



Elevating Elevator's Energy Efficiency and Performance

by Sasha Bailey

Buildings in the U.S. account for an estimated 42% of the nation's total energy consumption, and elevators consume roughly 5-8% of a building's total energy. As environmental initiatives become standard in the building construction and real estate industries, it is essential for building owners and managers to evaluate the carbon footprint of all of their building's assets.

With an array of efficiency upgrade options available, building owners and facility managers should not only evaluate the building's heating, ventilation, air conditioning, lighting and computer peripheral efficiency, but also assess its elevator's efficiency and the modernization techniques available to improve its environmental performance. Because an elevator's greatest environmental impact occurs via energy consumption during its use phase, choosing a thorough maintenance program and employing modernization and upgrade elements can ensure ideal operation, ultimately decreasing its environmental footprint.

Maintenance

Establishing a strong maintenance and service program can help ensure that elevators are performing optimally on a consistent basis and that the elevator meets its expected life cycle, while at the same time expending less energy and improving the building's overall efficiency. Robust maintenance programs that help achieve favorable elevator performance and energy consumption include frequent and regular preventive maintenance inspections, a comprehensive inventory of parts and a 24-hour emergency monitoring service.

Inspections

Any machinery that gets constant use needs constant care. For elevators, that means regular inspection, adjustment and lubrication. Preventive maintenance keeps elevators operating at their best; it helps avoid major replacements and prolongs the valuable life of elevators. This maintenance should involve fast, reliable service and trained technicians.

Inventory

In order to keep elevators running and to reduce elevator down time, a maintenance program that provides a complete supply of spare parts is crucial. Additionally, the location of and access to the inventory is just as crucial for a swift repair.

Monitoring

For uninterrupted operations, it is imperative to have a monitoring program that provides around-the-clock service. In addition, remote monitoring systems provide real-time progress reports that can be enabled and viewed at anytime from anywhere. Remote monitoring services can detect and expose problems even before a facility manager is notified of the issue, providing seamless adjustments and repair. In addition to guaranteeing building efficiency, a remote monitoring program also eliminates superfluous service calls and paperwork, which in turn can reduce the environmental impact by saving fuel and paper.

Maintenance programs that incorporate route optimization software can help reduce travel time to and from project sites for both preventive maintenance and trouble calls. Route optimization applications organize a

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field service technician's daily driving route based on planned preventive maintenance work and the possible interruption of unexpected emergency calls. Routing software has logic for "same-site" delivery of tickets to the mechanic, therefore, when a trouble call is entered, the application will recognize the location and insert same-site preventive maintenance tickets for the mechanic to complete work at the same time. Additionally, this technology also helps reduce fuel usage.

Modernization and Upgrades

Modernization and upgrade options can help ensure that an elevator performs optimally and meets its expected life cycle. Efficient elevator systems help building owners save money and reduce their overall carbon footprint. Initial expenses associated with creating a sustainable elevator range from minor upgrades, such as light-emitting diode (LED) lighting retrofits, to a completely modernized system installation.

LED lights offer an energy reduction up to 80%, reduce heat loss and increase life span in some cases up to 10 years per light. They also contain no mercury or ultraviolet light, which over time can cause damage to some elevator cab interiors.

Furthermore, to conserve energy while an elevator is idle, an existing unit can be programmed to turn the cab lights off when it is not in use, which can eliminate a substantial amount of wasted energy. This technique is linked to several variables, which must be met before the lights will go off to ensure the uttermost safety for passengers. The controller can also be programmed to shut off the cab fan when the elevator is not in use to conserve additional energy.

Regenerative drives offer an efficient way for building owners and managers to recapture some of the elevator's unused energy and send it


back into the building. The excess energy is captured and transferred into the building's electrical system to be used by other electrical equipment in the building. Instead of buying power from the electric company, the building consumes the power generated by the elevators, which would otherwise be dissipated via heat into the machine room. With the regenerative drive, costly traditional cooling of the elevator machine room is eliminated.

Other options include replacing traditional hydraulic oil with inherently biodegradable oil. The change to hydraulic oil without metal-containing performance additives can help reduce the elevators' environmental impact.

From an indoor air quality perspective, replacing elevator panels, laminate plastic walls and wooden ceilings made from traditional parti-

cleboard to one of several new particleboard products, which contain no added urea-formaldehyde, can increase the indoor air quality within the elevator cab.

Another way to improve the elevator's energy consumption is to upgrade from a motor generator drive to a variable voltage variable frequency, which could save approximately 40% of energy consumption depending on the elevator type and size.

Since an elevator's largest energy impact is during its use phase, it is critical that facility managers and owners optimize the performance of the building's existing elevators through modernization, upgrades and maintenance. These techniques all contribute to helping realize environmental benefits, improving the overall environmental footprint of the building. 


-OR-


*monitor not included

MICRO COMM® Video Overlay

The MVIDSYS-X is an overlay system that can add floor position and direction to any NTSC or PAL-B video signal for security and liability applications. If the information is available on the link, the unit can also provide messages that are needed for elevator status. Installed of the unit utilizes existing coax wiring to the monitor, but will require the 3 wire MICRO COMM link for the elevator information. This information can be gathered from an existing MICRO COMM link in the car or can be obtained by installing a driver in the machine room and bringing the data down to the car on the 3 wire serial link to display floor position and elevator status.

- Powered by MICRO COMM
- Easy installation
- Adjustable positioning
- Message handling
- NTSC compatible
- PAL-B compatible
- Other interfaces can be made available such as CAN or RSL if needed (these links are subject to approval).

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