



## **AC GENERATOR MONITORING –USING PIC THROUGH WIRELESS**

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### **ABSTRACT:**

Nowadays, the power failures have become a common problem. Hence to detect this failure, the electrical parameters like Voltage, Current, Oil, Fuel, Temperature are used and the information of these parameters are sent in the form of SMS over GSM network using GSM Modem/phone to the authorized person. This project is protect the electrical circuitry by operating an Electromagnetic Relay. This Relay gets activated whenever the electrical parameters exceed the predefined values. The Relay can be act as switch, and it triggers the generator. This system can be designed to send SMS alerts whenever the Circuit Breaker trips or whenever the Voltage or Current exceeds the predefined limits. If the generator becomes heat due to high temperature, it switches off automatically and similarly switches on after cooling. The user can monitor and control the generator by resending the SMS to switch on the generator automatically through GSM.

### **1.INTRODUCTION:**

An embedded system is some combination of computer hardware and software that is specially designed for a particular function. It is embedded as part of a complete device often including hardware

and mechanical parts. Embedded system control many devices in common use today. The integrated memory or peripheral microprocessors (using external chips for memory and peripheral interface circuits) are also common, especially in more-complex system. An embedded system is some combination of computer hardware and software that is specially designed for a particular function.

### **2.LITERATURE SURVEY:**

#### **2.1.“MALLIKARJUN SARSAMBA”:**

The Load Monitoring and Protection on electrical power lines are important factors in Electricity Field. The Paper proposes a monitoring of Load and Power lines using SMS based GSM Technology.

#### **2.2“S.VIMALRAJand**

#### **R.B. GAUSALYA:**

In this paper, the remote management of the generator done by a specific SMS with an authenticated mobile phone is elucidated. This system is extremely handy at places where we have to control the switching of the machine but no



wired connection to that place is available.

### 2.3“ALPER T.ALAN”

Recently, many algorithms have been developed for autonomous agents to manage home energy use on behalf of their human owners. By so doing, it is expected that agents will be more efficient at, for example, choosing the best energy.

### 2.4 “Y.JAGANMOHAN REDDY, Y.V .PAVAN KUMAR, K.PADMA RAJU, ANILKUMAR RAMESH”.

This paper describes modeling and simulation of a renewable energy based hybrid power system in the aspects of improving power quality, energy management and control, because optimal utilization of primary energy source management and control unit using programmable logic controller(PIC).

**Fig.3.Block diagram**

microprocessor to be put into low cost products. Building a complete microprocessor system on a single chip.The microcontroller.

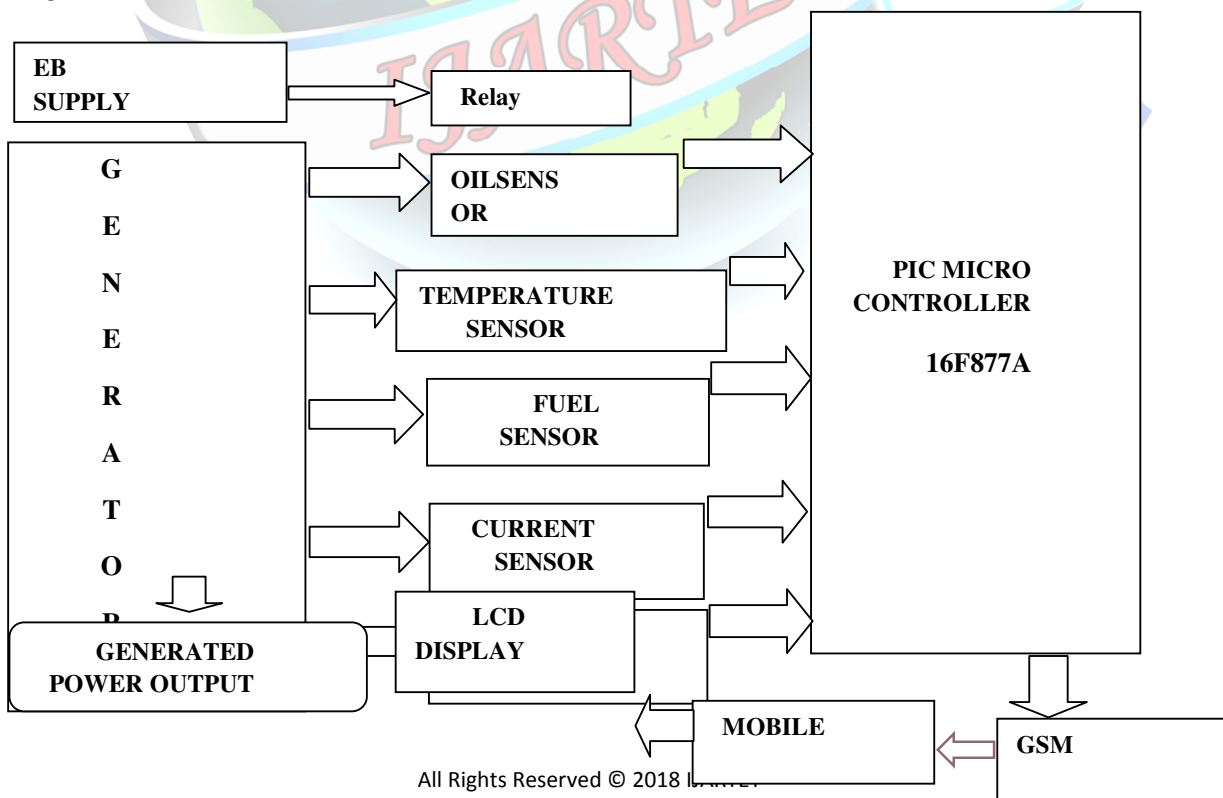
### 3.SYSTEM DESCRIPTION:

