Notice of dissertation defense 24.4.2018

Magnetically Controller Reactor - A New Way to Make Grids Smarter

Title
Magnetically Controlled Reactor - a Novel Component in Smart Grid
Magneettisesti ohjattu reaktori - älykkään sähköverkon uusi komponentti

Content
There is currently rapid increase of solar and wind generation in the grid and growing emphasis on the reliability and availability of electrical supply. These changes have triggered a need to have a more flexible grid, which can adapt instantly to a different load, production and failure situations. One way to create such flexibility is to introduce smart controllable elements in the grid. In this thesis a novel reactor has been introduced so, that it's inductance can be changed on the fly without moving parts and without generating harmonics. This new magnetically controlled reactor is applied to earth fault compensation in a structure, which eliminates the need for earthing transformers, making earth fault compensation not only more accurate, but also more economical. It is also shown, that a 100% earth fault compensation, made possible by the new reactor, significantly increases the probability of extinguishing earth fault arcs, thereby improving the reliability of supply in a distribution network.

Field of research
Power Systems and High Voltage Engineering

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Date and time
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Place
Aalto University School of Electrical Engineering, hall U4, Otakaari 1, Espoo

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