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AN INVESTIGATION INTO THE MANAGEMENT AND ENHANCEMENT OF THE SMART GRID USING DISTRIBUTED RENEWABLE ENERGY SOURCES AND TRADITIONAL ELECTRICAL POWER SYSTEMS

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ABSTRACT

India is in the opposite scenario in terms of having to supply electricity for a set amount of time in order to meet the demand for money goods and interest rates that are increasing quickly. For power system engineers, the restructuring of the power industry has raised a number of new issues. In order to see the current potential fast, sharp mind network (SG) at a good quality of levels, a recently sent out act or power of seeing of recently sent out act or power of seeing of highly developed automation apparatus in the Indian power systems, needs to be updated. Use more crisp, well-dressed networks in order to make them more functional. When strategically positioned, well-dressed network operations will open up new doors and prospects for big financial gain. To emphasise some of the points made in this go-to authoritative person, numerous instances of present automation systems in India are provided. Additionally, it details the development and advancement of well-dressed network technology over time, as well as insights made along the way. In the framework of anticipated demands for Indian control, efforts are made to emphasise current and emerging challenges associated to the forward production of well-dressed network technology.

Keywords: Solar Power, Smart Grid, Micro Grid, Restructuring of power network, Programmable Voltage source.

INTRODUCTION

Via green-house gases (GHGs) and the procurement of more carbon credits, the complete power for a given time shortness has directly foiled science relating to the production, distribution, and consumption of products and labour supply, society, nation-building, and conditions. The increasing demand for power around the globe is being observed in the mind and reported as a the transition. Due to a lack of property, old network roads and structures, weather, condition changes, higher powering content, substance gives idea of price, the electric system has become inefficient and constantly changing. With this, the entire about has raised a number of high-risk areas for which the power for a one-time total transition for a green and sustainable future is responsible for and came after.

2. SOLAR POWER

There are more than enough solar radio rays available (to be used) all over the globe to provide what is needed and necessary in response to a rise in demand for solar power systems. The total investment in solar power (PV) in India is estimated to be about 1095 MW, according to the National Solar Special Work (NSM), which began in January 2013. This diagram The government also adopted it as an officer value. Gujarat has the highest share of 41 percent in terms of daily PV payments, accounting for 214 MW of total PV output in the world. The PV power system's overall efficiency in converting various forms of solar power into usable electric power for a given time is very poor (6%). Its components include PV order lines, changers, cable connections, and so on. The output power is made greatest at a particular amount for a given degree of solar isolation and unit temperature due to the peculiar existence of its I-V qualities.

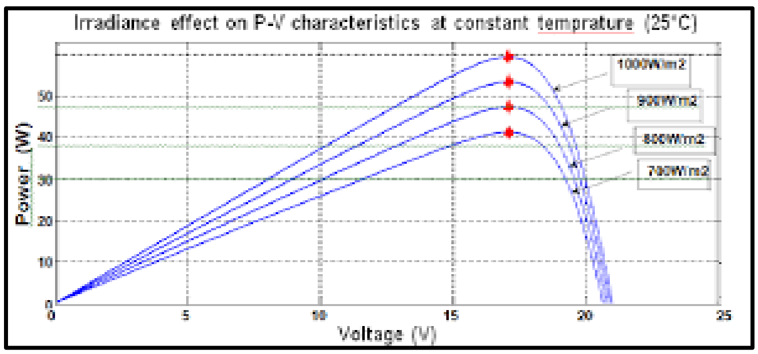

Figure 1: "MPPT algorithm on increme ntal conductance method."

