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Review of A New Approach for Hybrid Technology Monitoring and Logger System for Electricity

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Abstract: ***In India total electricity generation has depends upon the water. So, 60% or 70% water is used for electricity generation from dam; hence, shortage of water is take place for drinking & farming. To reduce the generation of electricity from water, then require to use non-renewable energy sources which are available in nature like a wind mills, Solar energy etc. Also because of non-renewable energy sources, we save the water for drinking & farming. In industries, colleges & big malls require so many energy every day. All these are dependent on Electricity Board energy supply which are present in every state. Beacuse of that Electricity Board reduce the Electricity supply for villeges & farm, hence effects is takeplace on production of farm. So, we are going to design a project on this electricity energy problem by using the non-renewable energy source for industries, malls and colleges. This project is depends on the non-renewable energy source like, wind. From this project we reduce the voltage variation problem of the electricity generation from wind mill output. As we are using power, voltage from windmill in absence of this supply MSCB supply will automatically on. To reduce the use of MSEB supply we are using the non-renewable energy source technology ,so we will not face the problems regarding the electricity. It will be available 24 hours.***
Keywords: PIC controller, Solar plate, Wind Mill, Buck boost converter, GSM System

I. INTRODUCTION

The wind mill are main source of non conventional energy power generation though there are some drawback of such system that when wind power is variable output which is changing as per rate of flow of wind naturally the o/p is also varying thus the grid power is variable so we can't get constant or a span of voltage which can further process The wind mill research has done for long duration to invent the basic method not only maintain the o/p voltage but to study via communication protocol using GSM the wireless system monitors from remote end the parameters like voltage current & wind control o/p using buck & boost technology.

Developing local sources to meet our energy needs means that we import less fuel from other states, regions, and nations, thus our energy funds are plowed back into the local economy. Wind energy can also help diversify the economies of rural communities and can generate jobs. Wind energy is a hedge for the future as our traditional fossil fuels become scarcer and public policies assign environmental costs to sources of pollution. While there is a general appreciation of the fact that wind energy is a clean source of power, and is also economical in the long term, there has been some public concern about their possible role in local climatic anomalies.

In particular, the occurrence of drought conditions in some of the areas where windmills have been erected has led to the spread of the belief that the windmills have something to do with the decrease in rainfall. A number of articles appeared in the newspapers highlighting the claims that the windmills are the main cause of reduced rainfall. There have indeed been sincere attempts to assuage these fears through scientific arguments by some individuals/eminent scientists, but they did not have the desired effect.

II. LITERETURE SURVEY

A. Following Papers are consider for desiging of this project

DC–DC buck–boost converter can be an excellent alternative to dc-link converters. Being a buck–boost converter, this converter is capable of both stepping-up and stepping-down the voltage. Due to use of buck and bust converter voltage variation problems can be reduced. Then electricity generation by using wind energy source. Buck-Boost DC–DC Converter, VOL. 29, NO. 4, APRIL 2014. Analog and digital sensors are input of the Microcontroller. Displays unit is an output of the microcontroller. It receives Analog and digital signals equivalent to the quantity of the weather variable to be measured; from sensors connected to it and conversion and processing through pre- programmed instructions written in C language to ensure that corresponding measurement made by these sensors are available in forms that are meaningful and useful for human analysis, interpretation and record. The microcontroller PIC16F877A has been used for the measurement of weather conditions and transmission of data to the receiver. It has 40-Pin packages. It has a 10-bit A/D converter. The microcontroller uses 20MHz clock. It shows in Transaction paper no Microcontroller Unit. by Aye Sandar Myint, Hla Myo Tun, Zaw Min Naing.

