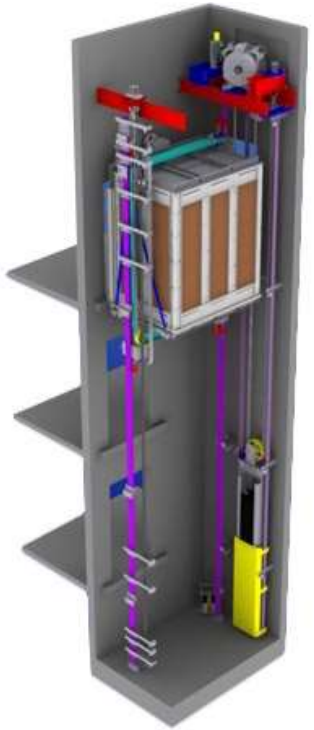
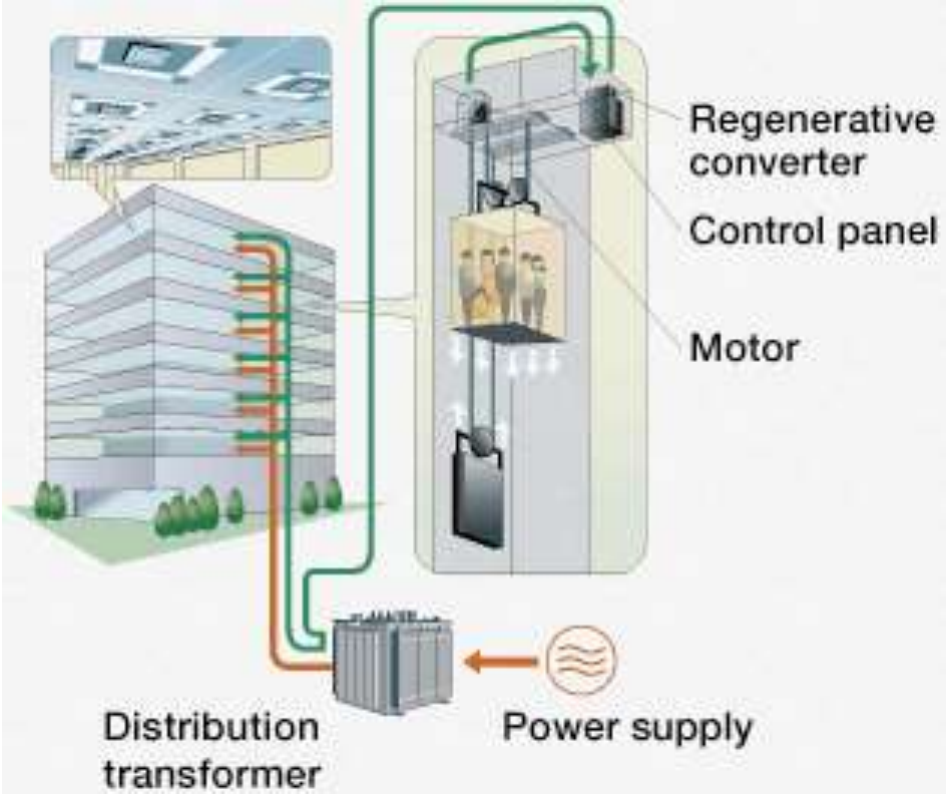
Elevator Overvoltage Solutions

Bonitron continues to open doors for distributors, elevator control manufacturers, and contractors.

Line Regens are ideal in AC drive-driven elevator applications.

Elevator Overvoltage Solutions





Elevator Overvoltage Solutions

Article published by Elevator World
Dec 2011

Elevator Drives, Power Quality and Energy Savings by Jonathan Bullick and Brad Wilkinson

"An AFE uses PWM with a high-carrier frequency, the switching losses are higher compared to the block-style commutation of the regen unit. The PWM iron losses in the AFE filter are also higher compared to those in similarly sized harmonic filters. AFE systems can only be connected to a balanced three-phase wye, center grounded electric system; delta-connected systems are not permissible."

