CT Open-Circuit Excitation Testing
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If you are performing Open-circuit excitation tests of CT's, you can get misleading information from your results when using True-RMS meters to measure excitation voltage.

This is documented in the IEEE Guide for Field Testing Relaying CT's (Appendix B in the 2006 update).

The primary area for error is when you start to get into the saturation area for the CT. As soon as the output voltage deviates from a purely sinusoidal waveform, the true-rms meter will read higher than an average-responding meter.

Since CT saturation curves have been created for years with average-responding meters, using a true-rms meter will give a false indication of output capability for the CT since the 'knee' will not flatten in the same manner as would be shown if an average-responding meter is used.

This problem will be most evident when performing excitation tests using primary current injection such as is commonly performed with loading gear. Use of almost any Fluke© will show errors in the CT 'knee' compared to manufacturer's curves.

The 'CTER' test boxes appear to use an average-responding meter in the unit, and thus appear to give the same results as using an external average-response meter.

So – something to be aware of if you are performing CT tests…

An example of this phenomena is shown here – based on testing of a 4000/5 CT: