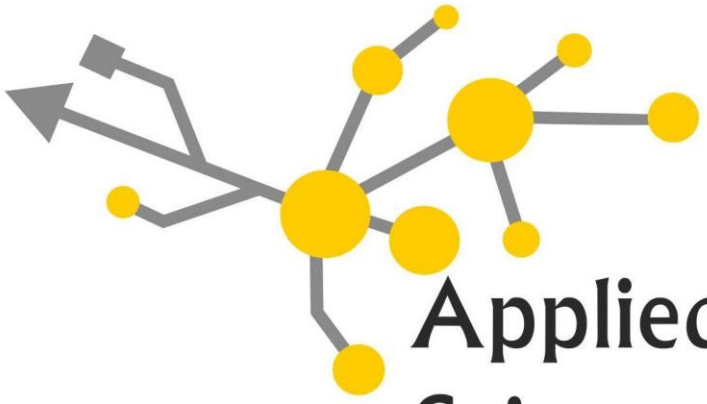

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ABSTRACTS BOOK

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Mathematical model and control strategy for a Capacitive Deionization (CDI) System for water desalination, with a buck-boost bidirectional converter powered by photovoltaic solar cell, and a supercapacitor

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1. Introduction – In recent times, a great effort has been made in increasing the energy efficiency of the processes of obtaining water from human consumption, so a number of new technologies have emerged, such as the capacitive deionification (CDI), that is based on the use of materials of high porosity in the form of electrodes in capacitive cells to capture the ions of salts dissolved in the water to be treated [1]. To achieve this, it must be used power converters that adapt to the operation needs of the CDI cells. In addition, intermidium energy storage systems have been used, such as supercapacitors that improve the operation of the system as a consequence of its characteristics [2]. **The main objective of this article** is to propose a mathematical state-space model and a control strategy for the system proposed in image 1, which is a capacitive deionization desalination system, which includes a buck-boost bidirectional power converter, a CDI cell, a photovoltaic cell, which will be responsible for powering the system in a more sustainable way, a supercapacitor like an energy storage element, with a high dynamic response.

2. References

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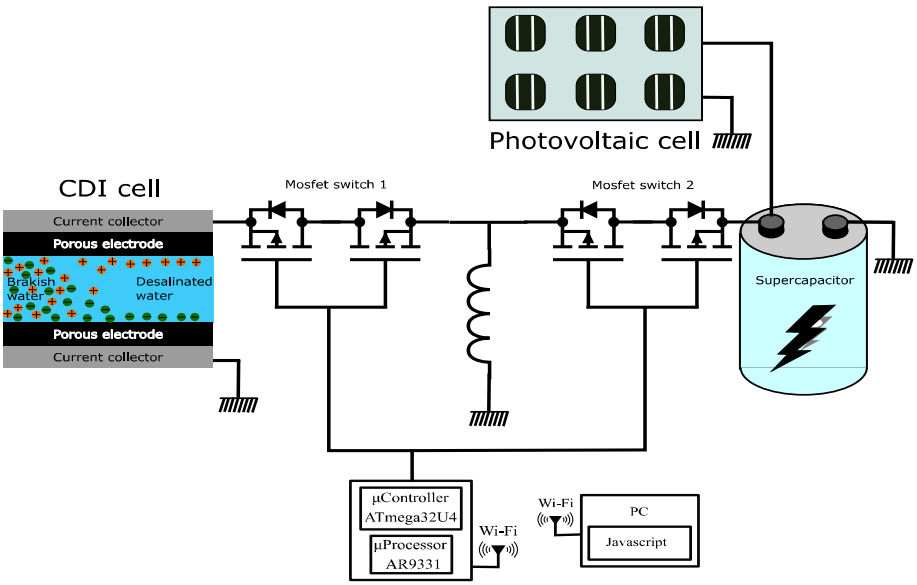

Image 1. Proposed system for water desalination, with a buck-boost power converter.