

Photovoltaic/Wind Hybrid Power Generation System for Rural Electrification

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Abstracts

The use of renewable energy technologies in rural areas is becoming increasingly important to meet the needs of a large rural population all around the world. Solar and wind renewable resources in particular are available in areas that at present have no access to conventional grid power. This paper describes a stand-alone photovoltaic/wind hybrid power generation system to supply power to rural areas since the availability and reliability of the system has been demonstrated in Vietnam.

The stand-alone photovoltaic/wind hybrid system installed in middle Vietnam consists of a 6.7 kW solar cell, a 1.8 kW wind turbine, a 1,200 Ah battery, a charge controller and an inverter, and is capable of delivering 26 kWh/day. In 2001, for example, the system has supplied 2,610 kWh power to 36 houses for lighting, television, radio, etc., and has played an important role in the area.

In stand-alone power generation systems, an efficient battery system is important because battery characteristics have an influence on overall power generation system performance, such as energy available to the load and system life-cycle costs. This paper also describes the efficient battery systems.