

REGENERATIVE DRIVE

For building owners, elevator energy usage is a substantial cost. Reducing this energy usage without lowering elevator performance makes excellent business sense and provides significant cost savings.

To meet the energy-saving demands for elevators and their owners, TK Elevator has perfected the Variable Voltage Variable Frequency (VVVF) AC regenerative drive. Known as the **Green Drive** and available with our TAC32T traction elevator controllers, uses advanced braking technology to recapture the energy that would have been lost as heat. This method will feed energy back into the building's power grid.

With considerable energy use reduction by employing the Green Drive, you can expect lower building electric bills. Some utility companies may also offer discounts and additional rate reductions for customers using energy-saving technologies like regenerative drives.

Green Drive operation

In certain load conditions, the Green Drive essentially turns the elevator motor into a generator. When a loaded elevator car moves upward, it requires more energy to drive the motor. As the loaded car moves downward, electrical braking must be used to slow it down. When electrical braking is used, the Green Drive captures the energy and then feeds it into the building's power grid.

Similarly, if the elevator car is empty, the counterweight weighs more than the car. This means traveling up requires less energy, while traveling down requires more. In this situation, the regenerative drive captures energy from the car traveling up and feeds it into the power grid. This will provide additional energy savings.



Benefits

- Fully regenerative, contactor-less digital drive; no pre-charge, line, motor or brake contactors, making this a very reliable and quiet drive.
- Incorporates the latest braking technology designed into an integrated brake controller.
- Incorporates regenerative control that recaptures the excess energy from the motor and supplies it into the building's power grid. This reduces energy consumption and lowers machine room heat.
- Improved grounding and shielding to reduce radiated RF emissions.
- Insulated-Gate Bipolar Transistor (IGBT) Switching Frequency Control automatically adjusts for the optimum condition between audible noise and junction temperature.
- Variable speed fans are designed into this drive to reduce audible noise during non-peak operation. The max audible noise is 55 dBA at the landing and inside the elevator car.
- Automatic Rescue Operation (ARO) available when paired with a permanent magnet AC machines and Uninterruptible Power Source (UPS). This system runs the elevator car at a controlled speed to the next available floor if building loses power.

Features

- In-house designed VVVF drive, intended for new installations and modernization applications that fall within the product ratings. Perfect for use with the TAC32T controller.
- Compact design - drive depth is 7.3 inches (185 mm) to allow for the in-wall controller installation.
- Bus boost capability increases the available output voltage to the motor. Permits output voltages up to 460V.
- Green Drive operates only in the regenerative mode, but a regen disable package is available when line regeneration is prohibited, such as required emergency power conditions. The package consists of a chopper (aka regen disable) and resistor.
 - » For in-wall controller: chopper and resistor are mounted in overhead.
 - » For 72" (1829 mm) and 84" (2083 mm) controllers: chopper and resistor are mounted in control closet, control room or machine room.

Green Drive specifications

- Four sizes available
 - » 230V input – 15HP (40 Amps.)
 - » 230V input – 30HP (80 Amps.)
 - » 480V input – 30HP (40 Amps.)
 - » 480V input – 60HP (80 Amps.)
- Short Circuit Current Rating (SCCR): 25kA
- Average life span: 15 years
- Complies with:
 - » ASME A17.5 / CSA B44.1
 - » EMI Immunity: ISO 22200, EN 12016
 - » EMI Emissions: ISO 22199, EN 12015
 - » IEEE 519 requirements for harmonic control in electric power systems

Drive Ratings					
Arrangement #		200C	200D	400D	400E
Voltage class		200		400	
Supply voltage; nominal; AMS BU application	VAC, 3 phase	208		480	
		220			
		240			
Supply voltage range; rated	VAC, 3 phase	+/-10%			
Supply voltage imbalance; rated	VAC, 3 phase	4%, line-to-line (not to exceed supply voltage range; rated)			
Supply frequency	Hz	50 or 60			
Supply frequency range; rated	Hz	+/-5%			
Power	kW	10.7	21.4	22.1	44.1
	HP	14.4	28.7	29.6	59.2
Amps., nominal	Amps., rms	40	80	40	80
Amps., accel	Amps., rms	80	160	80	160

For more information, visit tkelevator.com/us or contact your sales representative.