***Current Versus Voltage Output in Current Transformers***

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Magnelab has recognized that in most applications requiring an accurate measurement of the amount of current passing through a conductor, current to current transformer outputs must be converted, or burdened, into a usable and measurable voltage output. It has also been determined that if this is not done correctly, the phase angle shift and output voltage amplitude and linearity cannot be accurately controlled.

Magnelab has developed two U.L. listed current transformer styles that are designed to eliminate this problem. The SCT series are split core (opening) style current transformers, and the UCT series are solid core style current transformers. Both are manufactured and pre-burdened to a specified output voltage in a controlled environment in order to ensure the minimum phase angle shift, primary to secondary, and maximum voltage output accuracy and linearity over the specified primary current range.

The manufacturing process consists of the use of high grade silicon steel alloy laminated cores and precise winding techniques. The cores cross sectional areas were designed to allow for low flux densities and minimal core losses. The secondary windings were designed and laboratory tested in order to determine the optimum number of turns for the highest level of inductance practical, while maintaining a wire gauge significant enough to keep the direct current resistance of the windings as low as possible.

Along with the core and winding techniques, Magnelab uses precision resistor circuits to pre-burden and tune each current transformer to within ± 1% of the nominal output voltage specified. Each transformer is electrically tested for output voltage, linearity and phase angle shift using a custom designed computer controlled test station. The test station consists of a programmable current driver source and calibrated voltage and phase shift meters. The base of the transformer is then epoxy encapsulated to protect the resistor circuit and lead terminations.

These characteristics, along with several other considerations, help to minimize the phase angle shift and maximize the output voltage accuracy with relationship to the primary signal. This process allows Magnelab to maintain a high quality standard that can only be consistently achieved in a properly controlled environment.

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