

# Patents

At RailRunner, we have full product development capabilities and innovate around core technologies. Our significant base of core designs enables more rapid prototyping and a shorter time to market. We develop products based on a robust and proven set of core product designs and processes. RailRunner adheres to the philosophy of continuous improvement through technological innovation. It's with this focus, RailRunner remains committed to providing both innovative and environmentally sound solutions to meet increasing transportation challenges.

US Patent Filings	
Full Title	Status
BIMODAL CONTAINER CHASSIS	Pending
INTERMODAL VEHICLE FOR FORMING TRAIN OR TRAILERS	Awarded
REFINED INTERMODAL VEHICLE FOR FORMING A TRAIN OF HIGHWAY TRAILERS	Awarded
RETRACTABLE INTERMODAL VEHICLE	Awarded
PCT Patent Filings	
Full Title	Status
IMPROVED RAIL VEHICLE TO FORM A TRAIN	Pending

Patent Filings Outside of US		
Full Title	Country	Status
BIMODAL CONTAINER CHASSIS	ARIPO, Argentina, Australia, Brazil, Canada, Chile, China, Europe, India, Mexico, South Africa, Ukraine	Pending
IMPROVED INTERMODAL VEHICLE FOR FORMING A TRAIN OF HIGHWAY CONTAINERS	Argentina, Chile	Awarded, Pending
IMPROVED RAIL VEHICLE TO FORM A TRAIN	Argentina	Pending
INTERMODAL VEHICLE	India	Awarded
INTERMODAL VEHICLE FOR FORMING TRAIN OR TRAILERS	Australia, Germany, India, UK, Europe, France, Italy	Awarded
RETRACTABLE INTERMODAL VEHICLE	Mexico, Poland	Awarded
TRAIN AND VEHICLE FOR MAKING-UP RAILWAY TRAINS OR TRAILER-TRAINS	Russia, Brazil	Awarded

**Note:** Actual patent titles may/may not be abbreviated. Other filings are being examined in other countries under the Patent Cooperation Treaty process.

# Terminal Anywhere™ : Innovating Intermodal

RailRunner's patented **Terminal Anywhere** system makes intermodal transportation cost-effective for shorter distances and for smaller markets by allowing a shipper to shift from road to rail and back without the need for transloading any freight or the need for terminals and expensive cranes to lift the container from one mode to another. This enables container-based intermodal transportation services to reach a huge market of manufacturers, farmers, shippers, wholesalers and retailers who are not located near traditional intermodal hubs.

As a consequence of the increasing pace of trade and the global demand for more specialized products, container intermodal traffic, combining the advantages of water to rail and highway transport, has been growing rapidly. The benefits of this combination of containerized goods and intermodal traffic has not yet reached deep into the infrastructure of the North American, European and Asian economies, where much of the world's manufacturing and agricultural bases are located.

Without the consistently high volume of shipments necessary to justify a traditional and expensive intermodal terminal, shippers are forced to either use more costly road transport or to forego market opportunities altogether. RailRunner provides an accessible, economically efficient rail alternative.

RailRunner's pioneering railcar, trailer and container chassis system provides access to container-based rail transport to a much wider market of manufacturers, farmers, shippers, wholesalers and retailers, thus dramatically extending the reach of current intermodal rail transportation. After many years of development, testing, and initial commercial operation, RailRunner is now poised to bring its innovative **Terminal Anywhere** technology to a wide array of markets throughout the U.S. and abroad.

## Economic Benefits

RailRunner's technology may be used to enhance or feed existing double stack networks, and to provide an intermodal option in markets that have been traditionally truck-served. These are enormous markets which present significant opportunities. On a revenue basis, trucks handle in excess of 90% of the 200 million short haul (300-800 miles) trips made annually in the US market alone. RailRunner provides an economically viable and environmentally sound opportunity to convert this current truck traffic to rail.

Rail service provides a consistent low-priced service over the variability in driver capacity offered by trucking companies. Improved service performance by the rail also eliminates the

need for safety stock or increased inventory float to insure product is available. RailRunner technology provides the opportunity to benefit from the economics normally associated with rail in markets not currently serviced by rail or in markets that are currently underserved. A typical RailRunner train can transport up to 150 truckloads with a single locomotive and a two-man crew.

RailRunner's terminals, with no specialized lift equipment or costly surface preparation requirements, have significantly lower capital cost requirements than traditional intermodal facilities. Flexible and scalable, RailRunner terminals can easily respond to changes in volume and to rail disruption to protect service commitments. RailRunner's light weight rail characteristics, radial steering and aerodynamics provide savings via energy efficiency.

## Environmental Benefits

RailRunner provides major environmental advantages which are increasingly becoming important as concern about climate change grows. Shifting freight traffic from the less efficient highway system to the more efficient rail system reduces both carbon emissions and shipping cost. A gallon of diesel fuel can transport a ton of freight from 80 to 120 miles by road or roughly 400 miles by rail - a 70-80% reduction in fuel use. Further, each 100,000 ton-miles moved by rail results in 13,105 fewer pounds of emitted CO<sub>2</sub>. Moving just 1% of current short haul freight from road to rail means 100 million fewer gallons of fuel used and 2.2 billion fewer pounds of CO<sub>2</sub> emitted per year.

Designed for the standard shipping container, the RailRunner system is much more efficient than standard intermodal rail. The total tare weight is only 46,800 pounds - 13,200 pounds lighter than a flat-car designed to accommodate a variety of cargoes and packaging. Every 1,000-mile shipment sees a reduction of 6,500 ton-miles and 362 pounds of carbon emitted, compared with shipping containers on flat-cars.

## Beyond Efficiencies

The RailRunner system provides additional environmental benefits beyond just fuel and energy efficiencies: Moving traffic from road to rail helps ease overtaxed roadway systems. Radial steering and a unique airbag suspension reduce steel-on-steel noise. When coupled to bogies there is insufficient room for container doors to be opened, enhancing security. Air-cushioned suspension provides a ride quality reducing potential in-transit damage. Since cargo can be loaded into containers close to the production source, shippers have the ability to preserve the increased value of identity-preserved goods.