"A regenerative unit can be used in lieu of a braking resistor, and the regenerated power can be returned to the grid, where it is consumed by other building loads. Regen units are becoming increasingly popular, as they can dramatically increase system efficiency and lower the total cost of elevator ownership. Since the regen's IGBTs switch the current into the line in a similar manner to the diodes in a six-pulse rectifier, a regen unit will have similar harmonic content during regen mode as a VFD."

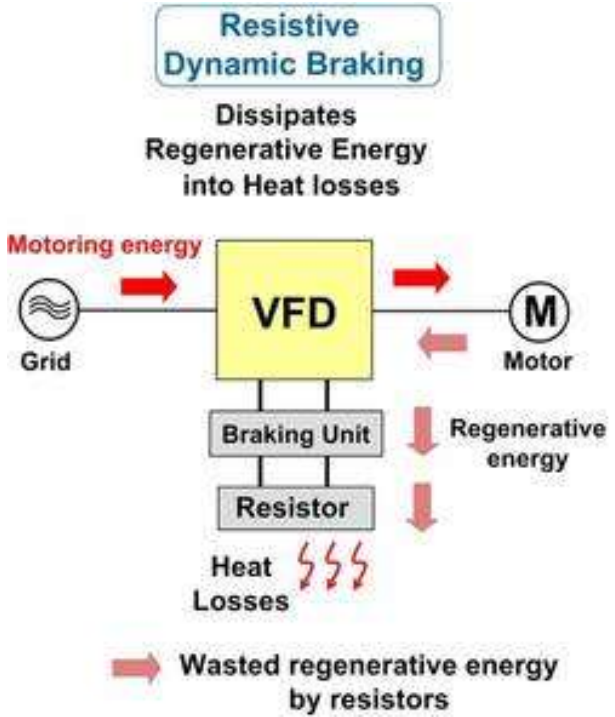
Elevator Overvoltage Solutions

Regen

Transistor/Resistor

- Return on Investment
- Resistors too hot for flammable areas
- 99% efficient
- Integrate into drive cabinet

- Low duty resistors are cheap
- Some drives include transistor / 7th IGBT



Elevator Overvoltage Solutions

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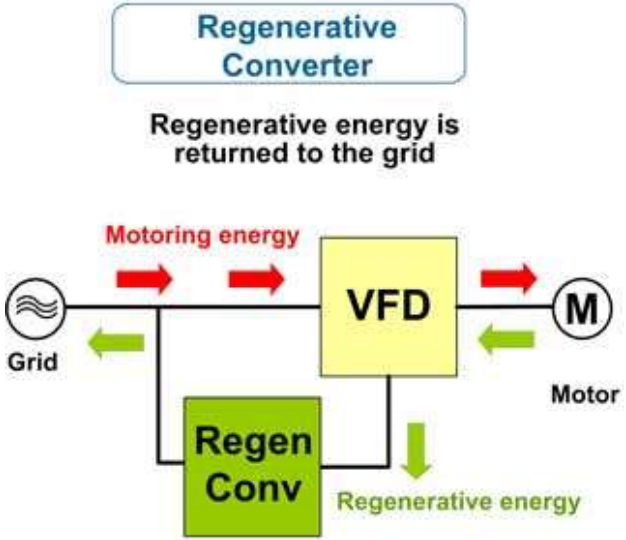


Overvoltage Solutions

Line Regen

Great return on investment

- Regenerative energy returned to AC line reduces utility power usage

Product Highlights

- 208 - 600VAC support with 50/60Hz auto select
- 15, 30, 50, 100 Amp units
- 150% overload for 60 seconds
- Digital Display with event and usage logging
- Integrated filtering and transient suppression
- > 99% efficient

