

Dissertation

Low Frequency Currents in Electrical Power Systems

Induced low frequency currents in electrical energy systems, especially in the transmission network, can negatively affect its stability. Induced currents are caused by geomagnetic influences or e. g. by other electrical systems such as DC railways.

A major problem caused by the superimposed current is the associated saturation of transformers. This can lead to grid instabilities, to impairment of the voltage quality and to increased noise emission from transformers. The aims of the dissertation are:

- Electromagnetic modeling of different power transformer types
- Influence of the vector group and asymmetrical current distribution on the transformer
- to identify other low frequency current sources
- continuation and extension of neutral point current measurements in the Austrian transmission grid
- Recommendations for action to reduce the influences and effects of low frequency currents



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