**PV2GRID: A Next Generation Grid Side Converter with Advanced Control and Power Quality Capabilities**

**Aalborg University** (AAU), **University of Cyprus** (UCY), Quantum Energy Corporation Limited (QUANTUM).

*Contact: tbl@et.aau.dk

**Description:** Photovoltaics (PV) have the potential to become a major source of renewable energy and clean electricity in the future and can provide a significant share of European electricity demand. However, there are several challenges that need to be addressed prior to the widespread adoption and utilization of PV technologies. Grid side converter (GSC), which is the key for the PV integration, are still not capable of advanced control features that enable the full control of PV systems, e.g., with fault ride through, reactive power support, and power generation control. This project aims to develop a next-generation GSC with advanced control and novel operational modes and capabilities, in order to further reduce the cost of PV energy.

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**Grid-Connected PV Inverters**

![Grid-Connected PV Inverters Diagram](image)

**Project Flow**

![Project Flow Diagram](image)

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**Summary of the Past Project Year**

In general, the project is running well as what have scheduled in the project proposal. The major activities in last year were:

- Recruitment of a Research Assistant, who is working on the project and has built up the hardware system for the project.
- Dissemination of the current outcomes and publicity of the project.

Deliverables listed in the project proposal were accomplished by the due time. Specifically, for Deliverables D2.1 and D2.2, links for the project have been launched (e.g., AAU - [www.et.aau.dk](http://www.et.aau.dk), UCY - [http://www.et.aau.dk](http://www.et.aau.dk)). For Deliverables D2.3 and D2.4, five journal papers have been published with the PV2GRID project, and one conference paper, which has also been presented at the 9th International Conference on Power Electronics and ECCE Asia (ICPE-ECCE Asia 2015), where valuable comments and recognition of the project have been received. There will be two more conference papers to be presented in the spring of 2016.

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**Example of an Advanced Active Power Control: Constant Power Generation**

![Example of an Advanced Active Power Control](image)

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**Dissemination of the Results**

**Journal papers**


**Conference papers**

- A Synchronization Scheme for Single-Phase Grid-Tied Inverters Under Harmonic Distortion and Grid Disturbances, (APEC 2016)
- Benchmarking of Phase Locked Loop based Synchronization Techniques for Grid-Connected Inverter Systems. (ICPE-ECCE Asia 2015)

For more information, please visit [www.et.aau.dk](http://www.et.aau.dk).