
IOT BASED SMART METERING INFRASTRUCTURE FOR EV VEHICLES CHARGING STATIONS

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ABSTRACT

Day by day environmental issues increasing due to increase in pollution caused by excessive use of fossil fuels. Also, power crunch-giving rise to load shedding and scheduling problems. It is desired that we should make effective use of renewable energy sources like solar power, wind power. Present green transportation increasing Attention due to global energy crisis and environmental pollution, it is becoming desirable to integrate renewable energy generation such as wind power and solar power into the existing power grid. Intermittent nature of wind power and huge capital involved in wind farms. Frequency ir-regulations problems associated with grids. To meet load demand during peak load conditions.

Keywords: Pollution, Green Transportation, Renewable Energy.

I. INTRODUCTION

In today's industrially advanced situation, energy demand is increased day by day. Oil and coal clinch command of our energy a few years ago. But with all indication, it is found that the world is knocking the energy crisis. Using the same methodology rate of consumption, the future scenario will result in exhausts these resources. Transportation is one of the world's most energy-intensive businesses, yet it's also one of the most ecologically friendly. Thus continues growth of energy consumption results into carbon dioxide (greenhouse gas) and energy crisis. Hence more research is turned to harness wind and solar as a clean sources of conventional energy Electrification of the transportation industry is considered one of the clever solutions for this. However, with planning of smart control and communication infrastructure smart grid is introduced into power system. If we see current scenario of grid, operational efficiency is unsatisfactory because of high-energy waste and cost and this is made by fluctuation of load demand. In case, when demand is higher than output of base load power plant the other expensive generators have to be put into operation since grid has not sufficient storage system or sometimes spinning reserve has to be participate. In case when demand is lower than output power plant with a base load most of energy will be wasted. For this problem increases in voltage and frequency regulation that will increase operating grid's price.

II. METHODOLOGY

This phase consists of formulation of mathematical model for V2G/G2V operation and smart charging. This helps to regulation of V2G/G2V power to reduce total operation cost.

This phase deal with use of optimization technique based on its feasibility and better convergence and probability of accuracy.

