

Integration of Combined Cooling, Heating and Power Microgrids in Zero-Energy Public Buildings Under High Power Quality and Continuity of Service Requirements (IMPROVEMENT)



Resumen:

IMPROVEMENT will develop, validate and demonstrate a system to turn public buildings into almost zero energy consumption buildings (nZeB) by including micro-networks of generation combining warm, cold and electricity and conceive to respond to the SUDOE climate conditions. Therefore, the autonomy and the energy efficiency of public buildings will be improved and resistant micro-networks to potential failures developed.

Objetivos:

- Development of a system to improve energy efficiency in public buildings through a solar heating and cooling generation system, and the incorporation of active/passive techniques for buildings with almost zero energy consumption.
- Development of a fault-resistant power control system for microgrids under high quality supply design criteria.
- Development of an energy management system for renewable generation microgrids with a hybrid energy storage system under criteria of minimum degradation, maximum efficiency and priority in the use of renewable energies.

Objetivos contribución:

WP 2. Power control system for microgrids with high supply quality requirements.

Entregables:

- D 2.1.1. IMPROVEMENT Power Control System Technical Requirements.
- D 2.2.1. Report on the AMI platform developed to evaluate the quality of supply in microgrids.
- D 2.3.1. Report on centralized and decentralized algorithms for detecting power quality.
- D 2.5.2. Factory Acceptance Test of the Power Management System.

Impacto:

IMPROVEMENT will allow to achieve the following results:

- Improve the energy autonomy of existing public buildings through hybrid storage systems, even under extreme weather conditions.
- Increase the energy efficiency of public buildings with the integration of almost zero energy building techniques, and cooling and heating systems based on renewable energies with thermal storage.
- Development of fault-resilient microgrids through the use of inverters with active neutral control to guarantee supply quality, in the presence of sensitive loads (high-tech equipment).
- Demonstration in real (and replicable) public buildings.
- Develop regional strategies and implementation plans.

In addition, as a result of the project, and with the collaboration of the associated companies, a business plan will be drawn up for the commercialization of the technology developed.

Presupuesto: 2,501,926.27

Equipo de investigación

Nombre: Instrumentación Electrónica Industrial

Email: icei@uco.es

PAIDI: TIC-240

Web: <http://www.uco.es/icei/es/index.html>

Investigador principal: Antonio Moreno Muñoz (Partner)

Email: el1momua@uco.es

Teléfono: +34 957218373

Presupuesto del equipo: 189,300.00

Universidad: Universidad de Córdoba

Enlace: <https://www.interreg-sudoe.eu/proyectos/los-proyectos-aprobados/216-integracion-de-aire-acondicionado-calefaccion-et-micro-grids-verdes-en-los-edificios-publicos>

Estado: published

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