12.09.2022

Institute of Electrical Power Systems

Bachelor Thesis

Influence of saturation effects on the short circuit behavior of synchronous machines

Motivation

The short-circuit behavior of synchronous machines has been well studied to date and results have been abundantly published. However, there is a lack of results available on how saturation effects affect the short-circuit current or the individual components of the short-circuit current (AC component, DC component). With the current possibilities of detailed analysis with the calculation software DIgSILENT PowerFactory, new doors open to investigate and clarify these questions in detail.

Prior knowledge with DIgSILENT PowerFactory is desirable, but not mandatory. The support of the supervisor provides a good opportunity to become familiar with the program.

Research Topics

- What influence do saturation effects have on the behavior of the short-circuit current?
- Which saturations have an influence on which short-circuit current components?

Procedure/Methodology/Task definition

- Creation of a simulation model in DIgSILENT
- Investigation of the influences of
    - main field saturation as flux amount in d-axis
    - main field saturation as d-component
    - saturation of the stator reactance

Organisational Issues

Beginn immediately

Contact Person/Supervisor

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