The flexibility of this laboratory allows to research new DC microgrids control configurations and technologies, including energy management systems, to optimize the energy and power efficiency of industrial and residential applications.

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1. Microgrid Technology Research and Demonstration – www.meter.et.aau.dk

This Sino-Danish project deals with research, development and demonstration of a new generation of fast HEV charging stations (CSs). Its principal functionality is to use dedicated ESS within the station to compensate the adverse effects caused by charging, as seen from the grid.

Expected Results
- Creation of a suitable environment for large-scale acceptance of HEV fleets
- Provision of business cases for CS operators and manufacturers
- New ancillary services and prototype business instruments for the future flexible power market.
- Suitable technologies, architectures and standards for fast HEV CSs.

2. Flexible EV Charging Infrastructure – www.flexchev.et.aau.dk

The project is focused on theoretical development and experimental verification of a new generation of fast HEV charging stations (CSs).

5 Setups consisting of:
- Transformer for grid connected applications
- Real-time control dSPACE platforms
- Motorized change-over switches
- Smart-meters
- Adjustable L-C-L filters

The plan of this project is structured into 4 frameworks:
1. Microgrid design and Control
2. Power Quality
3. Energy Management System
4. Communication and SCADA

3. Active Filter Functionalities for Power Converters in Wind Power Plants – www.apf.et.aau.dk

The project intends to analyse and develop active filtering solutions for mitigation of harmonic amplifications due to resonances in the Wind Power Plant electric circuit.

4. Intelligent DC Microgrid Living Laboratory – www.idclab.et.aau.dk

The objective of this project is to research new DC microgrids configurations and technologies, including control, communications and energy management systems, to optimize the energy and power efficiency of industrial and residential applications.


This project aims to propose an architecture able to cope with the on-going trends in electricity production and consumption at end-user level in a more reliable and efficient manner according to the Smart Grid Strategy.

- Project Partners: NEOGRID, KK-Electronics, Kamstrup A/S, INESCETIC (porto), CPES, AAU

The DC bus is the “dorsal spine” of any DC distribution system, therefore, its voltage stability and control should be considered as a critical issue.