



(1)

Steady-state Modeling and Control of a Microgrid Supplying Irrigation Load in Toshka Area

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Abstract:

This paper is aimed at sizing solar-wind-battery standalone microgrid for supplying irrigation and domestic loads in Toshka area, Toshka, Egypt. Not only the MG system components but also the interconnection cables and feeders are sized. Steady-state power flow through the MG system is analysed at varying sun irradiation and wind speed. Modeling of the MG components and their control of system voltages, currents and powers are investigated. Power flows during different MG operation conditions including absence of wind and sun as well as sudden disconnection of the load are studied

Keywords:

Hybrid Solar-Wind , Irrigation System , Toshka Area , control system , power flow

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(2)

Design and Implementation of Stand-alone Residential PV System

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Abstract:

This paper is focused on construction of a stand-alone residential 2-kW centralized PV system to feed different domestic loads at a home including lighting loads, washing machine, TV, refrigerator and computer. The stand-alone residential 2-kW PV system consists of PV generator, storage batteries, charge regulator, inverter, filter and maximum power point tracking control system. The paper in steps includes PV modeling, software development for monitoring storage batteries, development of maximum power point tracking controller, design and implementation of an inverter and use of a filter to improve the inverter output waveform.

Keywords:

PV system, residential load, inverter, filter

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