

MASTER THESIS 2023

Active systems influence on power grid dynamics.

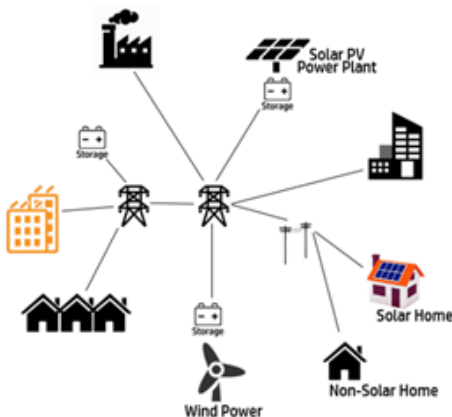
MSc project proposal

ABOUT US

Comsys, a forefront cleantech company, is dedicated to "Perfecting Power." We focus on enhancing power quality across AC and DC supplies. As the world pivots towards renewable energy, ensuring a resilient electric grid has never been more important. Master theses at Comsys play a important role in our research and product development. We offer you a chance to dig into these challenges, combining your passion for the environment with real physical innovations. Join us in shaping the next phase of power efficiency.

BACKGROUND

Imagine the electric grid's transition: from centralized power plants serving passive lightbulbs and radiators, to a future grid brimming with diverse local power sources and dynamic active loads. Every element in this network impacts the overall dynamics of the power system.



For Comsys, as a developer of active filters and battery support systems who are active and integrated parts in future electric grids, questions like below arise:

- From a given frequency dependent impedance of our products line filter and the grid (who together forms the plant), how to choose the control methods and its characteristics to create a stable system.
- How to work with the mix of a discrete controller (a digital control system) and a continuous plant. For example, what assumptions needs to be made regarding a discrete

systems sample rate to make a trustworthy continuous approximation.

- How to visualize, and to work in a structured way, with a systems stability criteria and control bandwidth.

THESIS

The goal is to develop knowledge and methods to visualize controllers influence and performance on line filter and grid (the plant), in a simulated environment.

From Comsys you will be supported with basic simulation models. You will also have supportive colleagues nearby. The simulations will be performed in Matlab/Simulink/Control system toolbox.

The work will be performed in cooperation with Dpt. of Automatic Control, LTH.

WHO ARE YOU?

For this thesis proposal we target students with a strong interest in control system modeling. Preferably also with a basic knowledge of power electronics and 3-phase AC systems.

We prefer students to conduct the thesis work in pairs. Our experience is that it helps to have someone to discuss approaches and solutions with during the work.

POSTING END DATE

2023-09-12

For more information / APPLY



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