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It shows cellular communication technologies by creating a prototype of a data acquisition interface using the GSM/GPRS cellular network to simulate the transmission and reception of data for remote monitoring of 02 (two) variables defined here: tower vibration and brake pad wear, in a small wind turbine of up to 10 kW. The data studied here show results that may be useful for any business that plans to implement a remote monitoring system using the Cellular Network (GSM/GPRS). Although wind turbine variables are used in the experiment, other remote monitoring applications are possible using air communication channels, such as monitoring pollutant emissions, river and reservoir level alerts, landslide warnings, agricultural irrigation systems. By VILSON GRUBER, DIEGO RODRIGUES FERREIRA, SÉRGIO DEITOS BITTENCOURT, WAGNER CABRAL BORDIGNON and LÍRIO SCHAEFFER.A tendency to erect even more wind turbines can be observed in order to reduce environmental consequences of electric power generation. As a result of this in near future wind turbines may start to influence the behavior of electric power a systems by interacting with conventional generation and load. Therefore, wind turbines models that can be integrated into power system simulation software. By S.W.H.de Haan, H.Polinder,W.L.Kling.[4]

III. PROPOSED WORK

A. Following figure shows the proposed work of project.

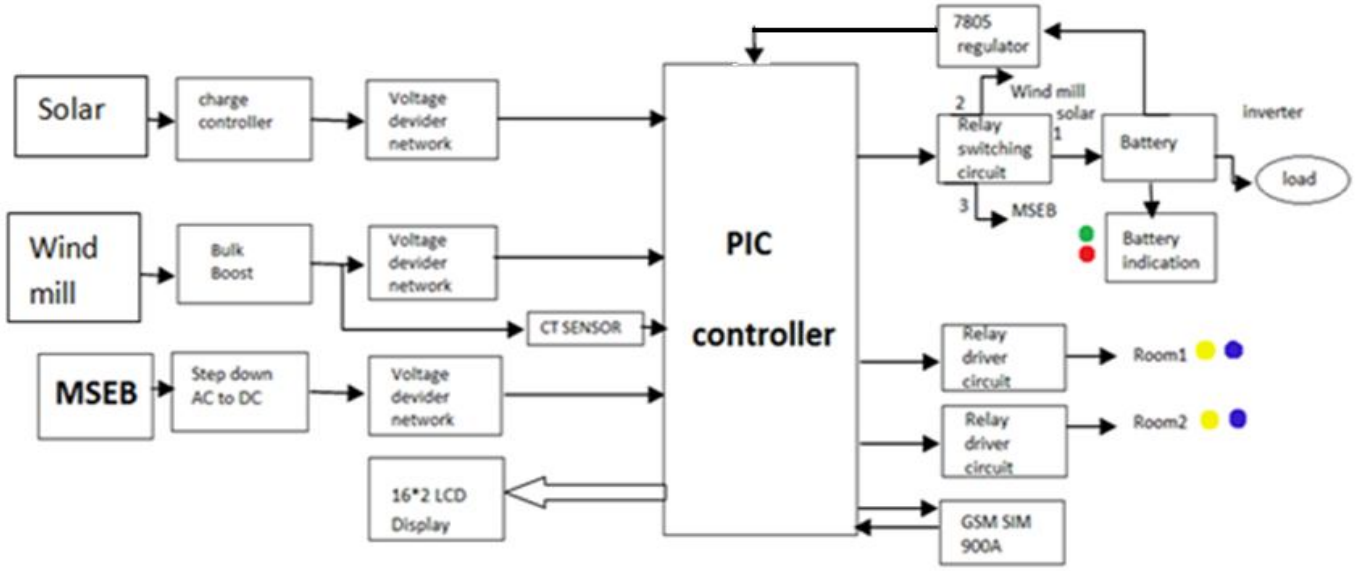

Fig. 1 Block Diagram of Transmission System (Hybrid monitoring technology & logger system)

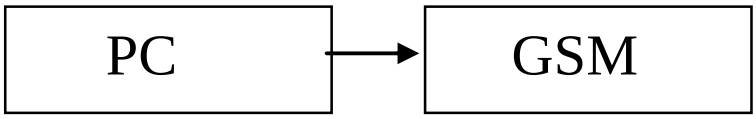

Fig. 2 Block Diagram of Reception System (Hybrid monitoring technology & logger system)

Figure 1 & Figure 2 indicates block diagram of transmission system and Reception system of Hybrid monitoring technology & logger system that contains the following main block.

