HARMONICS LIMITED
BY JEFFERSON ELECTRIC

The Green Way to Sustained Energy Savings

TransMax® vs. Zig-Zag

It has been suggested the **TransMax Harmonic Suppression System** (**HSS**®), can be replaced with a Harmonic Mitigating Transformers (HMT). Harmonic mitigating transformers come under many trade names. Whatever the name, these transformers are all basically zig-zag transformers that have a very low secondary impedance to zero sequence harmonic currents. The HMTs are claimed to be equivalent to the HSS. Outlined in the following are numerous reasons why HMTs are not equivalent and should be rejected.

1. Harmonic cancellation:

a. The HSS operates by blocking the flow of 3rd harmonic current in the neutral wire. This prevents the flow of harmonic currents in both phase and neutral wires from the transformer oft to the furthest outlet. The 3rd harmonic currents are never formed in the system.

b. The HMT operates by canceling the 3rd harmonic current in a specially wound zig-zag secondary winding. This prevents the harmonic current from circulating in the transformer delta primary winding, but has no effect on the phase and neutral currents flowing in the electrical system downstream of the transformer. The 3rd harmonic currents flow in every phase and neutral wire, circuit breaker, and to every outlet in the system. These currents are mitigated only within the transformer itself.

2. Special Wiring:

a. Since 3rd harmonic currents never exist in an electrical system using the HSS, there is no need to increase wire size, double neutral wires, or run an individual neutral wire for each phase wire.

Outlined here are numerous reasons why Harmonic Mitigating Transformers (HMTs) are not equivalent to Harmonic Limited's TransMax Harmonic Suppression System (HSS)

b. The HMT permits 3rd harmonic current flow throughout the electrical system therefore double or bindividual neutral wires are recommended. The transformer is constructed with double lugs for the neutral wire.wire, every circuit breaker and to every outlet in the system. The harmonic currents are mitigated only within the transformer itself. Therefore double neutrals are required for this system as they are with the K-Rated transformer. Zig-Zag transformers do not eliminate or even mitigate 3rd harmonic currents and thus do not save the energy wasted by the 3rd harmonic currents.

Harmonic Suppression System benefits, matched by no other harmonic mitigating product, include:

- true kW energy savings
- harmonic current reductions out to the furthest load
- no requirement for double neutrals or oversized switchgear
- no need to oversize the transformer and then de-rate it

For further information contact us or see more information at harmonicslimited.com

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