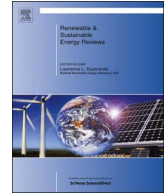




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Modeling and characterization of a grid-connected photovoltaic system under tropical climate conditions



Ali M. Humada^{a,b,*}, Ashty M. Aaref^c, Hussein M. Hamada^d, Mohd Herwan Sulaiman^b,
Nowshad Amin^e, Saad Mekhilef^f

^a *Electricity Production Directorate of Salahaldeen, Ministry of Electricity, Iraq*

^b *Faculty of Electrical & Electronics Engineering, University Malaysia Pahang, Pekan, Malaysia*

^c *Dept. of Software Engineering, Faculty of Technical, University of Kirkuk, Kirkuk, Iraq*

^d *Faculty of Civil Engineering & Earth Resources, Universiti Malaysia Pahang, Gambang, Malaysia*

^e *Dept. of Electrical, Electronic and Systems Engineering, The National University of Malaysia, 43600 Bangi Selangor, Malaysia*

^f *Power Electronics and Renewable Energy Research Laboratory (PEARL), Department of Electrical Engineering, University of Malaya, Kuala Lumpur, Malaysia*

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ABSTRACT

In this study, a three parameter photovoltaic (PV) model operates under tropical weather conditions is developed and characterized. The performance of the PV system model is also assessed. Malaysia weather conditions selected in this case study as a test bed. A mathematical PV model of a small-scale PV system is established. The proposed PV model reliance on, both, the simplicity and accuracy, which based on real data. The potential results obtained based on the designed simulation. The average PV performance based on the comparison of the calculated and actual PV performances was 65.8%. The average inverter performance based on the calculated and actual inverter efficiencies was 97.58%. The accuracy of proposed model verified by using different evaluation criteria and compared with various models from the legacy works. This study could serve as a valuable reference for grid-connected PV system installation in Malaysia and other tropical regions to promote PV implementation.