



Smart water grid: desalination water management platform

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ABSTRACT

This paper presents a desalination process powered by a microgrid. Desalination is critically important for many countries demanding potable water beyond that available in nature. The desalination process requires a stable power supply system. As the stable power supply system, microgrid, which is a distributed small capacity power system integrating renewable energy with energy storage, has become important. In this paper, small capacity desalination plant powered by a microgrid is implemented and its features are described. The desalination plant is operated by electricity provided from either renewable energy resource such as solar cell or power grid. Overall control of the desalination plant is carried out by a programmable logic controller and status of water production is monitored by energy management system. The implemented desalination plant consumes 5 kW and produces 1 m³/h of fresh water.

Keyword: Desalination; Reverse osmosis; Microgrid; Energy management system; Renewable energy; Transmembrane pressure

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