



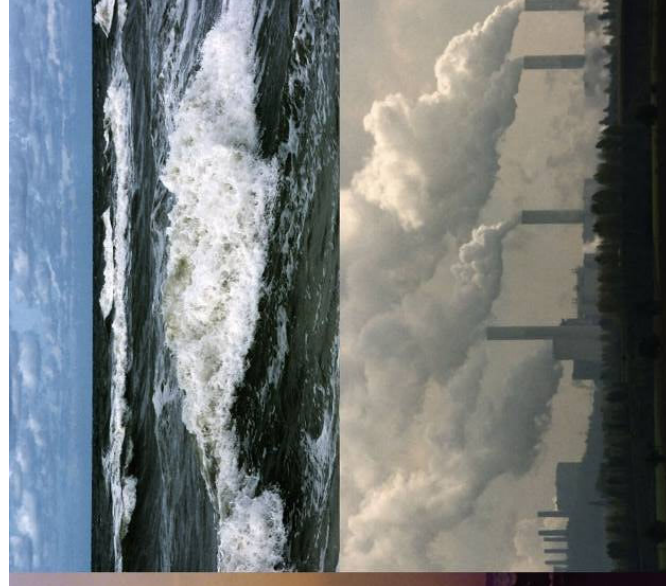
ECN

Energy research Centre of the Netherlands

EOS LT project: FLEXIBEL Results of WP 2 (ECN, TUE)

Peter Heskens

30 oct 2008



The EOS LT project FLEXIBEL is funded in part by SenterNovem

www.ecn.nl

WP2, insight into distribution grids with modern loads and DG

Thermal behaviour of buildings has strong effect on electricity use and should be taken into account in large scale models

uCHP and demand-side management

Large numbers of DG will affect reactive power

DG delivers only active power, therefore the substation need to deliver more reactive power

Different use of electricity grids can lead to lower PQ

resonances due to increasing cap. load, and reduction of damping due to electronic loads

Control of future PQ ask for new goods made to measure

combination of series and shunt active filters, placed central and dispersed

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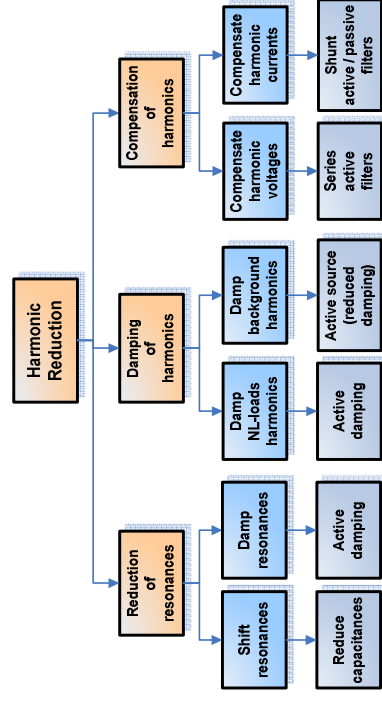
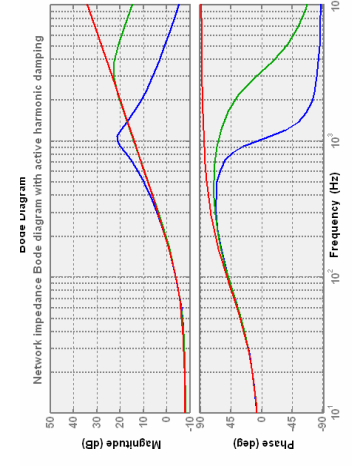
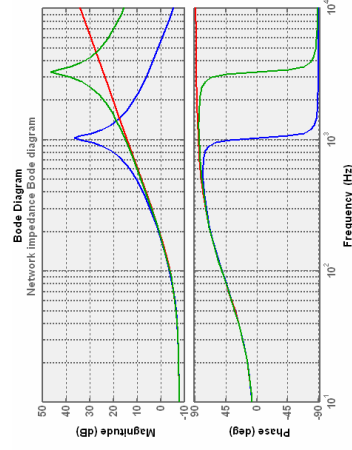
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WP2, Studies, modeling and developed tools

Studies:

