# GSM BASED FAULT ALERT SYSTEM FOR BTS (MOBILE TOWER)

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## ABSTRACT

*In electrical systems there are many kind for devices connected in a panel. These devices are for control and protection of the electrical systems. If any of the fault is generated in the system the devices connected for corresponding protection will close its NO contact so that it can be used further for tripping the system and indication. The Annunciator will get the input from these devices and it will show the corresponding fault by announcing and by sending the message. This system can be used where electrical systems are unmanned or at unmanned stations.*

*This project aims a single comprehensive solution that controls and monitors the subsystems inside each base station site and enables network operators to coordinate and manage the conditions at all base station sites across their network. Time management of cell sites in case of any failure protects the mobile network, mobile tracks and measures cell site performance for peak operation. This project provides the Power management of which enables the wireless operators to monitor cell sites remotely for performance degradation before it affects network integrity. The aim of the project is to Control multiple individual subsystems per base station site and thousands or more base station sites across your network.*

**Keyword :-** *ARM, LPC2138 , Annunciator.*

## 1. INTRODUCTION

Cellular towers form the backbone of our modern communications infrastructure. Each tower is incorporated with a power plant with batteries, diesel generator and devices for backup power. Some sites are not supported by utility power hence sometimes they rely on hybrid power sources like solar power plants. The sensors which we used to detect over temperature, diesel levels or diesel theft.

In this project, using GSM modem problems faced are rectified. Such as using GSM as alert system or fault informing system or fault alert system for BTS we are providing solutions to rectify these problems. The GSM modem whatever gives the instant message about the each activity happening in the site room. The LM35 sensors will sense the temperature of the site room and if it above the value, the GSM module will send the message to the master mobile which is already set in the system. similarly A fuel level sensor is provided in the generator fuel tank. Whenever the fuel level goes below the message is sent to the technician requesting real status of the tank. .The BTS cabinet with tower includes Diesel generator, Cooling Fan , Current Transformer, motion detection PIR Sensor , LM35 Temperature , Theft Sensor & GSM Module etc .This project aims a single comprehensive solution that remotely controls and monitors the subsystems inside base station.

## 2.LITRATURE SURVEY

Cellular (cell) phones first became commercially available worldwide in the 1980s, but their use has increased dramatically since then. There were around 5.98 billion cell phone subscriptions by the end of 2011 (International Telecommunication Union or ITU 2011). That is equivalent to 87% of the world population, and a 13% increase from 5.3 billion cell phone subscriptions at the end of 2010. This rapid growth brings the need to construct more towers in many communities to permit network coverage. Telecommunication companies face siting issues including public concerns about the placement of the towers, especially when they are to be located near homes. A brief history of cellular phone systems and the siting issues including the public's health concerns from EMF exposure is outlined in the following section. Chapters 7–9 present case studies carried out in three countries (New Zealand, the USA and the UK) to ascertain both the impacts of cell phone towers on property values, and public attitudes towards the siting of these structures.

A synonym for 'cell site' is 'cell tower'. These towers, typically tall steel poles or lattice structures, support antennas that receive and transmit radiofrequency (RF) signals that are connected to equipment stored in a cabinet at the base of the tower. The equipment in the cabinet includes radio transmitters and receivers, DC power and rectifiers, back-up batteries and cell site routers. Power is fed into the cabinet by an underground cable. The technically correct term is Base Transceiver Station (BTS), and colloquial British English synonyms are 'mobile phone mast' or 'base station'. Collectively, this apparatus will be referred to as a cell tower throughout this book.

The BTS cabinet with tower is incorporated with Diesel generator, Cooling Fan, Current Transformer, PIR Sensor, Temperature & Humidity Sensor, Wire Theft Sensor & GSM Module. The sensors that monitor Temperature & Humidity of BTS room, Diesel levels of Generator, Load Current, Wire Theft Status, & Authentication person entry. This project aims a single comprehensive solution that remotely controls and monitors the subsystems inside base station site.

Module are placed in inside BTS room for monitor & control above the parameters with the help ARM 7 LPC2138 board with PC, GSM Module. The said parameters value are displays on the 16X2 dot matrix LCD display, simultaneously transfers the parameter data to PC via RS232 link, & send massage to technician using GSM Module. The program written in „C" for ARM processor getting the data from different sensors. MATLAB Software with GUI in PC is used for Real Time Image Recording of Diesel Level, Load Current, Humidity & Temperature of BTS room.

## 3.PROPOSED SYSTEM

This project aims a single comprehensive solution that controls and monitors the subsystems inside each base station site and enables network operators to coordinate and manage the conditions at all base station sites across their network. Time management of cell sites in case of any failure protects the mobile network, mobile tracks and measures cell site performance for peak operation. This project provides the Power management of which enables the wireless operators to monitor cell sites remotely for performance degradation before it affects network integrity. The aim of the project is to Control multiple individual subsystems per base station site and thousands or more base station sites across your network.

Alerting users immediately when temperature rises to prevent or reduce damage to cell sites. Reducing energy consumption through automatic maintenance and monitoring of temperature. The GSM based Fault Alert System for BTS(Mobile Tower) using GSM system will get the input from the devices and it will show the corresponding fault by lamp indication and by sending the message to the pre-assigned mobile number giving exact information about the fault occurred.

