International Journal of Research Publication and Reviews

MPPT Technique Based Solar Power Extraction for Supplying the Loads Using Boost Converter

Neelesh Gour [a], Madhu Upadhay [b]*

[a] M. Tech Scholar, EX department NIIST Bhopal
[b] Professor, EX Department NIIST Bhopal

A B S T R A C T

Solar energy is a part of renewable energy soyrces which plays an important role in power forcasting for different loads. Solar power basically used in different ways, it can be used in stand alone mode wheresolar generated power is locally distributed to the local loads. While grid connected solar also contribute to the grid when ever surplus power is available. MPPT TECHNIQUES is employed for extrcaction of maximum power from RERs specially solar power Standard Solar, Inc. recently completed the country's first grid-interactive battery pack solar microgrid system. The first was challenging: it took months of dedication, innovative technology, and collaboration with key partners, electronics and government to make project a reality. The first half of this article describes the configuration, capabilities, and features of the Microgrid. Next, I discuss the time it takes to build and install a micro solar grid, the lessons learned from this new project, and what to consider when using this new technology.

Keywords: Solar power, MPPT techniques, Stand Alone Mode , Grid Connected Mode

1. INTRODUCTION

Today's world is full of issues, and many greenhouse gases are generated that are bad for the environment. One of the main causes of greenhouse gas emissions is non-renewable energy. Additionally, the inhabitants of these power plants are mostly affected by a number of ailments that are caused by these power plants. These power plants also have a limited lifespan because their energy supplies run out soon. In order to boost the voltage generated by wind, additional electronics are used, such as gearless or gearless machinery. Additionally, inverters are used to change the output voltage such that it is greater than the grid's value. It can incorporate wind energy into the bus grid because its stage is earlier than the bus stage. In a renewable energy scheme, wind and solar power are combined to increase the reliability of an electrical system. Conservatively, the wind turbine's AC output power is rectified or then interacted with the solar cell's output voltage to charge the battery or power load.

1.1 ENERGY RESOURCES

Since the development of the first electric machine in the 17th century, there has been interest in the use of electricity for a variety of reasons, including politics, the economy, the growth of the global population, and the demand for new technology. A worldwide hunt for new energy sources has been sparked by the expansion of electrical applications. To cut back on energy utilisation, other brand-new energy sources are being utilised. Details on global energy production and consumption. Energy can be split into two categories, non-renewable resources and renewable resources, in terms of quantitative change.

1.2 Resources for Renewable Energy:

A resource that can be used and recycled throughout time is renewable energy. The usage of renewable energy is aided by industrialization and rising global population. Learn about renewable energy sources such as solar, wind, biomass, tidal, wave, and geothermal.

A. Solar power

Standard Solar, Inc. recently completed the country's first grid-interactive battery pack solar microgrid system. The first is the challenge: it took months of dedication, innovative

technology, and collaboration with key partners, utilities and governments to make project a reality. The first half of this article describes the configuration, capabilities, and features of the Microgrid. Next, I discuss the time required to build and install a solar microgrid, the lessons learned from this new project, and what processes should be considered when using the technology. This new version of Chapter Solar Microgrid has two types of design work. mode: network interactive mode and island mode. In Grid interactive mode, the battery system works in parallel with the photovoltaic system.

B. MPPT Algorithm

Maximum Power Point Tracking (MPPT) is an algorithm for photovoltaic (PV) inverters to continuously adjust the impedance sensed by the solar panel to integrate the PV scheme in the transfer at or near the photovoltaic panel Maximum energy, temperature changes, such as solarisation. Chapter Solar inverter manufacturers use the MPPT algorithm to use the electricity produced by photovoltaic systems. The power control algorithm ensures that the input operates at the "max voltage" (or max voltage) of the output voltage curve, as shown below. The MPPT algorithm is generally used in the design of the photovoltaic system controller. The algorithm takes into account factors such as radiation (light) and disease to ensure that the photovoltaic system produces maximum power Chapter

Wind turbine and solar photovoltaic (PV) solutions use the final power to monitor power consumption in all cases. Chapter Photovoltaic solar power systems are available in various configurations regarding inverter, external grid, battery bank 36 or other payment methods.