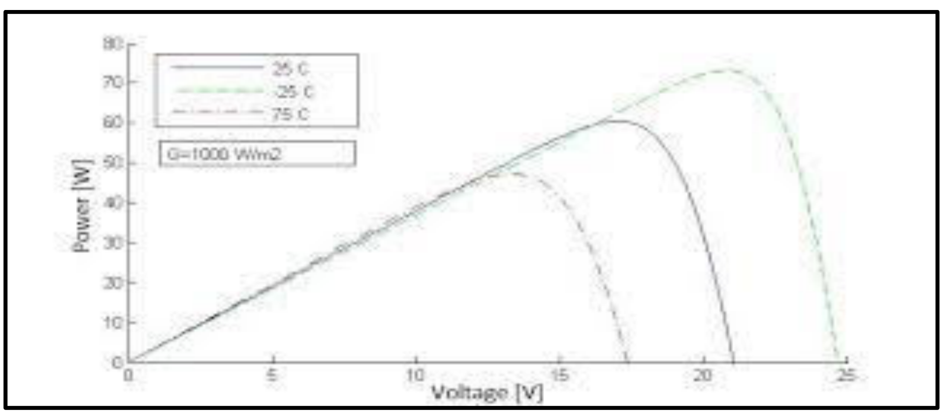

Figure 2: For different value of irradiance level and constant temperature (25°C).

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Figure 5 depicts the relation between a solar system and a service at a single residence. It is designed in such a way that users can use solar energy during the day when the PV panel produces electricity. If the energy provided by the solar panels is insufficient, the remaining energy demand will be met by utility. In the event that solar energy generation exceeds individual customer demand, surplus energy can be supplied to the power grid, and consumers can be rewarded for it, allowing for energy flow in both directions. The simulation is run for 24 hours, and the power produced by the solar system varies by hour due to the location of the sun and solar insulations.

