



## The VECTORR™ Atmospheric Propulsion System for High-Speed Inter-City Passenger Rail

**Overview:** The VECTORR™ system is an elevated rail system propelled by a pressure differential driving a free moving piston contained within a sealed power tube underneath the train. The piston is magnetically coupled to the passenger cars riding on the track above using high-strength permanent magnets. The piston assembly includes a thrust valve to control acceleration and deceleration as well as a mechanism to control the magnetic coupling forces between the piston and the passenger cars. In addition to conventional brakes, atmospheric pressure may also be used for braking by allowing pressure to build within the power tube in front of the piston. Vacuum is supplied by stationary power systems located along the line, as much as 50 miles apart. The system is projected to operate at speeds in excess of 200 mph and to climb grades as steep as 10%, even in the presence of ice and snow.

**Advantages:** The system offers numerous significant advantages compared to a conventional train:

1. No traction requirements: Because wheel traction is not needed for propulsion, the system can accelerate faster, climb steeper grades, negotiate tighter turns, and is less sensitive to weather conditions on the track.
2. Increased grade and turning capabilities means that it can follow existing freeway rights of way
3. Pleasing ride experience: No overhead catenary systems or visual distractions for passengers
4. Safety: Lock-on wheel assembly minimizes wind concerns at high speeds
5. Cost and Weight: Lack of on-board fuel or engines reduces weight and costs
6. Light footprint reduces construction costs and minimizes environmental impact
7. As quiet and green as any transportation system operating today.

**Project Status:** The company has built a 2,200 foot, 1/6 scale train demonstrating 2%, 6%, and 10% grades and a 180° curve with a 48' radius. The pilot model operates at speeds up to 30 m.p.h. which equates to a scale speed of 180 mph.

**Patents and Intellectual Property:** The company has obtained five U.S. patents covering the propulsion system and other aspects of the technology, and has made numerous other innovations that are likely patentable. These patents have been registered internationally as well. In addition, there are full 3D Solid Models and drawings of the major portions of the system's design.

**About the Company:** Flight Rail Corp. has been developing the system over the past 20 years in Mendocino County, California. Engineering and design work has been performed in-house. The company is self-financed. The effort has been led by Max P. Schlienger, P.E. and the founder of Retech, which was acquired by Lockheed in 1995 (and is now owned by SECO/Warwick). Retech designs and manufactures vacuum-and-inert-atmosphere metallurgical processing equipment used for the melting, refining, and casting of a wide variety of high-performance materials related to the aerospace, nuclear, gas turbine, and powder metallurgical industries.

**Additional Information:** For additional information about the VECTORR system, visit the Company's website, at [www.flightrail.com](http://www.flightrail.com). Videos of our prototype are located at <http://flightrail.com/our-prototype.html>.



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