BONITRON

Line Regen Selection

Line Regen									Fuse Plate
Phase	Power		Display Type	Model Number	Current		Watt Loss	Dimensions (H x W x D)	Model Number
	Cont.	Peak			Cont.	Peak			
208 - 240VAC									
1	2.5 HP	3.8 HP	LEDs	M3545-L015-M4	5 A	7.5 A	45W	17.00" x 4.70" x 10.80"	M3545F-H015
3	5 HP	7.5 HP			15 A	22.5 A			
3	14 HP	21 HP	LEDs+Digital	**M3645-L030-M10-D**	30 A	45 A	180W	20.00" x 10.00" x 10.50"	M3645F-H030
3	24 HP	36 HP	LEDs+Digital	**M3645-L050-M11-D**	50 A	75 A	265W	24.00" x 11.15" x 12.00"	M3645F-H050
3	48 HP	72 HP	LEDs+Digital	**M3645-L100-M12-D**	100 A	150 A	470W	24.00" x 12.00" x 12.00"	M3645F-H100
380 - 415VAC									
3	25 HP	37 HP	LEDs+Digital	**M3645-E030-M10-D**	30 A	45 A	180W	20.00" x 10.00" x 10.50"	M3645F-H030
3	41 HP	62 HP	LEDs+Digital	**M3645-E050-M11-D**	50 A	75 A	265W	24.00" x 11.15" x 12.00"	M3645F-H050
3	83 HP	125 HP	LEDs+Digital	**M3645-E100-M12-D**	100 A	150 A	470W	24.00" x 12.00" x 12.00"	M3645F-H100
460 - 480VAC									
1	5 HP	7.5 HP	LEDs	M3545-H015-M4	5 A	7.5 A	45W	17.00" x 4.70" x 10.80"	M3545F-H015
3	10 HP	15 HP			15 A	22.5 A			
3	28 HP	43 HP	LEDs+Digital	**M3645-H030-M10-D**	30 A	45 A	180W	20.00" x 10.00" x 10.50"	M3645F-H030
3	48 HP	72 HP	LEDs+Digital	**M3645-H050-M11-D**	50 A	75 A	265W	24.00" x 11.15" x 12.00"	M3645F-H050
3	96 HP	144 HP	LEDs+Digital	**M3645-H100-M12-D**	100 A	150 A	470W	24.00" x 12.00" x 12.00"	M3645F-H100
575 - 600VAC									
3	36 HP	54 HP	LEDs+Digital	**M3645-C030-M10-D**	30 A	45 A	180W	20.00" x 10.00" x 10.50"	M3645F-C030
3	60 HP	90 HP	LEDs+Digital	**M3645-C050-M11-D**	50 A	75 A	265W	24.00" x 11.15" x 12.00"	M3645F-C050
3	120 HP	180 HP	LEDs+Digital	**M3645-C100-M12-D**	100 A	150 A	470W	24.00" x 12.00" x 12.00"	M3645F-C100

Overvoltage Solutions

Transistor / Resistor

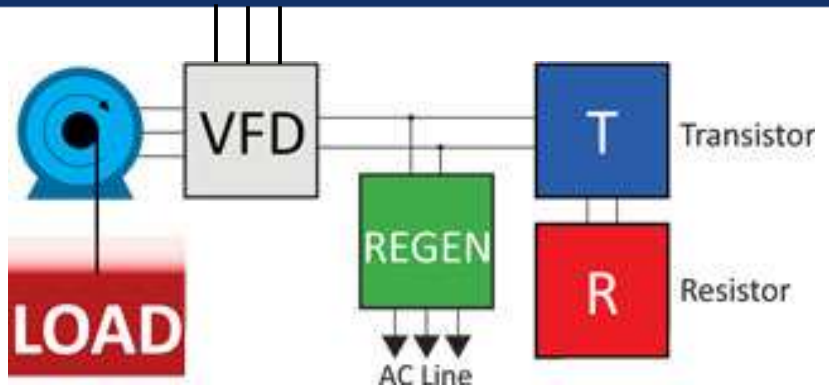
- Heat generated
- Locate outside or adjust cooling
- Added install cost (conduit, wiring, etc)

Line Regen

- Return on Investment
- Simple, low-cost install near drive

Both

- Regen efficiency
- Large Transistor/Resistor for peak or surge power



Resistor

Regen

Transistor

Current Customer

Uses the Bonitron M3645

Current Customer

McDONOUGH Elevators

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Bonitron.com/contact.html

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and Manufacturing
Quality Industrial Electronics