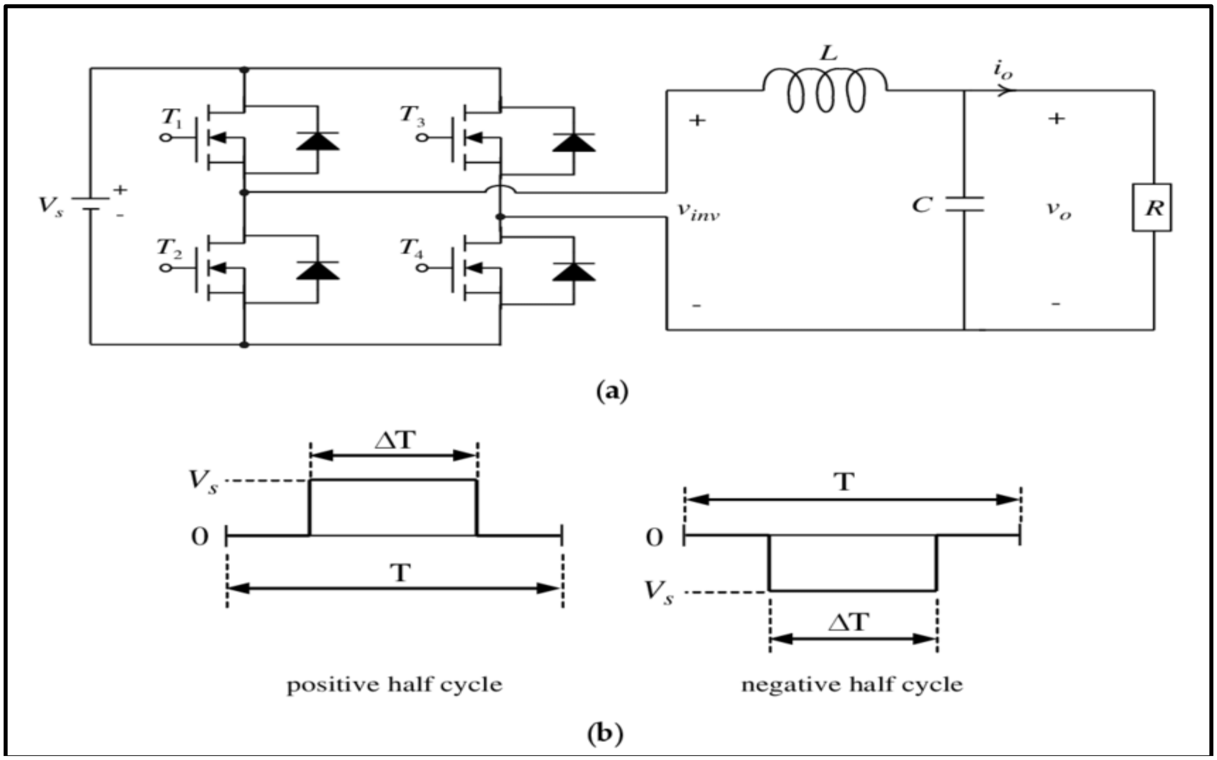

Figure 5: Diagram of solar panel (programmable voltage source)

We modelled a solar system at each home using a programmable voltage source that functions as a solar panel, as seen in the diagram above. The relation and design are shown in the diagram. The main distribution substation, on the other hand, is also connected to an industrial load, which is represented by a three-phase resistive load connected before the distribution transformer. If individual home solar system generation exceeds individual demand during a day hour, businesses can use excess electricity.We have analyzed the simulation results. Also the three phase power measurement diagram is given in Figure 6.

3. *SIMULATION RESULTS.*

The graph of time vs. power supplied by the utility is shown in Figure 6. The graph shows that during the day, electric grid power supply is lower than during the night. This is due to the fact that the energy produced by the solar system is used. Since we only linked five homes in the simulation, the difference in power at the main distribution is not important. The variation would be greater if the solar system was more connected. The voltage waveform at the transmission line is shown in Figure 8. The current waveform at the transmission line is shown in Figure.

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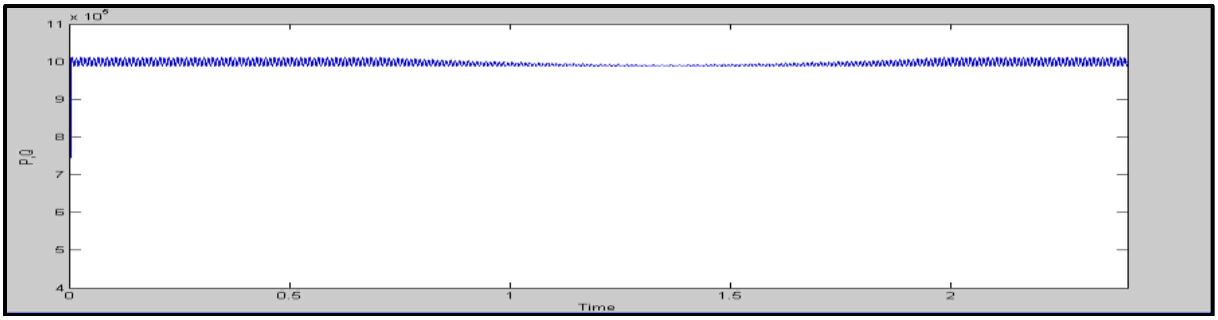

