‘SMART’ ELEVATORS ARE ENERGY EFFICIENT

Elevators are a necessity these days in Austin’s multi-floor buildings and can run up the electric bill. But smart building managers can curb their energy use and utility bills by implementing technologies recommended by Nancy Crumley, ThyssenKrupp Elevator Americas and BOMA Austin member.

“Smart” elevator efficiencies are effective not just on Earth Day, but every day of the year.

Sustainable elevator improvements can range from converting an elevator car's lights to LED lighting to replacing petroleum-based hydraulic fluid with biodegradable canola-based fluid. Another smart move is using automatic light/fan shutdown when the elevator is not running.

Mechanical and technological improvements offer the largest potential for energy and cost savings. Energy saving improvements in local facilities include:

- Conversion from a motor generator set with a DC motor to a VVVF drive with an AC motor. (City rebate available) A number of Austin buildings have done this, including the Arboretum Plaza, Cielo Center, 100 Congress and One American Center, to name a few. AC technology uses significantly less energy because it only runs when the elevator is running. The VVVF drive is now a small digital microprocessor which fits in the elevator controller. With some applications, use of regenerative drives will result in giving power back in the building. This cleaner system eliminates airborne pollutants from carbon dust. Elimination of the motor generator reduces the heat load in the elevator machine room and reduces the machine room air conditioning needed to cool the equipment. An elevator with old motor generator technology can consume over 40,000 kWh of electricity annually. If you take all MG sets installed and operating in the U.S., that's enough electricity to power over 800,000 homes annually. With the latest technology, the average elevator energy usage would drop by 50-72%.
- Conversion from a motor generator with geared machine set to a "baby" gearless machine with an AC motor. (There are potential Austin Energy rebates available under "new technologies" category.
- Installation of Destination Dispatch – new or modernization. Destination Dispatch is an advanced dispatching system that directs passengers to the elevator that will get them to their destination in the shortest travel time. It can increase handling capacity up to 30%. By grouping people together based on the floor they are traveling to. The number of stops is reduced, thereby improving the efficiency of the building's elevator traffic up to 25%. (Austin Centre and Greenwater will both have elevators with Destination Dispatch controls.)

An environment friendly hydraulic fluid has been introduced in elevators around the country and is now available in Austin. Enviromax is a canola-based hydraulic fluid, 95% petroleum free, readily biodegradable and 100% recyclable. It is temperature stable with a high viscosity index. It has
extremely high lubricity resulting in less wear and tear than traditional hydraulic lubricants (oils). It is low odor and made in the U.S.

Austin Energy offers rebates to offset the initial cost of elevator improvements. The rebates and energy efficiencies can add up to thousands of dollars over the life cycle of the elevators.

Austin Energy offers rebates to incentivize customers to choose more efficient elevator options in both retrofit situations as well as in new construction. As an example, in a relatively small 4 floor building, using two machine room-less (MRL) elevators with a gearless, frequency-controlled drives in place or instead of a hydraulic elevators could be eligible for about a $3,200 rebate. This technology would reduce the customer's peak demand by almost 10 kW per month and their annual energy bill by over 26,000 kWh (based on 8 hours per day operation). Based on a common commercial electric rate schedule, this would reduce annual bills by over $3,200.

At the other end of the spectrum, if a large high rise building were replacing multiple elevators driven by motor generator sets and DC motors with elevators with gearless AC VVVF drives, the rebate could exceed $36,000. The customer could see monthly demand reductions of over 100 kW and annual energy usage reduced by over 260,000 kWh. For this large user electric rate schedule, annual bills would be reduced by more than $30,000.

Since there are several types of elevators and the factors used to calculate savings and rebates depends on many factors, elevator rebates are determined under AE’s Custom Technology guidelines. AE representatives work closely with the owner and the elevator representative to collect the necessary data to determine the rebate.

BOMA Austin has some 300 members who own or manage more than 90 percent of the commercial office space in Austin, approximately 35 million square feet of space. The Austin organization is affiliated with BOMA International, an international federation of more than 100 local associations and affiliated organizations. Founded in 1907, its 16,500-plus members own or manage more than 9 billion square feet of commercial properties. BOMA International’s mission is to enhance the human, intellectual and physical assets of the commercial real estate industry through advocacy, education, research, standards and information.

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