60 years of Industrial Technology

Much has changed. ***Phaseback VSGR*** & ***AFPT*** will

Save Lives and Save Money – Take our challenge!

1950's Electric Service Ungrounded Delta Power Systems are the standard in Industrial Plants in the USA.

Loads Changing From Late 1960s Switch mode power supplies

1968 PLCs
1970s VFDs
1980 IBM PC
1990 NEC Grounding Standard changes

The 1980's bring Personal Computers, Industrial PLCs, Digital Devices, Electronic Lighting, and Now LED Lighting.

1990s bring smaller & smaller Control Devices, PLCs,& Sensors. Miniaturization caused some major issues: Harmonics, Transients, Unstable Frequency and Voltage. In 2000s Led Lighting gains ground, with PC Board, shorter Life than promoted. All digital devices are shrinking.

Current Driven Lighting

Prior to 2000s Transformer / Electromagnetic ballasts, power supplies, UPS, Relays, Industrial Devices

Voltage Driven Lighting – sensitive to Voltage change
Grounded Wye Transformer / Impedance Grounded Wye (with NGR or HRG)

Now & Future, Ungrounded Delta with ***Phaseback VSGR = AFPT*** *(Arc Flash Preventing Transformers) & gain Voltage Stability, Efficiency, Safety, Reliability, Economy, =* ***FUNDAMENTAL IMPROVEMENT***

www.phaseback.com Cy Cates www.cycates.com 832 647 4606c cycates@cycates.com

Completing the Circle of Power

Distribution Transformers

- ***Phaseback VSGR***
- Works with DELTA or WYE Systems
- Prevents ARC FLASH+ benefits
- Kema Test 1/17

- **Industrial Standard: Delta secondary**
- Stable Voltage
- Circular Windings
- **Loads: Electro - Magnetic Lighting Ballasts, Motor Starters, Relays**

- **Smaller Faster Controls & Drives**
- Voltage Sensitivity
- **Realization: WYE has higher risk of Ground Fault & ARC FLASH**

Grnd WYE : provide equal phase voltages needed by some drives.

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