B. Transmitter System Contains Following section

1) PIC Microcontroller
2) Solar Plate
3) Wind Mills
4) Bulk Boost System
5) GSM System

C. Reception System Contains Following section

1) GSM System

2) Personal Computer

D. Following Important parameter of project

1) Wind mill: Wind mill is used to Renewable energy is generally electricity supplied from sources, such as wind power, solar power, geothermal energy, hydropower and various forms of biomass. These sources have been coined renewable due to their continuous replenishment and availability for use over and over again. The popularity of renewable energy has experienced a significant upsurge in recent times due to the exhaustion of conventional power generation methods and increasing realization of its adverse effects on the environment.

2) Buck-boost converter: The buck–boost converter is a type of DC-to-DC converter that has an output voltage magnitude that is either greater than or less than the input voltage magnitude. It is equivalent to a fly back converter using a single inductor instead of a transformer.Two different topologies are called buck–boost converter. Both of them can produce a range of output voltages, from an output voltage much larger (in absolute magnitude) than the input voltage, down to almost zero.The output voltage is of the opposite polarity than the input. This is a switched-mode power supply with a similar circuit topology to the boost converter and the buck converter. The output voltage is adjustable based on the duty cycle of the switching transistor. One possible drawback of this converter is that the switch does not have a terminal at ground; this complicates the driving circuitry. Another drawback is of any consequence if the power supply is isolated from the load circuit because the supply and diode polarity can simply be reversed. The switch can be on either the ground side or the supply side.A buck (step-down) converter combined with a boost (step-up) converter. The output voltage is typically of the same polarity of the input, and can be lower or higher than the input. Such a non-inverting buck-boost converter may use a single inductor which is used for both the buck inductor and the boost inductor, sometimes called a "four-switch buck-boost converter", it may use multiple inductors but only a single switch as in the SEPIC and Ćuk topologies.In order to begin the analysis of DC-DC converters it is important to first understand the concept behind a converter. Over the years, alternating current has been the common choice of power supply. AC is popular because the voltage can be easily stepped up or down using a transformer. Due to the inherent properties of a transformer, DC voltage cannot be altered using this type of equipment. Transformers operate due to a changing magnetic field in which the change in magnetic flux induces a current. Direct current cannot provide a changing magnetic field therefore a transformer with an applied DC input would only produce heat. The concept of DC-DC conversi on emerged after the development of fast switching transistors. By varying the duty cycle of the pulse that is applied to the gate of the transistor for switching, these converters can buck or boost the voltage as if it were a DC transformer. When accurate feedback back is applied to this type of circuit, the converter will not only transform a supply voltage to the desired output but also maintain it given a varying input. These qualities of DC-DC converters are the foundation of the circuit that will be chosen for this project.

3) Voltage & current: In that circuit, voltage measure by using voltage divider circuit and current measure by using CT sensor.

4) PIC Controller: PIC is a family of modified Harvard architecture microcontrollers made by Microchip Technology, derived from the PIC. The name PIC initially referred to Peripheral Interface Controller. Early models of PIC had read-only memory (ROM) or field-programmable EPROM for program storage, some with provision for erasing memory. All current models use Flash memory for program storage, and newer models allow the PIC to reprogram itself. Program memory and data memory are separated. Data memory is 8-bit, 16-bit, and, in latest models, 32-bit wide. Program instructions vary in bit-count by family of PIC. The instruction set also varies by model, with more powerful chips adding instructions for digital signal processing functions.

5) GSM: GSM/GPRS Modem-RS232 is built with Dual Band GSM/GPRS engine- SIM900A, works on frequencies 900/ 1800 MHz. The Modem is coming with RS232 interface, which allows you connect PC as well as microcontroller with RS232 Chip (MAX232). The baud rate is configurable from 9600-115200 through AT command. The GSM/GPRS Modem is having internal TCP/IP stack to enable you to connect with internet via GPRS. It is suitable for SMS, Voice as well as DATA transfer application in M2M interface. The onboard Regulated Power supply allows you to connect wide range unregulated power supply. Using this modem, you can make audio calls, SMS, Read SMS; attend the incoming calls and internet etc. through simple AT commands.