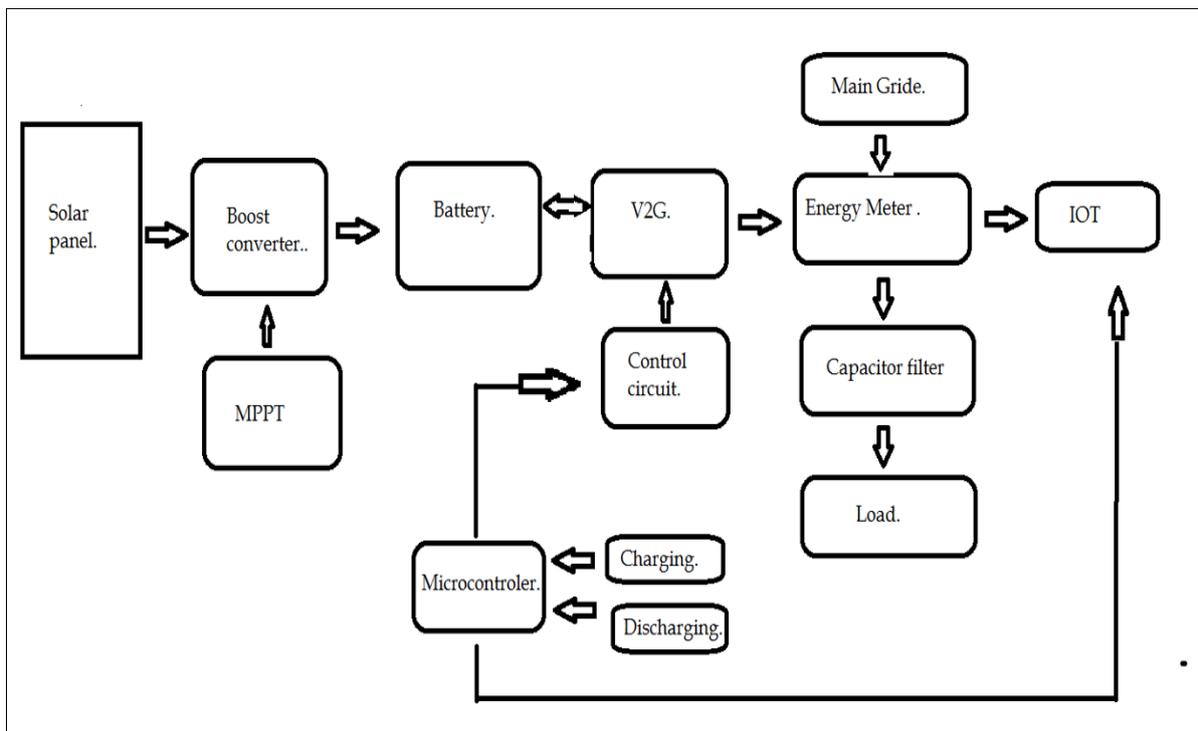


Fig 1: Block diagram Conceptual Design EV charging station

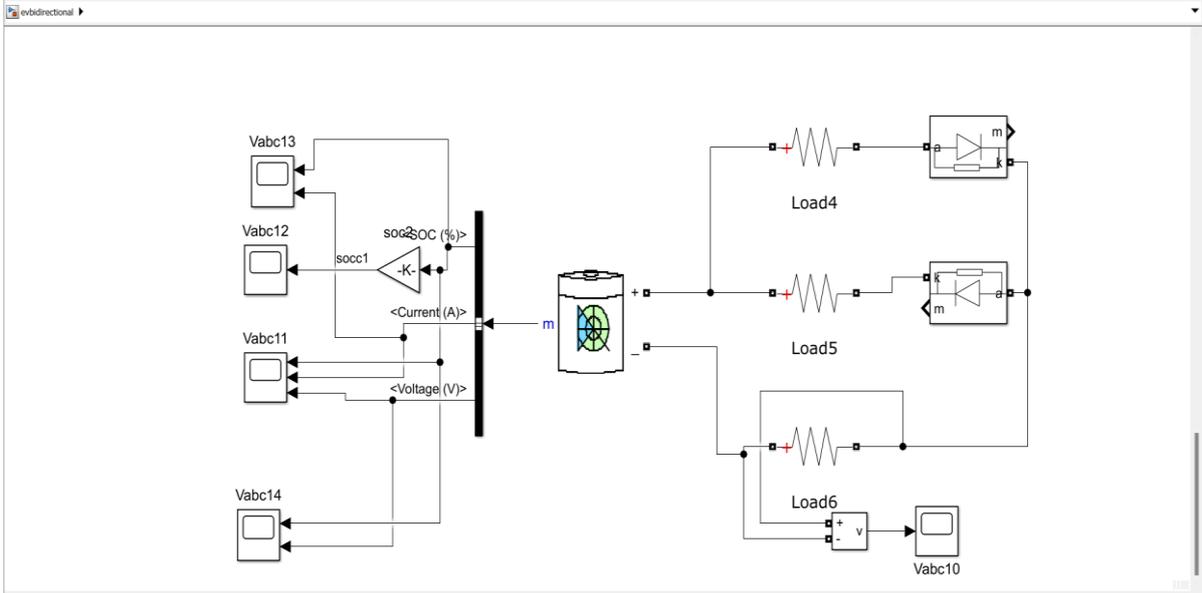
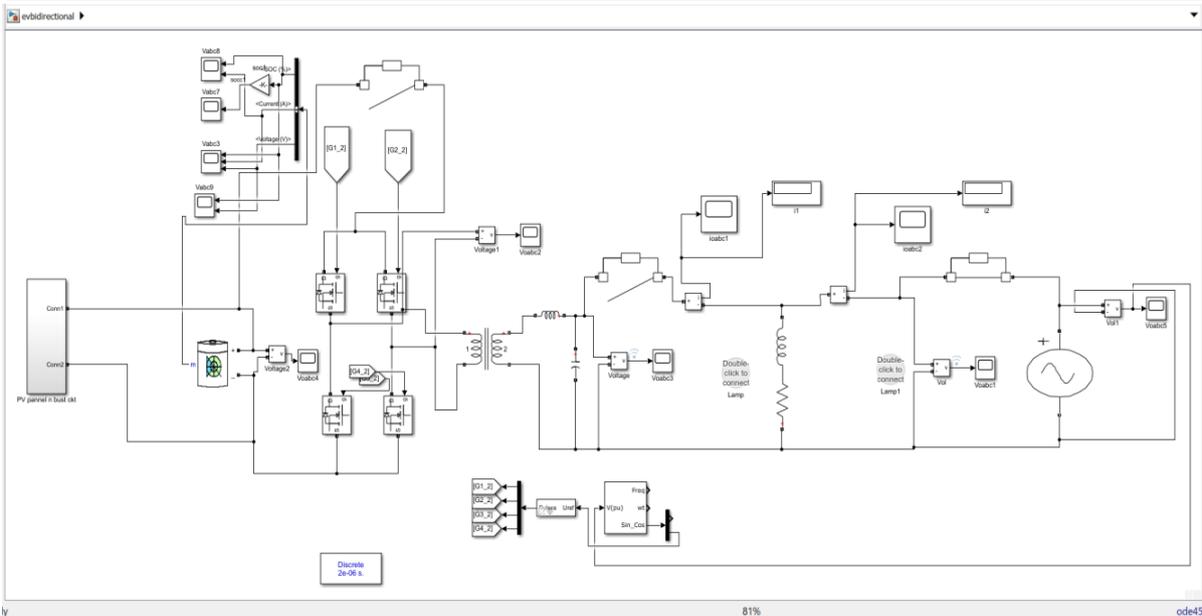
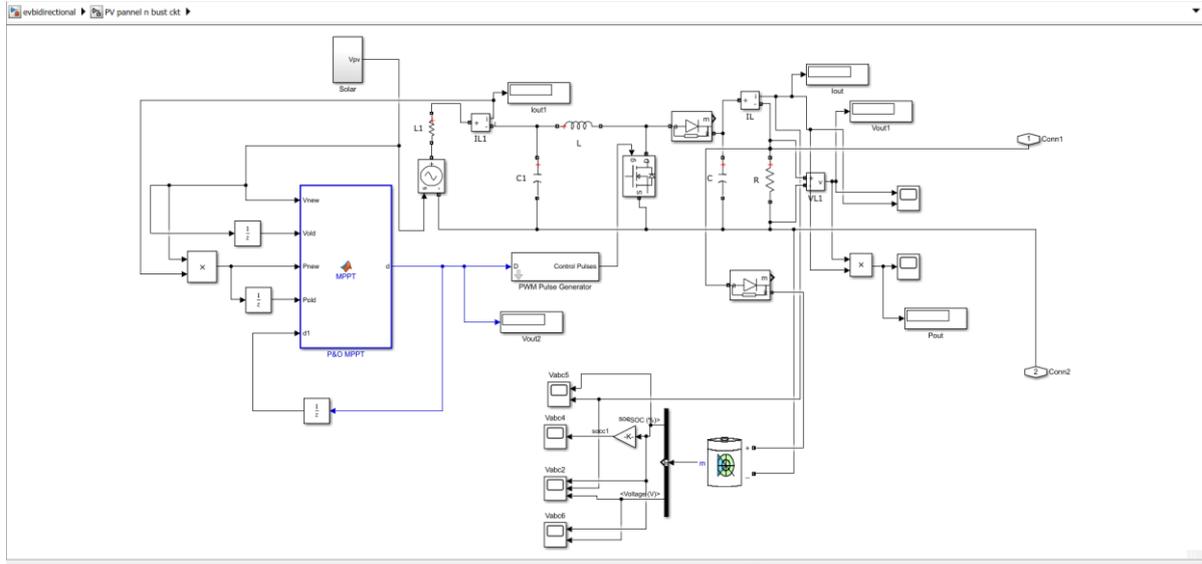
Block diagram of the V2G incorporate with micro grid with power quality controller shows in fig1. MPPT and the control circuit are playing main role in the system. PV/wind power is stored in the battery passing through the boost converter. Perturbation and Observation The MPPT method is used to get the most power out of a system. Synchronization between more than one sources is done through the adaptive control with VSI. Maintain the power quality parameters at PCC which is done through the adaptive control. We know that the entire world is rapidly a switch to advanced technology. Advanced technology like Automation. Now question arises what is automation?

