

## New Method for Controlling of Solar-Wind System

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### ABSTRACT

This paper offerings the simulation and analysis and control of a hybrid system centered on solar and wind system engaging a dc-dc boost converter and permanent magnet synchronous generator. Maximum power point tracking controllers of solar PV and wind system are functioning on perturb and perceive method that extract the maximum power from solar and wind springs. It needs the knowing of dc voltage and current output of solar PV and the rectified output voltage of PMSG motivated by a wind turbine. We implemented load leveling through battery means that the solar-wind hybrid structure equips with the battery to supply the load demand. We developed the modeling of the system in MATLAB and MPPT control is considered during changing solar irradiance and wind speeds.

**Keywords:** Hybrid control systems, Solar panels, Renewable energy

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### ۱. INTRODUCTION

In the modern world majority of the world's energy sources are from the conventional sources (non renewable)-fossil fuels such as coal, natural gases and oil. These fuels are often termed non-renewable energy sources, as they cannot be renewed at the rate of its consumption. With growing concern of global warming and the reduction of fossil fuel reserves, many are look at sustainable energy solution to preserve the earth for the future generations. Hence the importance of renewable energy is dominant. Renewable energy sources which are also called as non-conventional type of energy are the sources which are continuously renewed by natural process. The majority of the renewable energy comes either directly or indirectly from sun and wind and can never be exhausted, and so they are called renewable energy [۱-۲]. Wind and photovoltaic energy holds the most potential to meet our energy demands. Alone, wind energy is capable of supplying large amounts of power but its presence is highly unpredictable as it can be here one moment and gone in another. Similarly, solar energy is present throughout the day but the solar irradiation levels vary due to sun intensity and unpredictable shadows cast by clouds, birds, trees, etc. [۳].

Solar energy and wind energy match with each other at changed seasons and climate conditions, as a result independent wind-solar hybrid power system is expected to obtain better performance. Therefore, the hybrid energy source based on solar-PV and WECS are highly being a focus of research. It can provide high-quality power and also reduce the overall cost of power generation and greater balance in power supply. As a result, the important potential of renewable energy can is fully developed [۴].

The systems with only solar or wind power generation are productive but there are problems linked with both of them. The solar power is not available for ۲۴ hours and wind is not continuous all the time. So a hybrid system containing solar and wind has been designed to overcome these shortcomings. A system has been designed which utilizes both solar and wind power generation systems with the storage batteries for continuous power. Recent researches in the field