#### 3.1 MICROCONTROLLER:

A Microcontroller is a complete microprocessor system built on a Microcontroller. Microcontrollers were developed to meet a need for standard CLOCK, TIMERS, and it consists also SERIAL Port.

#### 3.2 GSM MODEM:

A GSM modem is a device which can be either a mobile phone or a modem device which can be used to make a computer or any other processor communicate over a network.





GSM modem requires a SIM card to be operated and operates over a network range subscribed by the network operator. It can be connected to a computer through serial, USB or Bluetooth connection. A GSM modem can also be a standard GSM mobile phone with the appropriate cable and software driver to connect to a serial port or USB port on your computer. GSM modem is usually preferable to a GSM mobile phone. The GSM modem has wide range of applications in transaction terminals, supply chain management, security applications and etc.

### 3.3 WORKING OF GSM:

A GSM modem duly interfaced to the MC through the level shifter IC Max232. The SIM card mounted GSM modem upon receiving digit command by SMS from any cell phone send that data to the MC through serial communication.

### 3.4 RELAY:

A relay is an electrically operated switch. Many relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers.

### 3.5 POWER SUPPLY:

A power supply is an electrical device, supplies electric power to

an electrical load. The primary function of a power supply is to convert electric current from a source to the correct voltage, current levels. The latter include power supplies are found in the desktop sensors consumer devices.



**Fig 3.2 GSM MODEM:**

### 3.6 SENSORS:

A sensor is a device that detects and responds to some type of input from the physical environment. The sensors can be a specific like oil, fuel, temperature based on an input. The output is generally a signal that is converted to human-readable displaying at the sensor for location or transmitted over using network for processing.

### 3.7 OIL SENSOR:

Oil level sensors can take the form of standard mechanical float switches or the depending on specific application for new requirements. Depending on the type of oil being measured, level sensors may have to take into account viscous oil medium from material could interfere with the efficient, opening and closing of the circuit. Oil of sensor (R SERIES) used in generator for a purpose of cooling of generator.

### 3.8 FUEL SENSOR:



Fuel sensor (PH606) level sensor measures different kinds of level utilizing capacity technology. The generator to maintain the level of fuel and an abnormal decrease in content could indicate, when the decrease level of fuel level reaches it sensed by the sensor.

### 3.9 TEMPERATURE SENSOR:

Temperature sensor (LM35) level sensor is use to monitoring the generator temperature and when the generator temperature exceeds predefined limits, and it is cooled for certain period of time and then generator ON automatically.

### 3.10 VOLTAGE SENSOR:

The Voltage sensor is a device used to monitoring the voltage level of a generator. It is measured between two points of an electrical circuit into a physical signal proportional to the voltage. The voltage values are used to display in voltmeter.

### 3.11 CURRENT SENSOR:

The current sensor is a device that detects electric current in a wire, and it generates a signal proportional to that current. The generated signal can be measured and then used to display the current values in ammeter. The current values are denoted in amps.

### 3.12 AC GENERATOR:

AC Generator is a machine that converts mechanical power into alternating-current electric power. The generator works on the principle of electromagnetic-induction.

Alternating Current are used instead of direct current (dc) generators because ac power can be easily be stepped up in voltage, by using transformers, for more efficient transmission of power over long distances. Similar transformers step the voltage down levels are safer and more convenient.

### 3.13 LCD DISPLAY:

A model described here is for its low price and great possibilities most frequently used in practice.

It is based on the PIC16F877A microcontroller and display messages in two lines with 16 characters each. It display all the alphabets.

## 4.RESULT ANALYSIS

To monitor Temperature range and Fuel, Oil, Voltage, Current level and circuit breaker status of the generator. Taking the data of previous fault condition and intimated automatically when they exist their limit and abnormal condition are monitored through our mobile device by using GSM Modem.

## 5.CONCLUSION:

Generator Monitoring system is GSM based technology monitoring. The parameters like Oil, Fuel, Temperature, Voltage, Current sensor are monitored ,if these parameters exceeds their predefined limits, the microcontroller through





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GSM Modem are displayed in LCD  
Screen.

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