Automation is a process in which all the process is done by using different instruments i.e. less man power is involved. So human errors are reduced in this process. Due to this, system is accurate enough. In the automation process, all of the long procedures seen in traditional operations are removed. As a result, in the automation process, the time it takes to achieve a result is reduced. With less time and people, automation allows for more efficient and accurate operations.

Now a day, automation rapidly spreads all over sector for e.g. Agricultural, Industrial, Educational, Robotics etc. This gives increase in profit of that sector. So we are interested in doing automation in M.S.E.B. & Corporation. The main aim of project is to develop a system that will take/generate electricity from vehicle and supply to grid and that electricity is measured power units consumed by the customer and power units given by consumer to MSEB. Then calculate the bill of particular quantity & display the same units & their respective bill on LCD. This display will be available to customer in his house & to central controller unit. This is the advanced system. It reduces the drawback of the present system adopted by M.S.E.B. & Corporation.

III. RESULT

1. To Minimize Total Operating Cost (TOC) of Electric vehicles connected to grid.
2. Frequency Regulation by V2G operation.
3. To show the cost-effective system.
4. Efficient battery charging.
5. Implementation of IOT



IV. CONCLUSION

In this synopsis, the wind power generators and EVs with the capability of V2G/G2V operation are integrated in the distribution grid. A mathematical model of V2G/G2V power control is formulated, which incorporates EV models into power grid optimization. The V2G/G2V optimization method is suggested scheduling of electric vehicle charging and discharging energy to reduce operational costs while meeting mobility demands power system limitations. In addition to V2G/G2V optimal energy scheduling, EVs are also used for dynamic regulation of dynamic power, which necessitates quick responses to electricity demand and supply imbalances.. V2G/G2V The use of power is regulated to cut back on the use of electricity. fluctuation as a consequence of this; as a result of this; as a result of this the frequency and voltage of the system are stabilized. The simulation findings back this up. effective utilization of V2G/G2V numerous uses of power Finally, the hardware-in-the-loop By controlling electricity, a system is created to implement software simulation. converters, The simulation model is proven by the measured findings.

V. REFERENCES

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