AI BASED LOAD RESPONSE FOR WIND AND SOLAR INTEGRATION AND POWER SYSTEM RELIABILITY

Dr.G.B.Mohankumar,S.Devendrakumar, M.Vaitheeswaran, B.Wilson Babu, M.Sivakumar

Assistant professor, Electrical and Electronics Engineering, Nandha College of Technology, Tamil Nadu,India
Student, Electrical and Electronics Engineering, Nandha College of Technology, Tamil Nadu, India
Student, Electrical and Electronics Engineering, Nandha College of Technology, Tamil Nadu, India
Student, Electrical and Electronics Engineering, Nandha College of Technology, Tamil Nadu, India
Student, Electrical and Electronics Engineering, Nandha College of Technology, Tamil Nadu, India

ABSTRACT

The current and typical solution of smoothing renewable power generation fluctuations in power system. A based SOLAR power systems had a suitable control strategy that can effectively utilize the maximum power (MPPT) output from the DC to DC converter. As like split battery the output Inverter also classified in to TWO ratings that is called as load response inverter. Smart grid is considered as an attractive technology for monitoring and management of renewable energy grid connected plants due to its flexibility, network architecture and communication between providers and consumers. Smart grid has been deployed with renewable energy resources to be securely connected to the grid. Indeed, this technology aims to complement the demand for power generation and distributed storage. For this reason, a system powered by a photovoltaic (PV) has been chosen as an interesting solution due to its competitive cost and technical structure.

Keyword: *DC to DC converter, renewable energy grid connected, photovoltaic (PV),*

1.INTRODUCTION

Today, smart grid is considered as an attractive technology for monitoring and management of grid connected renewable energy plants due to its flexibility, network architecture and communication between providers and consumers. Smart grid has been deployed with renewable energy resources to be securely connected to the grid.Indeed, this technology aims to complement the demand for power generation and distributed storage. For this reason, a system powered by a photovoltaic (PV) has been chosen as an interesting solution due to its competitive cost and technical structure. To achieve this goal, a realistic smart grid configuration design is presented and evaluated using a radial infrastructure.

The economic problem of PV integration is the high installation cost due to lower PV penetration rate of these decentralized power stations. Indeed, electricity grids are stable systems contrarily to renewable energy plants (PV and Wind) which are decentralized, unpredictable and their connection to the grid could lead to instability while coupling them.These phenomena limit the integration of renewable energies into conventional grids and harm their sustainability. In general, they discuss smart grid concept and applications, design, sizing and optimal placement of the energy mix, small scale test-bed implementations in order to choose the best strategy to its implementation, voltage stability, overall system integration rate, global losses and many other factors which help economical and technical decision-makingIt implicitly promotes the reliability and sustainability of the power supply and lowering the peak demand. They presented a survey of potentials and benefits when enabling technologies such as energy controllers, smart meters and communication systems with reference to real industrial studies courses.At first, we will present an improved electrical grid model dedicated to any smart grid based on power load profiles estimation which can be integrated with grid connected PV plants and conventional power generation stations. The current and typical solution of smoothing renewable power generation fluctuations in power system. A BES based SOLAR power systems had a suitable control strategy that can effectively utilize the maximum power (MPPT) output from the DC to DC converter. As like split battery the output Inverter also classified in to TWO ratings that is called as load response .

2.Exitising system

In this paper, we have proposed an accurate distribution system based on smart grid technology. The presented system was treated and discussed in detail under various climatic conditions. Several assumptions were assessed and explained throughout the smart meter data. To supervise and manage the required energy demand and the energy supply, an accurate platform was proposed. The proposed platform aimed to collect and treat the information according to smart meters. Moreover, obtained results presented in the above section prove the reliability and sustainability of our proposed design.