Figure 6: P, Q v/s Time

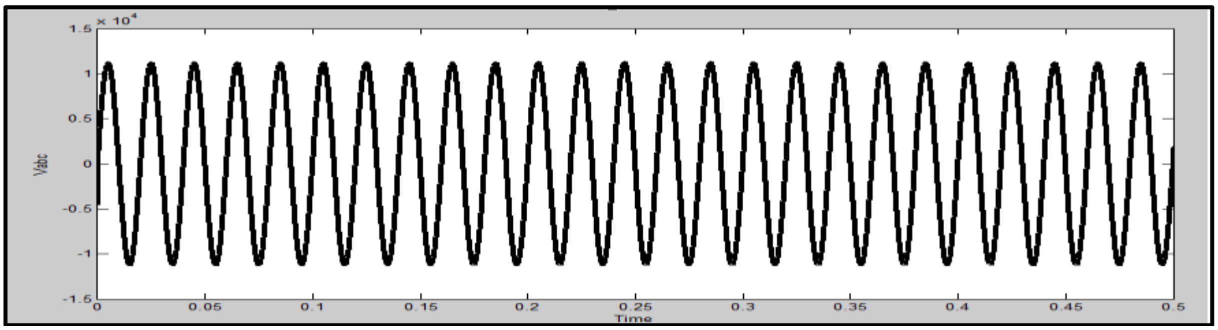

Figure 7: Vabc v/s Time

3,1 *SIMULATION RESULTS OF HOME-1*

Figure 10 depicts the net power drawn from the grid by home 1 over a 24-hour period. The waveform indicates that the amount of power drawn from the utility decreases during the day and peaks in the afternoon. Home 1's load demand is 1 kw, which is assumed to be constant for 24 hours. Figure 11 depicts the power provided by the solar system at home 1 over the course of a 24-hour period. The waveform shows that the amount of power produced by the solar system increases during the day, peaking in the afternoon. Figure 12 depicts an individual house's load demand, which is presumed to be constant for 24 hours and has a value of 1 kW. It is powered by a solar system and the utility grid. A same analysis has been done for all homes.

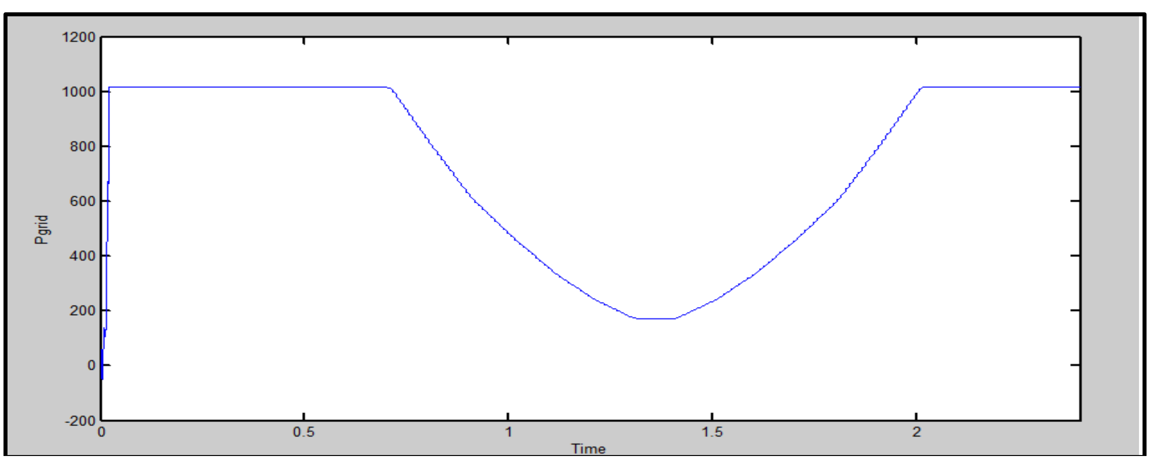

Figure 9: Pgrid v/s Time of Home1

CONCLUSION

In relation to the living standards and consumption of the period, India's electricity is expanding quickly. Climate change businesses known as "dampers" are grouped with "useful objects" and "base structural forces" to restrict emissions and demand payment. By the end of this ten-year period, the 186 GW installed in power capacity will need to be doubled to meet the power needs of its growing population and degrees at which a country's value growth interests, money, and goods are likely to occur, as nearly 40% of its 1.22 million residents live without access to electricity. Power system units and a quick description of the Indian market are included. The Indian electricity market often has a weak base structure, which is consciously represented in poor demand side business managers and actions. Well-dressed network technology will solve these problems through an unfounded assumption. In addition, it is possible to say yes to enhancing the supply level, making power more efficient and its business managers more effective, income security, lowering crime against property, and lowering line losses in order to overcome the inadequacies of the ruling authority. It was anticipated that it would have a substantial impact on the operation of the power grid because it was united as a full thing of Res for the ability to keep energy running for a specific amount of time in the future.

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