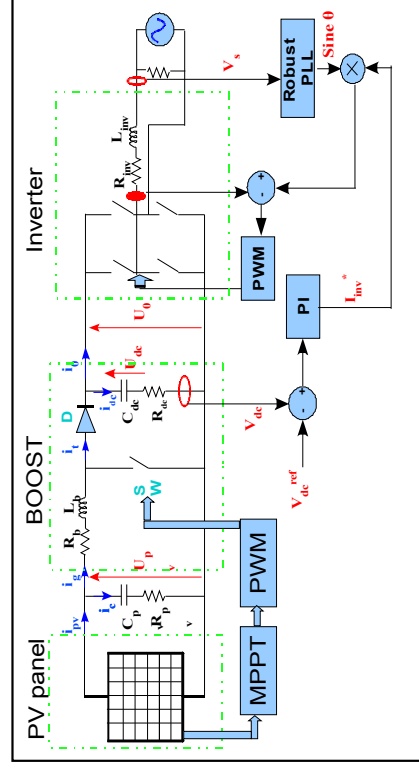
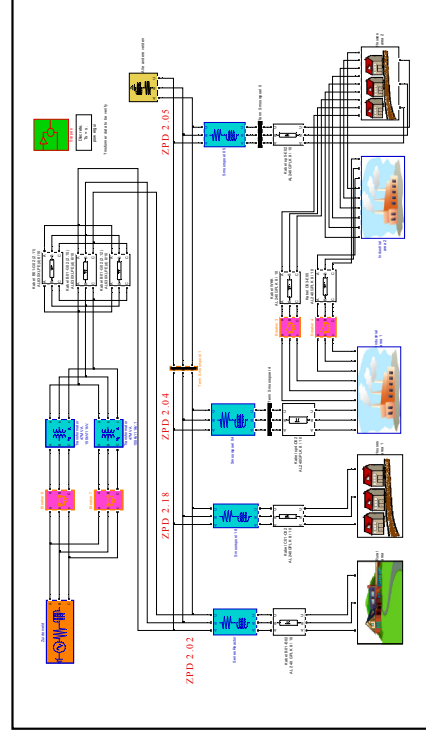
system of harmonic interaction
 measures needed to control harmonic interaction
 grid impedance spectrum measurement for PQ indication



WP2, Studies, modeling and developed tools

Computer modeling:

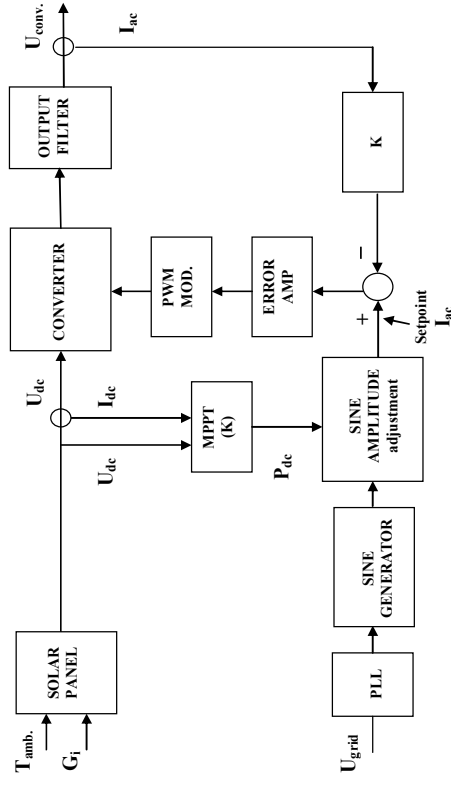
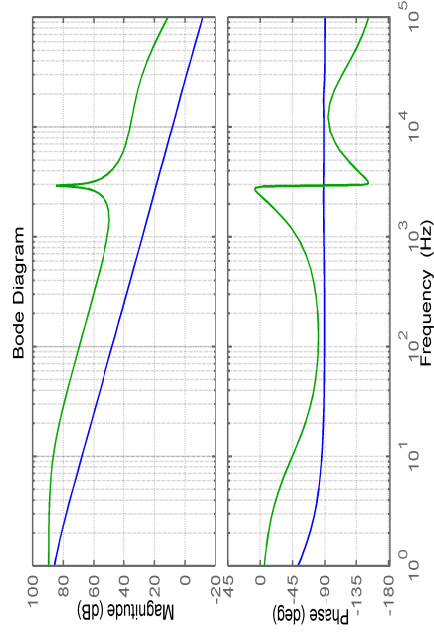
grid model (Lelystad), with configurable blocks (Flexdimodel)
 thermal and electrical Building and Energy Equipment model (BEE-model)
 Loads and DG modelling via U/I-Image, validated in a laboratory



WP2, Studies, modeling and developed tools

Control algorithms:

- local reactive power support
- load dispersal for LV cables and lines (DiaLog)
- compensation of capacitive load



WP2, Selection of work

Klaas Visscher with:

Control algorithms:

- local reactive power support
- load dispersal for LV cables and lines (DiaLog)

WP2, Selection of work

Choukri Benhabib with:

Computer modeling:

loads and DG modelling via U/I-Image and laboratory validation

*Thank you for your kind
attention*

PV Roof ECN (Petten)