

Hybrid Renewable Energy Standalone Systems

Several isolated areas in the world currently use only diesel generators (DGs) to serve their requirements of electrical energy. However, the use of DGs has many drawbacks: 1) high cost of electricity, 2) air and noise pollution, 3) Loss in fuel efficiency and maintenance cost. To remedy those problems it is better to generate power from a cost-effective, environmental friendly renewable energy sources (RESs) such as wind, solar, hydro, biomass, etc. RESs are clean and almost available all over the planet but are intermittent in nature, especially wind and solar power generations. This makes their integration to micro-grid with DG difficult, especially if the local grid is not connected to the main grid. Hybrid standalone system consists of many elements such as photovoltaic panels, wind turbines, DG, energy storage system, AC and DC loads, dump load etc. Most of these elements are connected to the AC or DC bus via power electronic devices. In this presentation many possible hybrid renewable energy standalone systems will be discussed. Control of some of the systems will be discussed in detail.