#) by the Department of Energy (DOE) as part of its [Advanced Research Projects Agency-Energy](#) (ARPA-E) initiative, which is helping to fund the development, production and testing of the second generation electric rail vehicles. The results of that testing will influence the next vehicle generations as Parallel shifts to commercial production.

About Parallel Systems

Parallel Systems is reimagining the historic rail industry with innovative software and hardware. Founded in 2020 by a group of former SpaceX engineers, the company has created autonomous battery-electric rail vehicles to move freight cleaner, faster, safer, and more cost effectively than traditional trains or trucks. The company aims to increase the utilization of today's rail network by converting some of the \$700 billion U.S. trucking business to rail. Headquartered in Los Angeles, California, the company's mission is to decarbonize freight by building a cleaner, automated rail future. To learn more, visit moveparallel.com or follow the company on [LinkedIn](#).

Parallel's press kit can be found [HERE](#) and an explainer video detailing the company can be found [HERE](#).

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