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Advanced Simulation tools in support of the design of the Power System architecture of the European Spallation Source (ESS)

Thursday 24 October 2013 17:00 (20 minutes)

Advanced laboratories such ESS are a challenging infrastructure from the energy perspective both for the internal energy management and for the impact on the overall energy grid.

In a project developed in collaboration between ESS, Lunds Energi, E.ON and RWTH a complete model of the ESS Lab and of the surrounding energy grids has been developed in order to have realistic predictions on the static and dynamic characteristics of the this future laboratory. Models are used both to internally optimize energy consumption and to study the interaction with the Distribution and Transmission Grid. The models have been implemented in a very advanced simulation infrastructure available in RWTH Aachen able to support the execution also in real time without compromising on the accuracy of the modeling itself. In particular, given that we are dealing with a system that will be inserted in the grid in few years from now, different studies have been performed to incorporate the elements of uncertainty given by the lack of knowledge about how the electrical network will look in the future.

The presentation will illustrate the main concepts adopted during the modeling process and some of the most interesting results obtained in the analysis phase.

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Session Classification: Energy Quality and Operation