However, regardless of the use of solar energy, the main problem with MPPT solutions is that the power conversion of the solar cell depends on the amount of sunlight absorbed by the solar panels or the nature of the load. When the size of the sun changes, the components of charge change, giving the maximum acceleration. This change is called power point and MPPT is the way to find or control this consumption. The conversion can be used to charge photovoltaic cells and then transfer current or more to another device or solution. MPPT MP has a hard time choosing the best battery. the strongest. Solar battery has a good relationship between temperature and total resistance, which leads to non-linear efficiency generation, which can be calculated according to the I-V curve. The purpose of the Section MPPT system is to model the effect of the photovoltaic cell and use the (load) resistor to get the maximum power in the environment. Section MPPT units are often combined with power transformers to provide current or future feedback, filters or commands for to handle a variety of loads including base, battery or generator. Solar panel is directly converted from inverter and can be MPPT: this inverter uses output form (co-V of solar panel and uses protection). (Load) is the result of MPP, current MPP (Vmpp) and current MPP (Impp) to get maximum power to Power (Pmpp).

C. A BOOST CONVERTER is a DC-DC converter with a higher output volume than Also known as a pulse converter. The loader got its name because it has a higher gain than the extension cable like the boost converter. According to the energy-saving law the input power must be equal to the output power (i.e. there is no line loss in.

References:

[1] H. Abu-Rub, J. Holtz, J. Rodriguez, and G. Baoming, "Medium-Voltage Multilevel Converters—State of the Art, Challenges, and Requirements in Industrial Applications," *IEEE Trans. Ind. Electron.*, vol. 57, no. 8, pp. 2581–2596, 2010.

[2] R. Agrawal and Sh. Jain, "Comparison of reduced part count multilevel inverters (RPC-MLIs) for integration to the grid," *Int. J. Electr. Power Energy Syst.*, vol. 84, pp. 214-224, 2017.

[3] N. Sandeep and UR. Yaragatti, "A Switched-Capacitor-Based Multilevel Inverter Topology with Reduced Components," *IEEE Trans. Power Electron. Lett.*, vol. 33, no. 7, pp. 5538-5542, 2018.

[4] A. Hota, S. Jain, and V. Agarwal, "An Improved Three Phase Five-level Inverter Topology with Reduced Number of Switching Power Devices," *IEEE Trans. Ind. Electron.*, vol. 65, no. 4, pp. 3296–3305, 2018.

[5] M. Norambuena, S. Kouro, S. Dieckerhoff, and J. Rodriguez, "Reduced Multilevel Converter: A Novel Multilevel Converter with Reduced Number of Active Switches," *IEEE Trans. Ind. Electron.*, vol. 65, no. 5, pp. 3636–3645, 2018.

[6] S. K Chattopadhyay and C. Chakraborty, "Three-Phase Hybrid Cascaded Multilevel Inverter Using Topological Modules with 1:7 Ratioof Asymmetry," *IEEE J Emerging and Selected Topics in Power Electron.*, vol. 6, no. 4, pp. 2302–2314, 2018.

[7] M. Ghosh Majumder, A. Kumar Yadav, K. Gopakumar, K. Raj R, U. Loganathan, and L. G. Franquelo, "A Five-Level Inverter Scheme Using Single DC Link with Reduced Number of Floating Capacitors and Switches for Open-End IM Drives," *IEEE Trans. Ind. Electron.*, (Early Access), 2019.

[8] F. Bahia, C. Jacobina, N. Rocha, I. Silva, and R. Sousa, "Hybrid Asymmetric Cascaded Multilevel Inverters Based on Three- and Nine Level H-Bridges," *IEEE Trans. Ind. Appl.*, (Early Access), 2019.

[9] T. Abhilash, K. Annamalai, and S. Veeramraju Tirumala, "A SevenLevel VSI with a Front-end Cascaded Three-Level Inverter and Flying Capacitor fed H-Bridge," *IEEE Trans. Ind. Appl.*, (Early Access), 2019.