Networked Control Architectures for Intelligent Energy MicroGrids – iMGLab Project

Department of ENERGY TECHNOLOGY

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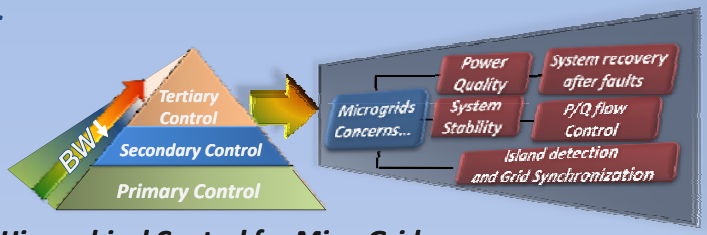
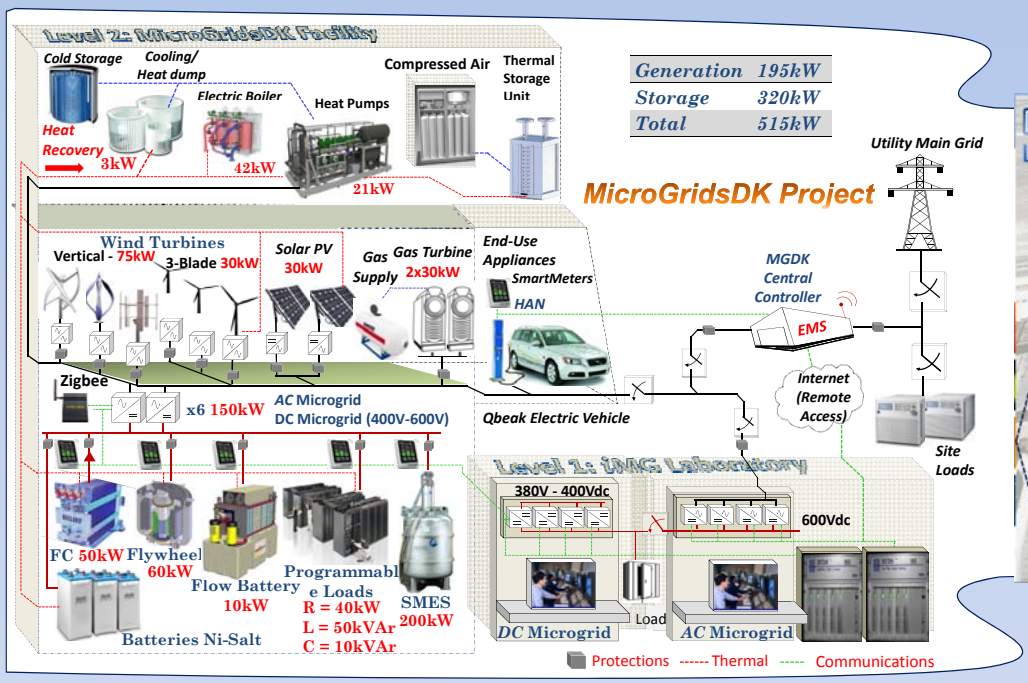
Abstract: ***A Microgrid can be defined as a part of the grid with elements like distributed energy sources, power electronics converters, energy storage devices and controllable local loads, that can operate autonomously islanded but also interacting with the main power network, in a controlled, coordinated way.***

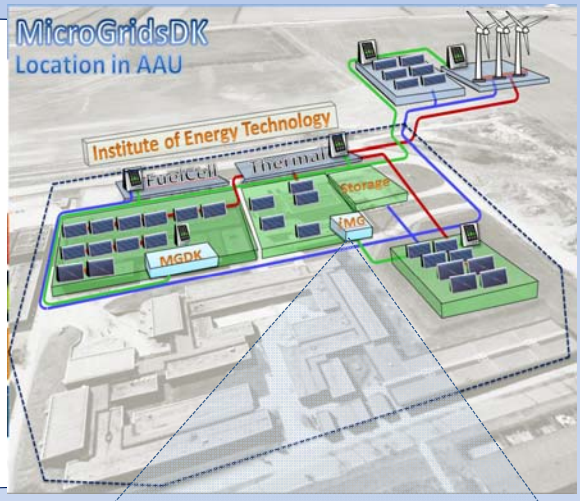
General aspects of a MicroGrid: "Definition and Operation"

- **Primary Control: Modeling + Inner loops + droop Control (P/Q Sharing).**
- **Secondary Control:**
  - **f/V Restoration (Island) :** Set-points assignation from MGCC to the DGs .
  - **Synchronization (Island to grid Connected mode)**
- **Tertiary Control: Power Import/export from/to the grid.**

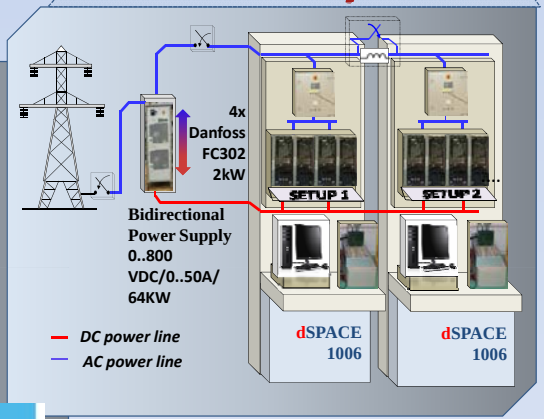


Hierarchical Control for MicroGrids





iMGLab Project

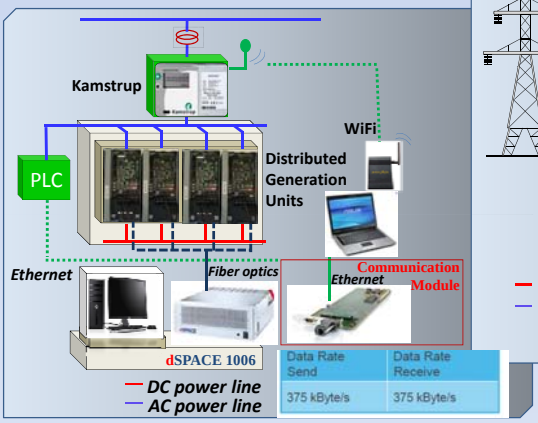


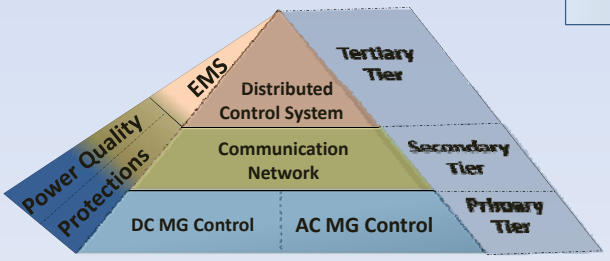
Ongoing Projects

iSARE-MicroGrid project in Spain – JEMA
Faroe Island MicroGrid Project – AAU and KK Electronics
iMGLab – Intelligent MicroGrid Lab in Aalborg Unversity

Industrial / PhD courses

AC Microgrids
DC Microgrids
Power Quality in Microgrids
Communications for Microgrids





Network Control Architecture

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