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Data collection for optimiation sizing of a hybrid photovoltaic-wind system in East Coast of Malaysia / Mardhiah Rahim.

Lihat sebelah

DATA COLLECTION FOR OPTIMIZATION SIZING OF A HYBRID PHOTOVOLTAIC-WIND SYSTEM WITH BATTERY STORAGE IN EAST COAST OF MALAYSIA

By
Mardhiah Bt Rahim

A project report submitted in partial fulfilment of
the requirements for the award of the degree of
Bachelor of Applied Science (Physics Electronic and Instrumentation)

DEPARTMENT OF PHYSICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: DATA COLLECTION FOR OPTIMIZATION SIZING OF A HYBRID PHOTOVOLTAIC - WIND SYSTEM IN EAST COAST OF MALAYSIA

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DECLARATION

I hereby declare that this thesis entitled Data Collection for Optimization Sizing of A Hybrid Photovoltaic-Wind System with Battery Storage in East Coast of Malaysia is the result of my own research except as cited in the references.

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ABSTRACT

In today's world of enhancing the renewable energy technologies, the demands of electricity generation from renewable energy has been increasing rapidly. Due to that, many researchers are interested in this field and thus many studies had been done. In this study, the hybrid photovoltaic-wind system which produced electrical energy from both solar radiation via solar cells and wind energy by wind turbine was studied. The insolation and wind speed data for the year 2006 had been recorded by NRG Symphonie Data Retriever at University Malaysia Terengganu (UMT) Renewable Energy Station. Wind data had been analyzed using Weibull distribution method. The method for optimization sizing of the hybrid PV-wind systems presented involved the daily load demand for a specific house. In this study, the design of optimal size of the systems is based on the deficiency of power supply probability (DPSP), relative excess power generated (REPG) and unutilized energy probability (UEP).

ABSTRAK

Penggunaan tenaga diperbaharui semakin meningkat dari tahun ke tahun disebabkan oleh permintaan yang semakin tinggi. Tenaga diperbaharui adalah mesra alam dan boleh diklasifikasikan kepada enam kategori bergantung kepada sumber-sumber yang sedia ada iaitu teanaga angin, tenaga suria, tenaga biomas, tenaga hidraulik, tanaga ombak, dan tenaga geoterma. Walau bagaimanapun, tenaga suria dan angin merupakan dua sumber yang paling kerap diaplikasikan di negara kita pada hari ini. Telah terbukti bahawa tenaga diperbaharui daripada penghasilan tenaga elektrik boleh bersaing dengan sumber dari kawasan penempatan jauh. Berikutan dengan itu, gabungan sistem solar menggunakan sel solar dan tenaga angin daripada turbin telah dikaji. Sisten tenaga solar itu sendiri tidak boleh menyumbangkan sumber tenaga berterusan disebabkan oleh faktor cuaca. Begitu juga dengan tenaga angin, kerana perbezaan magnitud dan halaju angin berubah dari masa ke semasa.