

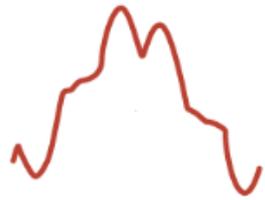


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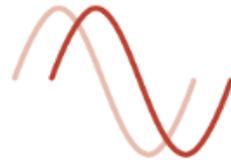
PERFECTING
POWER

Nils Lundström
Research & Innovation
[nils.lundstrom@comsys.se](mailto:nilslundstrom@comsys.se)

Electrical power isn't perfect



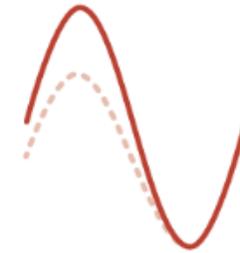
Harmonics



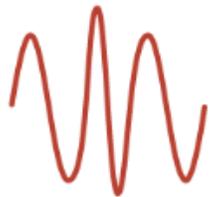
Reactive power



Network unbalance



Voltage variations
(dips, sags, swells,
brown-outs)



Oscillations
(resonances)

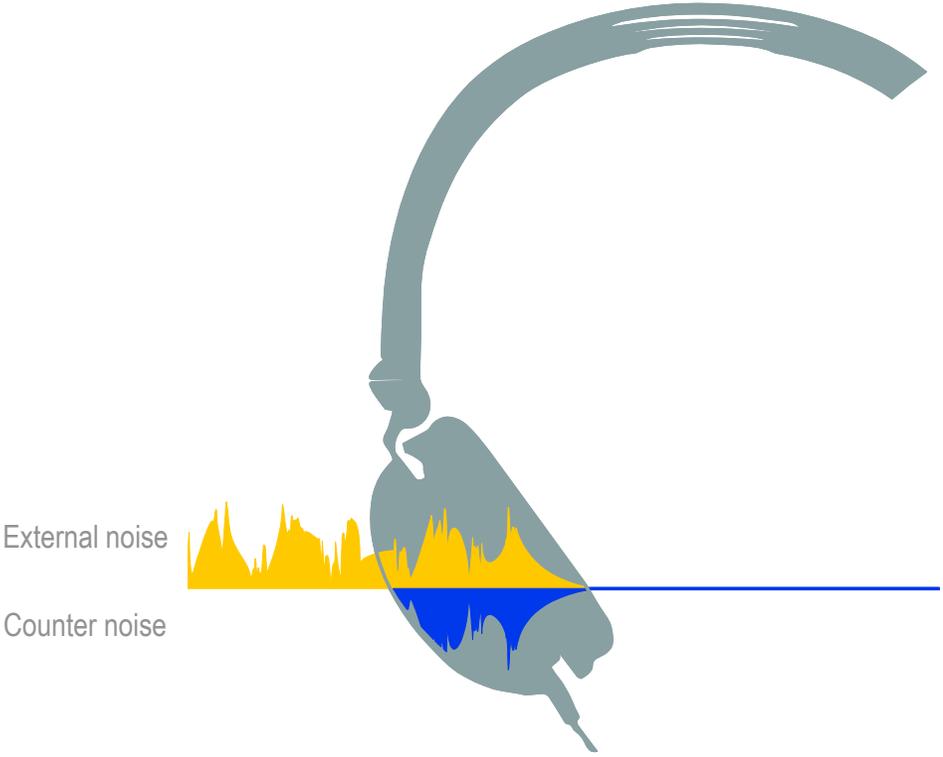
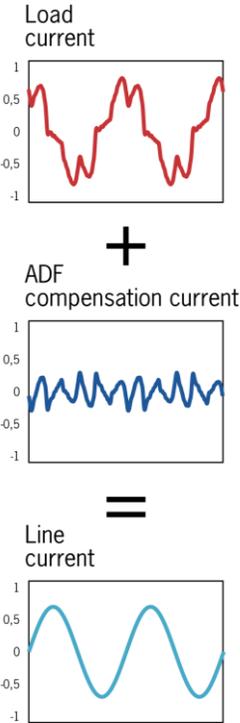


Flicker



Transients
(fast disturbances)