6) CT Sensor: The current transformer is sensor for measuring alternating current in electric wires. It uses a current transformer to convert current flowing through a conductor.

III. OPERATION

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This Project is going to use for save the energy of MSEB. Solar plate & Wind mills generates the electicity & that energy is going to store in battery. So, how much stored energy is present in battery that information transferring to receiver side by using GSM system. From that information operator understand the how many units operating on this energy, that energy from battery is supplied to that unit and for remaining units energy is supplied from MSEB. All this swiching is done by using PIC controller, but operating by operator from receiver section.

IV. FLOW CHARTS

Figure 3 shows the flow chart of project, in which the PIC controller played very important role. All operation is depending on the PIC microcontroller. If stored energy is less than required energy, then operator sends the massege throught GSM system to PIC controller to switch supplying energy from battery to MSEB supply to remaining units & keep supplying energy from battery to remaining units. Also, PIC controller display the energy status on display board.

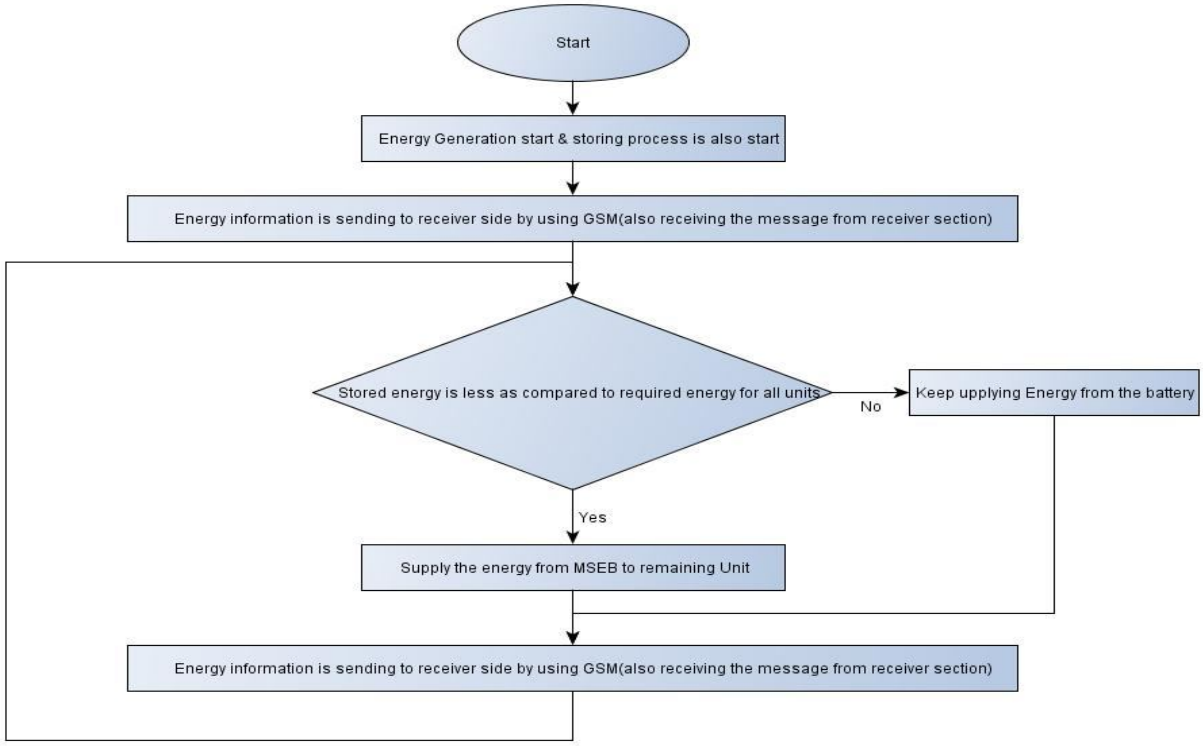

Fig. 3 Flowchart of Hybrid monitoring technology & logger system

V. CONCLUSIONS

This project is used for to save the electricity, also because of that we switch on energy provided by solar panel & wind mill or MSEB by our convinent. Also this project provides information about how much energy is present in battery through GSM module. On that information we going to decide which supply is required for operation of units. This project will be going to use in industry, colleges, small farms, also in homes.

