



The Insider

National Elevator Industry, Inc.

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Building Transportation & Energy Efficiency – How Do They Relate?

Our cities are growing and the trend towards urbanization inevitably results in a greater number of taller buildings, making energy-efficient elevators and escalators even more critical. Highlighting this trend, the Pew Center on Global Climate Change reports that buildings account for almost 39 percent of the total U.S. energy consumption and 38 percent of U.S. carbon dioxide (CO₂) emissions.



Additionally, there are an estimated one million elevators currently operating today in the United States and Canada. Of this one million, an estimated 50 percent are at least 20 years old. This percent of older equipment presents the industry with a significant opportunity to improve the energy consumption of our building transportation systems and our contributions to a building's overall carbon footprint.

Lighting and HVAC systems are typically higher profile targets when considering energy usage and, indeed, are contributing factors to total energy consumption. The complex mechanical and electrical systems necessary to support elevators and escalators, however, are meaningful components of a building's energy profile that may be much less obvious. Building transportation systems can account for up to five percent of a building's energy use, offering a number of ways to reduce energy and greenhouse gas emissions.

The commercial elevator market represents three distinct segments:

- Low rise - typically hydraulic elevators
- Mid rise - typically geared traction elevators
- High rise - typically gearless elevators

As technology continues to advance along with the advent of machine room-less (MRL) technology, these segments no longer have clearly defined lines. The traction market is becoming a single market with the introduction of small gearless machines.

The first MRL elevator was brought to market in 1996 and revolutionized the building transportation industry. The cornerstone of the MRL concept is its hoisting machine, a permanent-magnet gearless motor that is 93 percent efficient compared to a hydraulic motor with 65 percent efficiency. Additionally, this technology requires less starting current. The reduced starting current demand uses 30 to 40 percent less energy than traditional technology.

In addition to MRL's, today's elevator technology has improved in a variety of ways and can provide a number of efficiencies:

- Hoisting motor efficiency
- Mechanical efficiencies
- Power conversion efficiency
- Regenerated energy
- Reduced idle time losses

Escalators and moving walks have also improved efficiencies in recent years. Downward moving escalators can regenerate energy back into the grid, and as of 2010, both escalators and moving walks are permitted to reduce speed (and thus energy use) when not carrying passengers.

Building transportation solutions have kept pace with general market trends for lower energy use. *NEII*® follows the major building industry "credit" based efficiency standards such as the United States Green Building Council's LEED (Leadership in Energy & Environmental Design) certification program. Building transportation equipment can and has contributed to projects earning LEED certification in a number of ways. For example, elevators have successfully contributed to the Energy & Atmosphere and Innovation & Design credit categories.



While building owners and managers may not immediately think of elevators and escalators when seeking ways to reduce their energy consumption, these building transportation solutions can play an important role in 'greening' a facility.

Stay tuned for the next edition of *The Insider* to learn about the global impact on energy efficiency.



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