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A Review of the Experimental Study on Increasing Energy Efficiency through Smart Grids Connected Power Supply

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ABSTRACT

Solar photovoltaic (PV) production will play an important role in shaping the future of electricity worldwide. Reflectors are an important feature of photovoltaic systems. Ensuring its safety and quality is an essential link in the development of this technology. The case and perspective of photovoltaic power generation, especially detection and dependence, is presented. It uses a photovoltaic system to convert sunlight directly into electricity. The photovoltaic system is one of the most attractive candidates for green energy generation. This system is designed to be connected to the grid system to meet the load demand. From this point on, the term grid-connected photovoltaic system arose.

Key Word- Grid-connected inverter; PVsystem; Testing technology

1 Introduction

To get the most out of this situation, a third-party platform is required to test and test the performance of different PV Transformers, which seem efficient, reliable and independent. A front test bench installed, which can be used to test the inverter with a display power not exceeding 500 kW. Initially, the current position of viewing technology in PV systems is displayed. The basic requirement for building the photovoltaic inverter test platform is monitored and discussed. The first platform for the platform was redesigned and provided in depth. The design specification, test items and test methods are clearly shown.

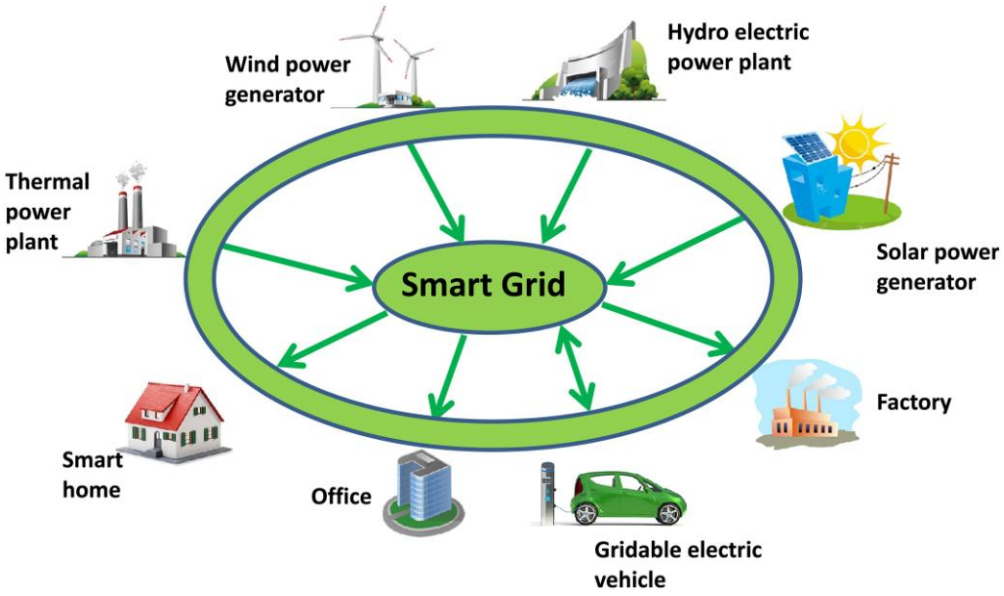

Figure 1 Smart grid

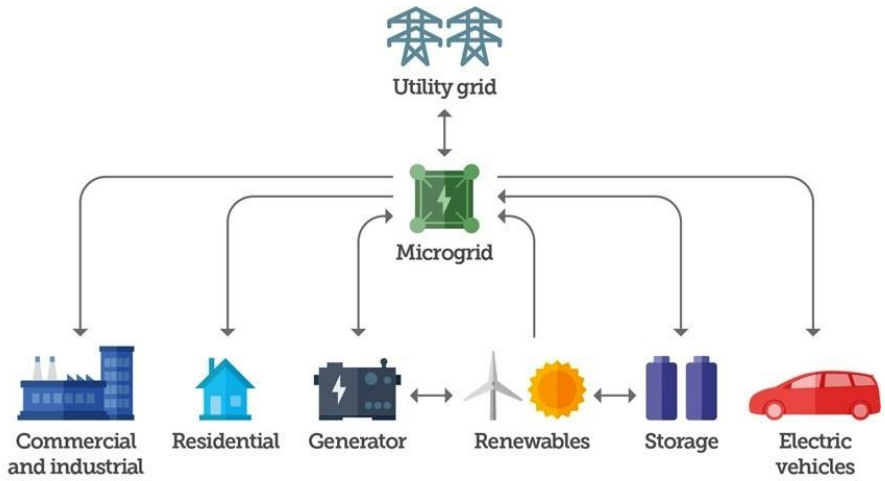

Figure 2 Utility and microgrid

2 Literature review

Haider Muaelou (2015)- solar energy is increasing in modern energy systems. Due to the lack of fuel, grid-connected writing is important along with conventional electrical wiring. Creating control systems for integrating photavoltaic power distribution systems is a daunting task. The first step is to model which components of the photovoltaic system, especially PV sauce, DC DC converter and network interface inverter have the appropriate filters. PSCAD is used to implement this study. Then the fixed controller is mounted. The designed control device aims to create a highly dynamic point tracking (MPPT) algorithm for controlling injection performance and response power. In order to provide photovoltaic systems as well as energy efficiency factor optimization, this article deals with energy efficiency.

Huang-Jen Chiu (2011) - Maximum power point tracking (MPPT) is used in photovoltaic systems to increase the output power of a photovoltaic array, regardless of temperature, lighting conditions. The new MPPT system is designed, consisting of DC to DC converter, controlled by a unit compatible with a microcontroller. There are two levels of charging for a defined PV charger. At the beginning of the charging process, the MPPT continuous charging program is accepted. When the charging battery (SOC) has reached a certain level, the current pulse charging scheme is performed with the normal rest time to get the average charging current has two exponential.

Mohammad H. Rashid (2009)- To maintain the current growth rate of 8-9%, India needs to develop more electricity. Nowadays, renewable energy (RE) systems and technologies are becoming increasingly important in the country. There are a variety of renewable energy sources. Renewable energy produces DC or AC electricity depending on the type and characteristic. The current situation indicates that we are connecting more and more improved electrical systems to the grid. The most widely used renewable energy is solar energy because it is quiet and clean, which is why PV system is gaining value in the current environment.