VI. ACKNOWLEDGMENT

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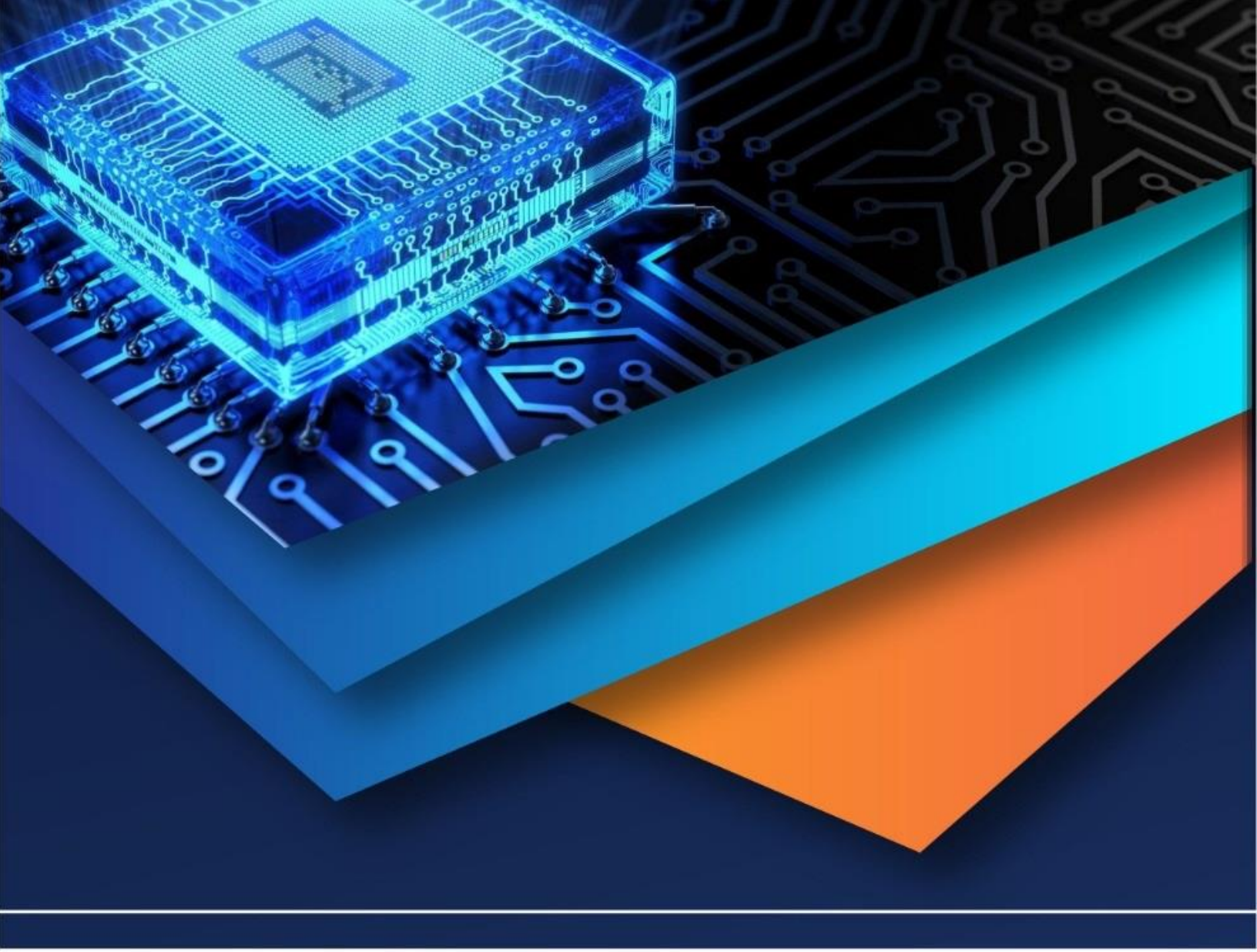

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