ReGen Drives
The smart choice

Otis brings the advantages of regenerative-drive technology to low- and mid-rise residential and commercial buildings. The compact modular design makes ReGen™ drives ideal for application on Gen2™ systems.

KEY BENEFITS

Environmentally friendly

- Energy savings (up to 75 percent)
- Low harmonic distortion (typically below 5 percent)
- Reduced Radio Frequency Interference

Significant cost savings

- Reduced peak power demand
- Decreased energy consumption

Optimal system performance

- "Brown-out" tolerant, the drive can operate with voltage drops of up to 30 percent below the nominal value
- State-of-the-art digital design provides a smoother ride and improved floor-to-floor time

ReGen Drive

A 'GREEN' SOLUTION

As the product of choice for "green" building initiatives, ReGen™ drives deliver substantial energy savings while helping to meet or exceed established worldwide standards.

Generating energy savings

In a typical non-regenerative drive, energy is dissipated as heat in a set of resistors when braking occurs, resulting in reduced efficiency and creating additional waste-heat loads in the building. ReGen drives feed this energy back into the building's internal electrical grid where it can be used by other loads or users connected to the same network.

ReGen drives reduce energy usage by up to 75 percent compared to non-regenerative drives. The drives are so efficient that their power factor is close to unity.

Minimizing harmonic distortion

ReGen drives produce "clean power" — resulting in less pollution of the building's electrical power system and helping to protect sensitive building equipment.

The drives minimize distortion of the incoming sinusoidal waveform line current, making Total Harmonic Distortion (THD) at nominal load typically equal to or below 5 percent, versus more than 80 percent in non-regenerative drives.

Reducing Radio Frequency Interference (RFI)

ReGen drives substantially minimize RFI, or Electromagnetic Interference (EMI) — virtually eliminating disruptions to other building electronic systems and ensuring compliance with strict regulations around the world.

SIGNIFICANT ANNUAL SAVINGS

ReGen drives lower overall building operating costs, delivering significant annual savings to building owners and tenants year-after-year during the life of the elevator.

The drives help reduce the two key factors that influence energy costs, peak power demand and energy consumption. As a result, both the fixed costs based on peak power demand (kilovolt amperes or kVA) and variable costs based on energy consumption (kilowatt-hours or kWh) decrease.

Electrical power is generated when the elevator travels up with a light load, travels down with a heavy load and during the elevator system deceleration. In effect, a fully loaded, descending elevator can now provide a significant portion of the power for an adjacent ascending elevator.

The amount of energy savings due to regeneration depends on various system parameters and configurations such as car load, speed, length of run, traffic pattern and system efficiency.

Modeling and simulation results show that ReGen drives use substantially less energy than non-regenerative drives for equivalent elevator motion. (See energy savings example on back page.)

As a "green," cost effective option for the Gen2 system, ReGen drives are the smart choice for your next low- or mid-rise installation.

OTIS

ReGen™ Drives

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The combination of ReGen drive controls with Permanent Magnet Synchronous Motors (PMSM) optimizes motor and drive voltages, reducing currents during acceleration and normal run.

OPTIMAL SYSTEM PERFORMANCE

"Brown-out" tolerant

ReGen drives will continue to operate with acceptable levels of degradation (reduction of contract speed and acceleration rates) in the event of voltage drops as low as 30 percent below the nominal value, providing a significant advantage in areas where voltage fluctuations are common.

Superior ride quality and performance

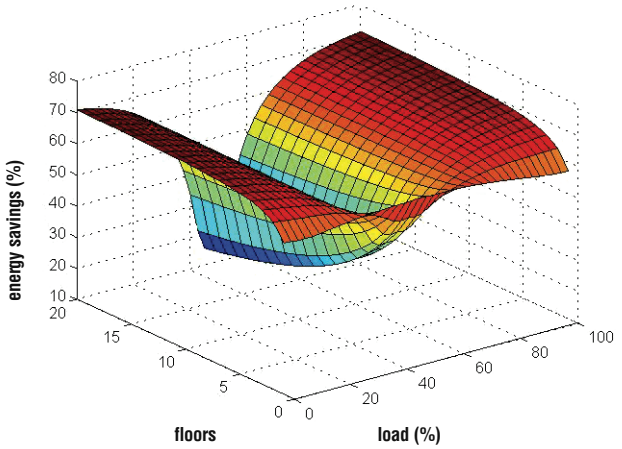
State-of-the-art, 32-bit high-speed digital signal processors and new control algorithms for profile generation and position accuracy result in a smoother ride and improved floor-to-floor time compared to a non-regenerative drive.

SPECIFICATIONS

Duty and speed

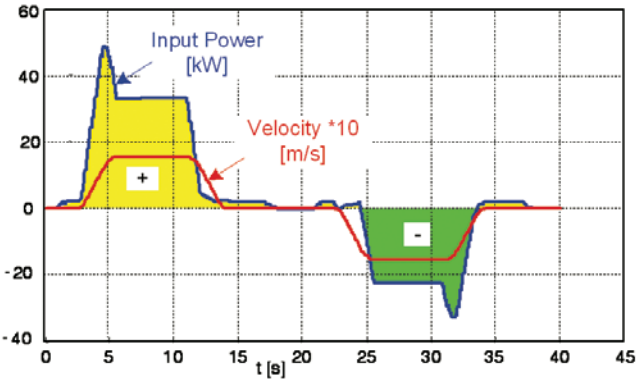
ReGen drives can be used with systems up to 4 meters per second. They are optimized for Gen2 systems with duties from 630 kg to 2,500 kg and speeds from 1 meter to 2.5 meters per second.

Energy savings



Energy savings with a ReGen drive versus a non-regenerative drive during elevator motion as a function of car load and elevator run from 1 to 20 floors for a typical elevator cycle

Energy efficiency



Energy consumed when a fully loaded car travels in up direction

Power benefit of ReGen drives: energy generated when a fully loaded car travels in down direction

Energy and cost of energy consumed over a year

Profile: 20-floor building, 60-meter rise, 300,000 trips per year

Duty/ Speed	Gen2 system ReGen drive Gearless PMSM		Gen2 system Non-regenerative drive Gearless PMSM		Geared system Non-regenerative drive Induction motor	
	Energy [kWh/Y]	Cost* [€/Y]	Energy [kWh/Y]	Cost* [€/Y]	Energy [kWh/Y]	Cost* [€/Y]
1275 kg 1.6 m/s	3640	364.0	6573	657.3	9930	993.0
1600 kg 1.6 m/s	4431	443.1	8161	816.1	12258	1225.8

(*) Cost of energy assumes € 0.1/kWh

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