Bachelor Thesis

In Cooperation with OMICRON electronics

Current Transformer Model Generator

Motivation

An accurate model of a current transformer is crucial for protection relay testing and power grid fault analysis. The well-known T-equivalent model of transformers or current transformers with a distributed leakage inductance on the primary and secondary side cannot accurately represent the physical leakage inductance between the primary and secondary winding. The leakage inductance is commonly neglected in current transformer models, due to its low value. Neglecting the leakage inductance may introduce an additional phase displacement and amplitude error in the model.

In a recent publication, a DC hysteresis measurement together with a topological transformer performed well. The modelling approach should be more automized and tested on different current transformers.
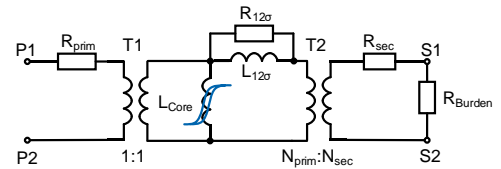

Figure 1: Current Transformer topological model.

Research Questions

✓ How to pre-process measurement data from CT for an automated model generation?

Procedure/Methodology/Task

✓ Carry out reference measurements on current transformers for validation purposes.
✓ Create a graphical user interface (in Python or Matlab)
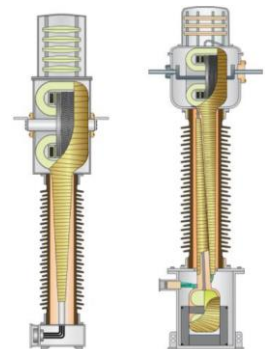✓ Validate your tool with measurement data

Figure 2: ABB application guide.

Organisation & Benefits

✓ Beginning: as soon as possible
✓ Language: English or German
✓ Documentation: in LaTex or Word (EN or DE)

✓ Get in contact with OMICRON
✓ Carry out measurements on real CTs
✓ Get together with a nice team

Contact Person

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