Electrostatic Shield

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All transformers used with Non Linear Loads application such as drive transformers, K-Rated transformers, harmonic mitigating transformers should come with an electrostatic shield.

But what is exactly an electrostatic shield?
An Electrostatic Shield is a grounded metallic barrier provided between the primary and the secondary windings of an isolation transformer.

Applications

▶ Originally used as an electrical barrier between primary and secondary windings of a power isolation transformer, so that the secondary side will be electrically isolated from fault occurring on the the primary voltage system.

▶ These days, it will be commonly used to filter out, to very low values, transient (High Frequency Common Mode Noise) present in distribution system. Transients that are generated by contactors, high frequency variable speed drive, capacitor switching, H.I.D lighting, computer power supply; basicaly all power electronic driven equipment.

How does it work?

A transformer is a device that uses electromagnetic induction to convert energy from an input system to the desired output at the same frequency. The challenge with transients is that they do not need the transformer iron core path to travel from one side to the other. They travel using a path known as electrostatic action, using capacitive coupling between primary and secondary to ground.
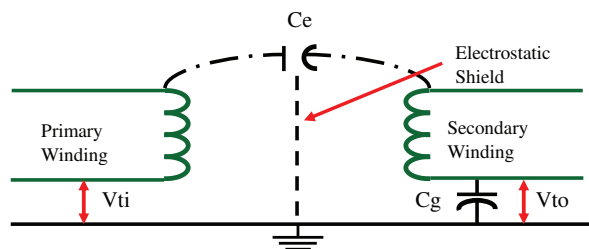
Shielded Transformer
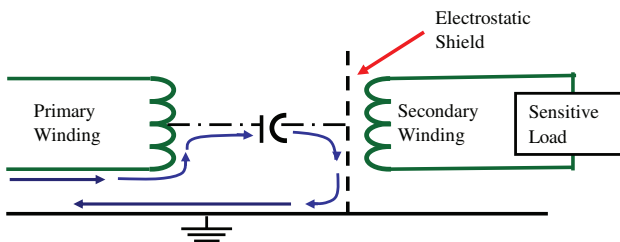
Unshielded Transformer
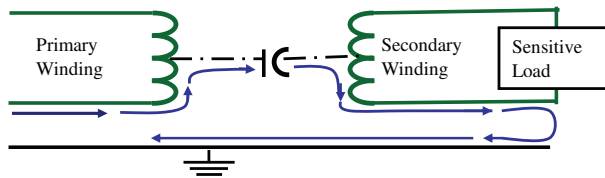
Attenuation

Vti	Vto	Ratio	CM Noise Attenuation (dB)
50	1	50:1	34
100	1	100:1	40
200	1	200:1	46
250	1	250:1	48*

$$\frac{Vti}{Vto} = \frac{Ce + Cg}{Ce}$$

*Level of attenuation usually obtained with
1-only standard electrostatic shield

Plus Value

Using a <u>non electrostatic shielded transformer</u> to feed sensitive electrical equipment is leaving same equipment unprotected and subject to damage or failure due to transients.

All Delta Group *xfo* Non Linear Load Distribution Transformers are designed and built with an electrostatic shield. Same shield can also be added to a standard distribution transformer at a very low cost for the extra protection it will provide you.