Prashant. V. Thakre (2011) - To use solar energy, different energy conversion technologies are required. Photovoltaic (PV) panels, or more commonly known as solar cells, are used to convert solar energy into electricity. The term PV stands for image (lamps) and electricity (electronics), which solar photographs emit electrons from atomic plates and make a difference.

Jawad Ahmad (2010)- In this paper it is recommended to take maximum power from the photovoltaic fryer to charge the maximum power point tracker battery charger battery. The output power of a photovoltaic system varies with light and temperature. It is important to improve the performance of young people. There are several ways to use an MPPT to use PV systems at high voltage points.

Siwakoti, Yam Prasad.(2010) - These models provide an estimate of the solar location with respect to the approximate location, determination of solar energy, and analysis of the electrical energy generated from the PV surface.

Jiang Nan (2010)- Solar photovoltaic (PV) generation plays an important role in the world's future energy field. The inverter is an integral part of the photovoltaic system. Maintaining its integrity and quality is a key factor in the development of this technology. The nature and potential of PV for power generation are mainly observed and investigated.

3 Testing method

Grid Photovoltaic Inverter: Test element with DC power and IAC output power installation

PV Specifications: The version contains several PV modules, which can convert solar energy into DC power.

PV Surrey Simulator: In fact, it controls the electric motors used to compare the rows of PV arrays based on different climates and assumptions based on the output of the PV inverter. Both are PV tires and have to install reflective simulator stations.

Grid simulator: Similar to a photoelectric head simulator, which is used to compare electrical currents and sometimes the inverter is directly connected to the physical grade. Basically, they are adjustable electric motors. Usually, phantom load and network simulator are used for simultaneous testing.

4 Electrical performance

The Electrical Performance Parliament is a review of the photovoltaic inverter type, which includes performance, harmonic current, power factor, object current, uneven voltage and noise. In this test, the network simulator should perform five times the rated power of the inverter. DC power should be provided 1.5 times the height of the tested object.

In this section, some measurement results can be calculated directly with the oscilloscope and for the type of analysis, while other parameters must be calculated according to the measurement.

5 Electromagnetic compatibility

A photovoltaic inverter is a large electrical device connected to a grid. Therefore, it must operate reliably and stablely in any electrical environment. In other words, a photovoltaic power plant should be able to operate normally when there is a power outage and no other installation. Testing features include electromagnetic and brightness switching, needing output, and noise transmission protection (static output, radio frequency electromagnetic field, electromagnetic explosion speed, increased frequency, channel noise, electrical dynamics, and obstructions). It includes.

6 Conclusions

Depending on the technical display and test characteristics of the photovoltaic inverter connected to the CGC grid, the inverter viewing platform is designed and its performance in principle is explained in detail. Test plans, test materials and associated facilities will be provided. It should be noted that the construction of the current platform for photoovoltaic systems is very expensive.

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