Algorithm for Optimum Sizing of a Photovoltaic Water Pumping System

A sizing algorithm for a photovoltaic water pumping installation composed of photovoltaic panels, battery's bank, DC/AC converters and a water pump is presented. Considering criteria related to the battery's bank's safe operation, fulfilling the water volume needed by the crops and ensuring a continuous operation of the pump, the algorithm decides the size of the installation's components. The installation's cost using the presented and the basic algorithms are compared. Obtained results confirm that the water demand is covered during the crops' vegetative cycle with a minimum use of the battery's bank and minimum cost.

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Abstract

References

hybrid renewable energy systems. Renewable and Sustainable Energy Reviews. (2009), 2111-2118.

**Index Terms**

Computer Science  
Algorithms

**Keywords**

Photovoltaic energy  sizing algorithm  water  pumping.