

There are currently 1.1 million emergency backup power systems installed in elevators, powered by either a diesel-generator (DG), uninterruptible power supply (UPS), or emergency power supply (EPS).

DG sets pose EPA environmental concerns.

Diesel produces carbon dioxide, nitrogen oxide, particulate matter, and other dangerous exhausts that release into the atmosphere. DG sets may not continue to meet future Air Quality Regulations set by the EPA.

UPS sets pose ADA safety concerns.

Uninterruptible power supply sets, typically offered by the elevator manufacturers, are generally designed to only move the elevator to the nearest lower landing, and do not usually offer an extended run time. This limits the number of occupants in a building that can use the elevator to fully evacuate and presents a potential safety concern for less-mobile occupants who may not be able to escape via stairwells in the event of an emergency.

Inverter-based EPS sets offer a greener, safer alternative.

Newer “Inverter-based EPS” sets include inverters, chargers, and batteries (UL 924 certified) that require less intensive maintenance and can contribute to carbon-neutral, greener footprints. They can also move the elevator both up or down within an extended run time of 90 minutes, maximizing the number of occupants who can use the elevator to exit the building.

The North American Market Opportunity for Inverter-Based EPS.

Which kinds of elevators can you use EPS with?

Hydraulic Elevators are powered by a pump system to push a cylinder/piston that pushes the cabin up.

- Generally cost less than Traction elevators, but are slower
- Typically limited to low-rise and mid-rise buildings
- Can carry large heavy loads, such as freight

Traction (Electric) Elevators use a motor that results in a lifting torque on the shaft and pulley, lifting the cab. When a cab goes up with a light load and down with a heavy load, the system generates more power (regeneration) than it uses.



Elevator Emergency Power Statistics

- Approximately 40,000 new elevators are installed in North America annually (estimates ranged from around 25,000 to over 50,000).
- There are currently 1.1 million elevator emergency power systems installed, with a CAGR (compound annual growth rate) of 2.5%.
- Of those, diesel-generator sets comprise (~60%); regular UPS & inverter-based EPS (~25%); and other/no system (15%).
- The average lifespan of an elevator is approximately 25 years, which would suggest that 4% of the installed base should be replaced or modernized annually.

Traction MR (Motor Room) Elevators

- Have a dedicated machine room (MR) above the elevator shaft.
- Used in almost all high-rise buildings, and in approximately 12% of mid-rise buildings (9-30 landings).
- Almost all buildings over 250 feet use Traction MR elevators.

VS

Traction MRL (Motor Room-Less) Elevators

- Found in 88% of mid-rise buildings and 50% of low-rise buildings (2-8 landings).
- Faster and use less energy than Hydraulic but have more moving parts and higher maintenance costs.
- Require less space as they don't need a separate machine room.
- Almost all use gearless synchronous motors.

An ongoing trend is for elevators to maximize energy efficiency by utilizing regenerative drives.

In this scenario, the motor acts as a generator, transforming mechanical power into electrical power and pumping current back into the facility's electrical grid to use elsewhere.

Conventional Traction Elevators are those that simply dissipate and waste the regenerative energy from the elevator in the form of heat.

Regenerative Traction Elevators include regenerative drives that capture kinetic energy during regeneration and convert it to electrical energy that is transferred back to the building's power grid instead of dissipating as heat energy.

Myers' inverters are not currently serving the Regenerative Traction Elevator market, where kinetic energy is converted into electrical power that is transferred back to the building's power grid.

Why make the switch to a safer, greener option now?

Owners looking for showcase 'green' buildings are reducing use of diesel-generators, and looking for other ways to **minimize the 'carbon footprints' of their buildings.**

ADA-related concerns about building evacuation during power outages are stirring up demand for extended runtime backup power that enables less-mobile occupants to evacuate the building and not just to get out of the elevator.

Also, recent **building codes need at least 90 minutes of full load backup power** to ensure continuous mobility of passengers in spite of a power failures.

Why choose EPS inverters from Myers Emergency Power Systems?

- MEPS is a leading designer & manufacturer of highly engineered backup power technology for emergency lighting, traffic, rail, and broadband.
- MEPS strengths include brand image, experience, complementary products (lighting), sales / distribution infrastructure.
- MEPS is becoming a strong supplier in an emerging market for inverter-based extended runtime EPS for elevators.
- MEPS EPS inverters fill the void of extended runtime for elevators and simultaneously improve the air quality in spite of its long runtime.
- MEPS EPS can be used as a backup for both new and existing elevator systems, while also powering lighting in both the elevator and a path of egress from the elevator to a common way.