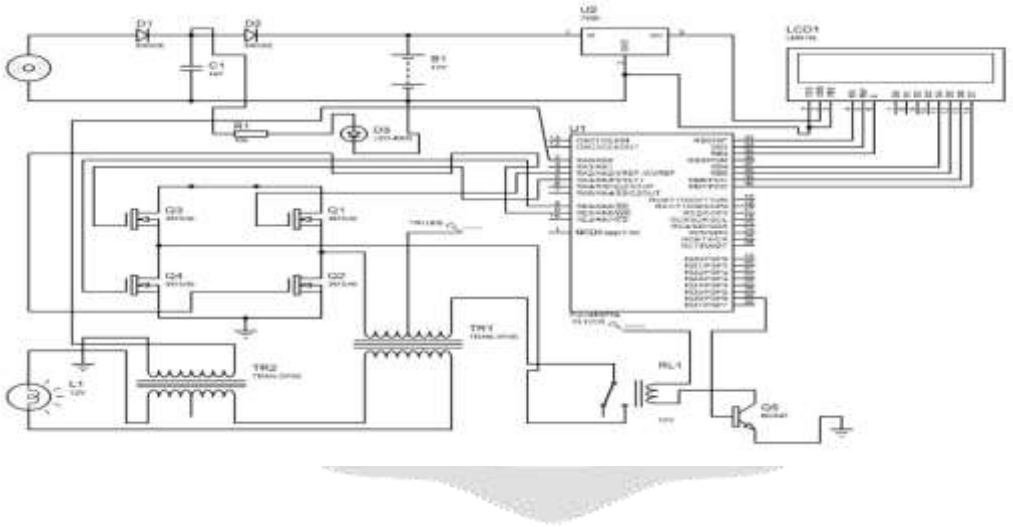

Fig -1*:existing circuit diagram*

3.PROPOSED SYSTEM

Solar and are connected with dc to dc converter to maintain the output voltage as constant. For dc to dc converter PWM is obtained from AI controller, the pwm is given to converter by the help of gate drivers. Batteries are monitored and controlled by Micro controller.Dc storage is utilized As a Ac output by the support of Inverter During low power load condition inverter 1 only in on condition when the load value increase the current sensor finds the value and its activate the secondary inverter

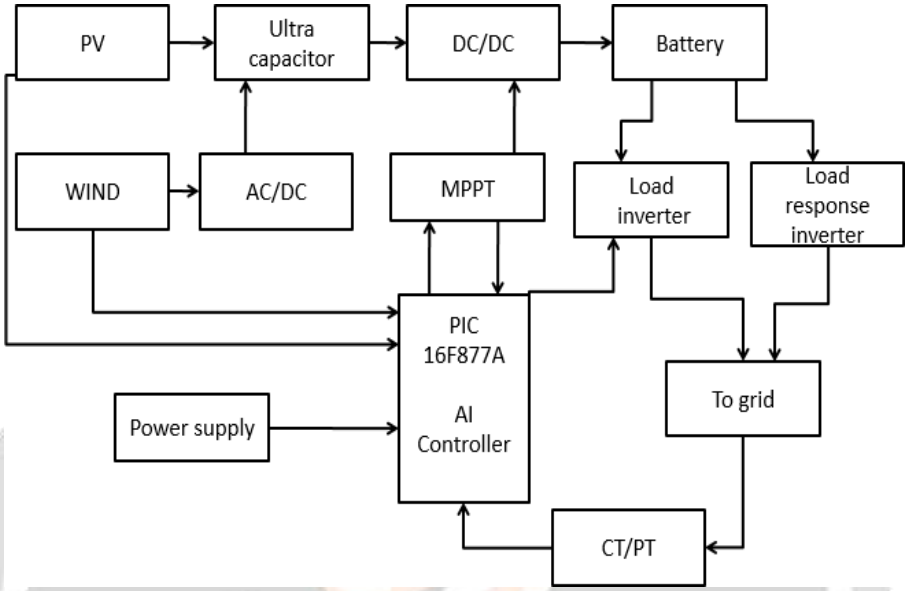

Fig:2 proposed block diagram

Practical electronic converters use switching techniques. Switched-mode DC-to-DC converters convert one DC voltage level to another, which may be higher or lower, by storing the input energy temporarily and then releasing that energy to the output at a different voltage. The storage may be in either magnetic field storage components (inductors, transformers) or electric field storage components (capacitors). This conversion method can increase or decrease voltage. Switching conversion is often more power-efficient (typical efficiency is 75% to 98%) than linear voltage regulation, which dissipates unwanted power as heat. Fast semiconductor device rise and fall times are required for efficiency; however, these fast transitions combine with layout parasitic effects to make circuit design challenging.to the wheels while driving, but supplied by the wheels when braking. The higher efficiency of a switched-mode converter reduces the heat sinking needed, and increases battery endurance of portable equipment. Efficiency has improved since the late 1980s due to the use of power FETs, which are able to switch more efficiently with lower switching losses at higher frequencies than power bipolar transistors, and use less complex drive circuitry Another important improvement in DC-DC converters is replacing the flywheel diode by synchronous rectification using a power FET, whose "on resistance" is much lower, reducing switching losses. Before the wide availability of power semiconductors, low-power DC-to-DC synchronous converters consisted of an electro-mechanical vibrator followed by a voltage step-up transformer feeding a vacuum tube or semiconductor rectifier, or synchronous rectifier contacts on the vibrator.

Most DC-to-DC converters are designed to move power in only one direction, from dedicated input to output. However, all switching regulator topologies can be made bidirectional and able to move power in either direction by replacing all diodes with independently controlled active rectification. A bidirectional converter is useful, for example, in applications requiring regenerative braking of vehicles, where power is supplied

4.CONCLUSION

The wind and PV power generation is their unstable power output, which can impact negatively on utility and micro grid operations. The power control strategies for large scale renewable hybrid power systems taking into account the optimum capacity of SES and battery aging will be discussed.Proposed system is going

to demonstrates that the control strategy can manage Segmented Energy Storage power and load response inverter control within a specified target region

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