Our solution - Active Filtering of current



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Based in Lund

+20% annual growth

More than 75 partners all over the world

About 5 000 projects has been sold in over 50 countries

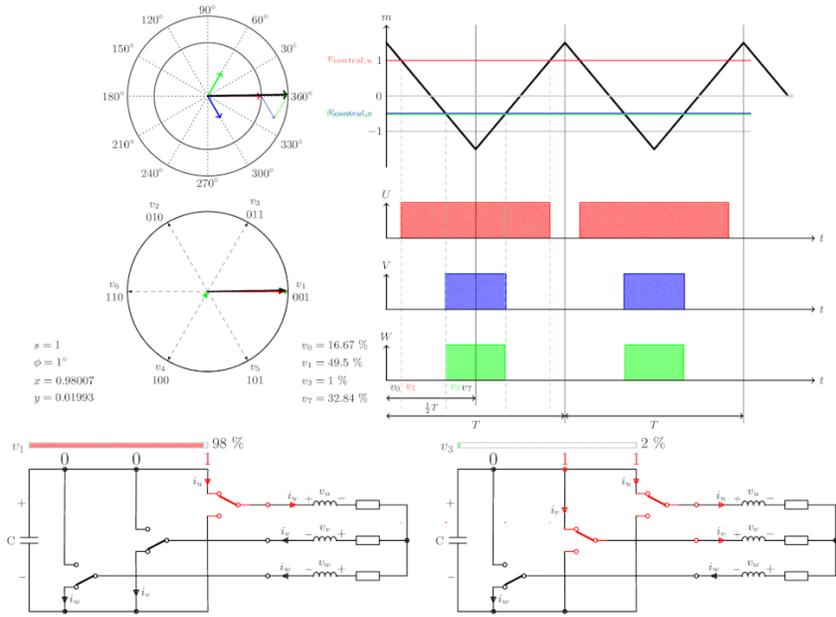
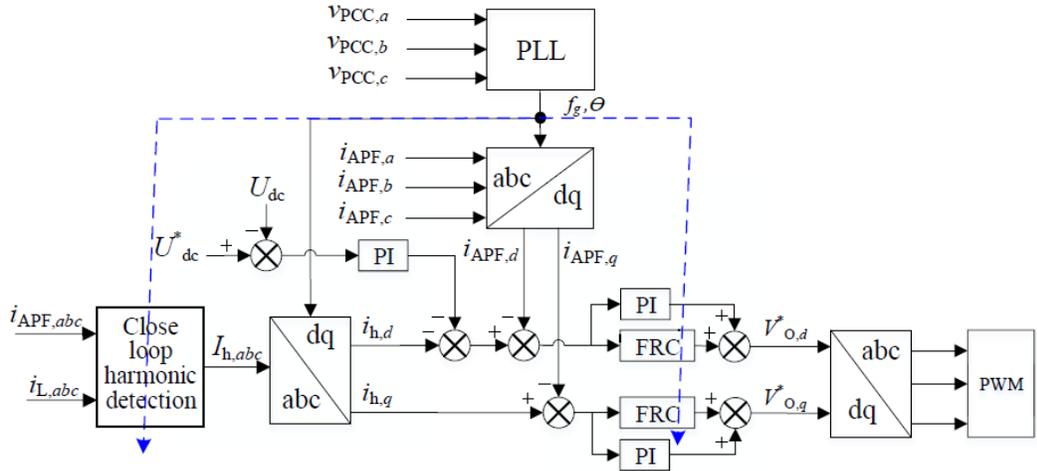
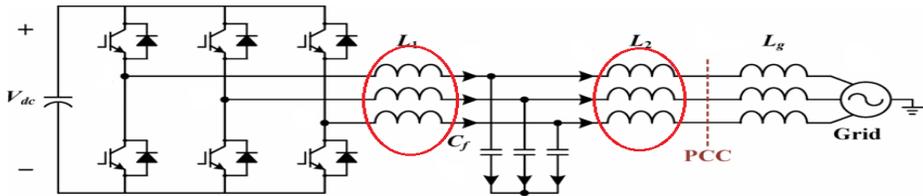
ADF products are developed in Sweden; Manufactured in Sweden and US



DAIMLER



Fast control and Power electronics



Active filters – A wide range of applications



Add batteries -Energy storage system



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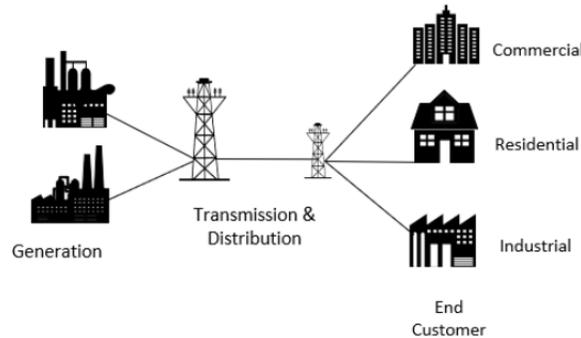
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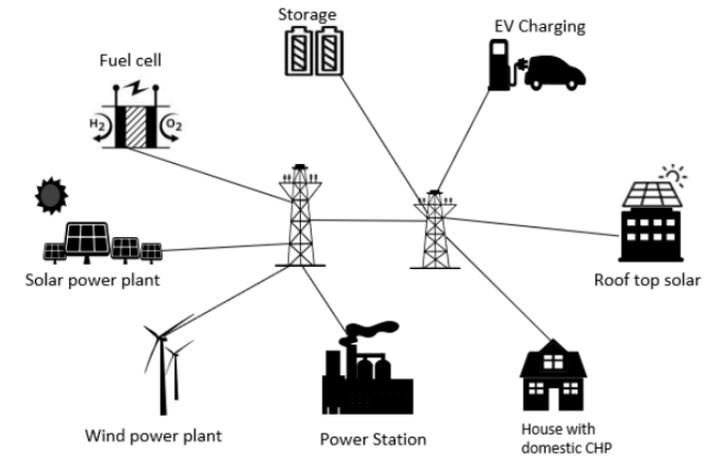
Master Thesis Project

Background – A future messy grid

- The world is changing from a Centralized to a Decentralized energy System.
- Before: Few big, plannable, producers. Passive consumers.
- Future: Many small unplannable producers/consumers, each with an active influence on the grid dynamics
- New challenges



Centralized Energy System



Decentralized Energy System

Grid impedance -Weaker, continuously changing, frequency dependent.

Questions arise:

- How to relate your grid connected system, and its control, to this complex grid.
- How to choose control methods to contribute to a stable grid.
- How to visualize and work with system stability.

Motivation

- This is a special area of knowledge, not known to many.
- With global electrification and transition to renewables -The demand for expertise in this area will be huge!

The work

- The work will be based on simulations
- You will have supportive colleagues nearby.
- The work will be performed in cooperation with Dpt. of Automatic Control, LTH.

Welcome to Comsys!

Comsys is a growing company, active within this area, and we are right now hiring engineers..😊



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