## 4.SYSTEM BLOCK DIAGRAM

GSM BASED Fault Alert System for BTS (Mobile Tower) SYSTEM
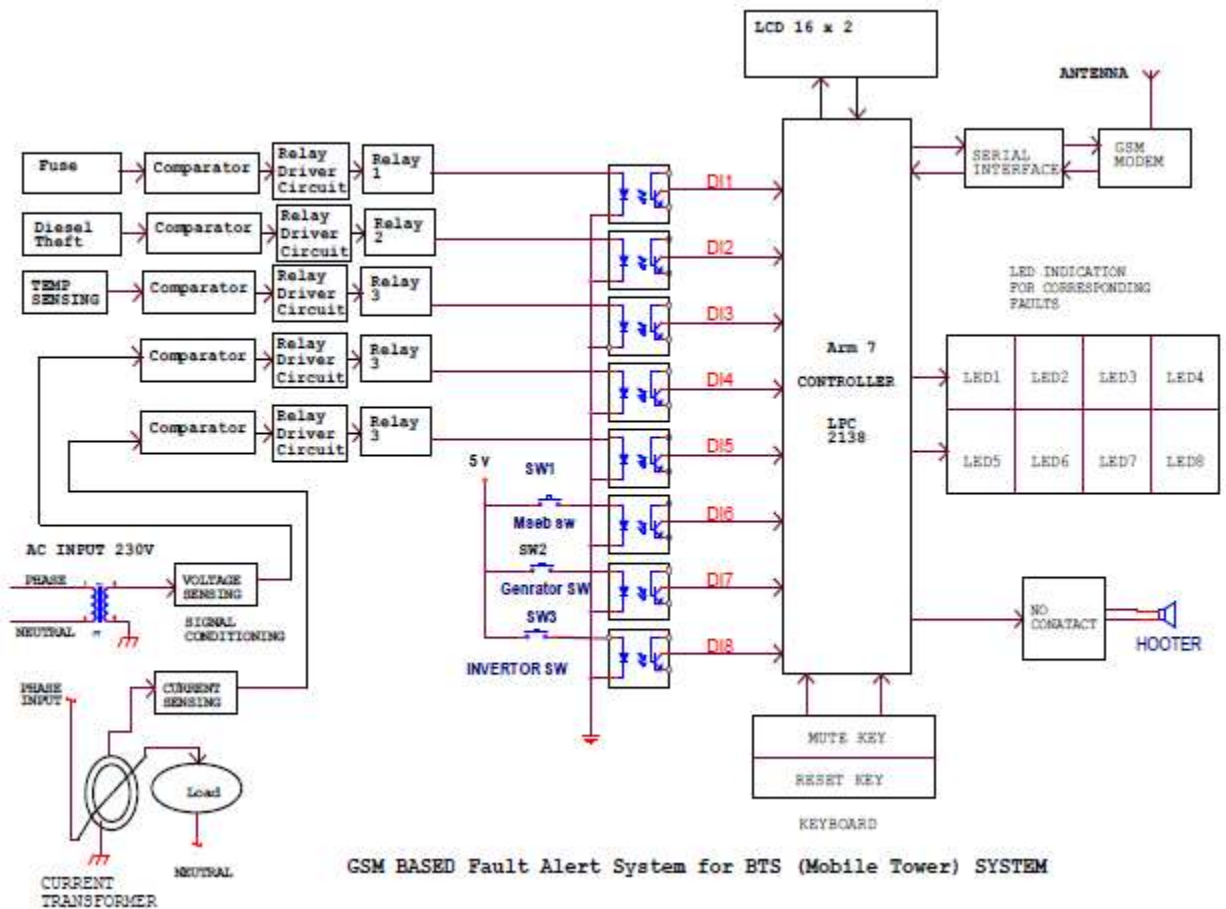
## 5. WORKING

Controller LPC2138 is the main controlling element to which PT on input side, CT on load side, thermistor andfloat sensor are connected. The project is based on arm controller programming. The program for microcontroller in embedded C language. Program written burned into controller and saved as Hex file. For LPC2138 controller Atmel programmer is used. Program hex file is compiled in μcontroller flash compiler. This compiler converts program into machine language code as well as check program for error if any error found notifies and these errors are corrected manually. Then it successfully executed in compiler. After compiling program in controller flash compiler, it is burned into LPC2138 controller with the help of universal program burner kit FP8903 programmer which is connected to computer. After successful program burning, arm controller becomes ready for use.

## 6. CONCLUSIONS

This project introduced beneficial techniques to protect the mobile BS site and its proper uninterrupted operation like, BS Security Monitoring enables users to monitor remotely the conditions of base stations (BS). System Temperature, Distance, Unauthorized entry in room, theft of wires are all problems are solved .

The core of the solution is the GSM SMS controller which always performance monitoring features. Great time management and hence required less number of technicians. With the help of this system the technician is alerted of any unexpected situation and can attend to it immediately and hence the loss is minimized. The system

itself efficiently monitors the power supply and controls the BS equipment's to avoid total outage of communication system. With this we can develop low cost, real-time system which can monitor and control the operation of cell sites. We also believe that the described control and maintenance system will be an important tool in our efforts to create a better total availability for the power feeding of our different telecommunication systems.

The system is developed in a generic way so that it can be implemented in any industrial area after little modification. This adaptive technique will help to maintain an uninterruptible communication service to the mobile users.

## 7. ACKNOWLEDGEMENT

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