



“*In many regions, Inductrack maglev technology represents the ideal transportation solution to reduce traffic congestion and emissions, while reducing dependence on fossil fuels.*”

Mike Simon,
GA Director,
Commercial Business Development

General Atomics: Magnetic Levitation Comes of Age

THE LLNL TECHNOLOGY

Inductrack's magnetic levitation technology uses a unique configuration of high-field permanent magnets to create a levitating field. Magnetic levitation elevates a vehicle just above a fixed guideway and efficiently pushes it along using electric current without touching the track. Friction is eliminated, dramatically increasing the energy efficiency of the system and reducing noise and wear and tear on the vehicle and track. The end result is clean, zero-emission operation. Inductrack won an R&D 100 Award in 2004 and has been proposed for use in energy generation, roller coasters, people movers, and rocket launchers. Livermore scientists have worked with a consortium of scientists from the licensee and other private and public organizations to optimize Inductrack.

COMPANY

General Atomics (GA), of San Diego, California, was granted an exclusive license in 2002 for railroad applications. GA had been awarded a contract from the Federal Transit Administration (FTA) to develop maglev for urban transit. For the Port of Los Angeles, GA is studying the feasibility of using Inductrack to move goods in an electric cargo conveyor (ECCO).

PRODUCT

GA has completed a full-scale prototype system and is continuing development of passive maglev technologies. The prototype—a 400-foot-long test track with full-sized vehicle chassis and all associated power and control systems—is for dynamic testing of levitation, propulsion, and guidance systems. GA has received FTA funding to build a 4.6-mile, single-track rail passenger maglev system to link the main campus of California University of Pennsylvania with an auxiliary campus and to build an ECCO container movement maglev system at the Port of Los Angeles and Port of Long Beach.

IMPACT

Inductrack offers important benefits over similar technologies from Germany and Japan. It requires no active power system on the vehicle, making the vehicle design lighter and less expensive. Less energy is required to move the vehicle so the guideway tracks can be lighter, cheaper, and less intrusive. “Halbach array” magnets increase the magnetic field strength; low magnetic fields are in passenger compartments and near stations. Inductrack is the only maglev system that can operate on a steep grade as well as on level ground. Its short turning radius makes it versatile for intercity or high-speed distance travel. Finally, the costs to construct and maintain Inductrack are projected to be substantially lower than for other maglev systems.

