Universidad de Alcalá

CONTROLLER AND COMMUNICATION SYSTEM DEVELOPMENT FOR GRID-CONVERTERS APPLIED TO POWER QUALITY, RENEWABLE ENERGIES AND SMART GRID

TECHNOLOGY OFFER

Code

ENER_UAH_01

Application areas

- Energy

Type of collaboration

- Joint Venture Agreement
- Services Agreement

Main researches

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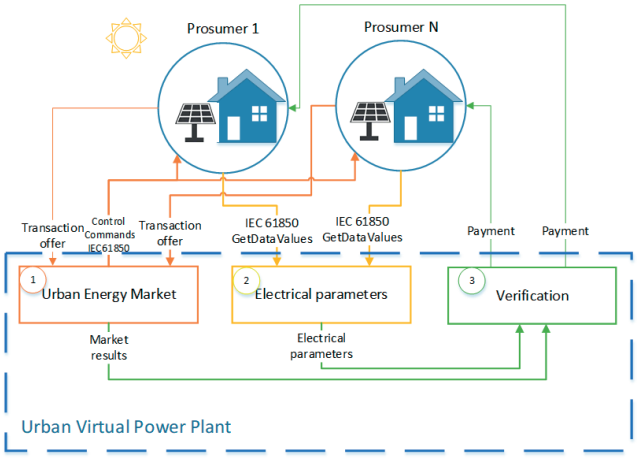

ABSTRACT

The research group "Electronic engineering applied to renewable energy systems", has worked since 2005 on projects with both public and private companies in the development of communication and control systems for power electronic converters that operate as interface with the power grid, to improve the quality of electric power (power quality) and to integrate renewable energy sources. The technology developed addresses issues such as remote control of converters, application of grid codes in the case of grid faults, operation and compensation of voltage sags, power factor compensation and harmonic, smart grid communications, virtual power plant implementations, etc

ADVANTAGES AND INNOVATIONS

- Communications systems that allow high-level control systems for power quality improvement or renewable energy sources.
- Development of algorithms to verify grid operation codes.
- Development of algorithms to detect isolated mode of operation.
- Algorithms to optimize the quality of electrical energy.
- Algorithms to compensate harmonics and phase shift factor.
- Energy efficiency in rail transport.
- Control and communications in intelligent networks (smart grids).
- Energy management solutions to optimize the revenue of distributed renewable sources.
- Energy trading managers based on IEC61850 standard and Blockchain technology.
- Forecasting algorithms to predict generation and consumption.
- Own test benches of renewable energy.