SMART POWER MONITORING SYSTEM USING ZIGBEE

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SYNOPSIS:

Electrical power system engineering comprises power generation, transmission, distribution, and the utilization of electricity. Modern trends in the development of electric power systems explore means of improving efficiency in these stages mentioned. On the demand side, the protection of consumer equipment and appliances from damage and total destruction due to phase failures is an issue of paramount importance mainly in parts of the world with unsteady supply of electricity. In this work we took a detailed look into what a phase failure is and the possible causes. Then we finally explain the details of a method we have developed that detects cases of phase failure and takes the appropriate measure that will save the consumer loads from damages.

After the generation and distribution of electricity, if it is not well managed by the final consumer, there could be losses and serious problems to the loads and user alike. With the recent increase in the use of power in our homes and industries, there is the need to adequately protect our homes, industries and every other appliance that make use of electricity.
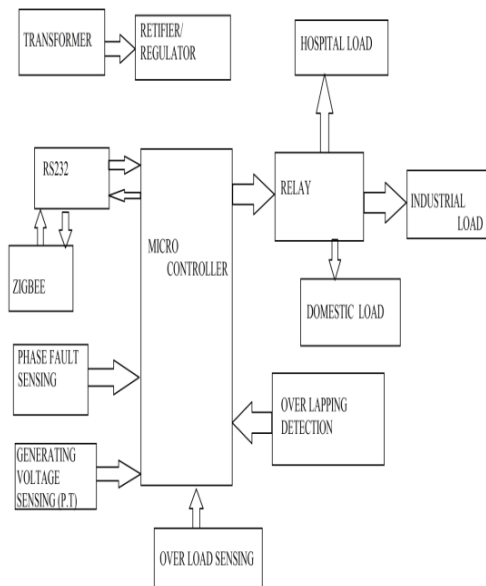
Thus a phase failure detector is overly important both for the improvement of the quality of service from the power utility companies and the protection of life and properties of the electricity consumers.

This is a situation where any of the three phases in a power system fails. This could result from a fuse blowing up or an interruption in the power line. Phase failure could be caused by any of the following:

- ➢ Unbalanced voltage
- ➢ Single phasing or phase loss
- ➢ Overloads
- ➢ Power outage (short cycling, over cycling)
- ➢ Overvoltage
- ➢ Under-voltage
- ➢ Phase reversal (incorrect phase sequence)

BLOCK DIAGRAM:

BLOCK DIAGRAM EXPLANATION:

As the power from the distributing transformer transmitted to the line a basic rectifier and regulator is provided to control the line voltage in a stable manner and phase fault sensors and potential transformers and current transformers are used to observe the voltage and current parameters hence we also detects the single line phase fault and overlapping faults here Atmel micro controller is interfaced with the all sensors and microprocessor is interfaced with the ZigBee by using RS232 cable which provides data transmission between the micro controller and ZigBee and an relay is connected with an microprocessor to separate the loads in fault condition and voltage imbalance or unbalance condition.

HARDWARE REQUIRED:

- ➢ Power Supply
- ➢ Rectifier
- ➢ Regulator
- ➢ Micro controller
- ➢ Load
- ➢ Resistors
- ➢ Capacitors
- ➢ Diodes

SOFTWARE REQUIRED:

- ➢ KEIL (EMBEDDED C)

Main objective:

In this project, a smart ZigBee based fault data transmission system is employed.ATMEL [ATMEGA328p]

microcontroller is used. The fault detected by the sensors intimates micro controller it sends the data to the regarding department instantly using ZigBee. It is quiet efficient than the normal existing systems. This project main objective is to protect the hospital load and provide stable power 24*7.Hence relay is used for separating domestic loads and industrial loads from hospital loads.

Existing system:

- ➢ Fault detection using PLC and SCADA.
- ➢ Fault detection using GSM modules.
- ➢ GSM and GPRS prototypes.

Disadvantages:

- ➢ Low speed of response.
- ➢ Hard to install.
- ➢ Time consuming process.
- ➢ High installation cost.

Proposed system:

The proposed method using ZigBee is efficient and uses micro controller and find the desired conditions faults current state of the system which can be monitored using LCD and the data's of the system can be manipulated and stored externally for future forecasting purposes.

Advantages:

- • Avoids many medical accidents and saves human life.

- • High efficiency and high speed of response.
- • Excellent mode of data transmission.
- • Hence we use micro controller the system cost of installation may low.
- • Easy to globalize

Conclusion:

Hence we conclude that the our project is quiet efficient than existing systems Which is mainly prototyped to serve people and save most valuable human life's Hence our project might be an two edged sword still have to be developed in future for to serve the mankind.

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