

DESIGNING A GENERATOR ALARM MONITORING SYSTEM

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ABSTRACT

The options for backup power are varied, but the most often used power source for moderate-sized telecom sites needing extended runtime is a diesel internal combustion generator. They supply 3 phase current to their equipments. But, when power failure was occurred, they set these equipments to automatic transfer switch to the generator. Therefore it should be functioning well. Some faults can occur in power generators due to various causes. Before affect those faults into the whole site we should get acknowledge of the alarms. For that most of the time telecommunication sector used alarm management systems. Alarm management is the application of human factors along with instrumentation engineering and systems thinking to manage the design of an alarm system to increase its usability. This study is basically on the alarm monitoring of the power generators that are placed in telecom sites. All the alarms acknowledged via short message service (SMS).

Keywords: *power generator, short message service (SMS), GSM modem*

1.0 INTRODUCTION

In telecommunication field have fast growth with the new technologies. During the growth of technological advancement maintain the quality of network is very essential. Network Management System is used to monitor all the equipments, maintenance and troubleshooting for network managers, ensuring carrier-class reliability levels for legacy, hybrid and next generation services across the entire network in real-time. This research is supports to maintain the alarm history of generator alarms and get acknowledgments of the alarms in real time from all the generators via short message service (SMS).

2.0 EXPERIMENTAL

In this system used global service mobile (GSM) modem to send the SMSs of the fault alarms to the relevant person. This circuit was designed for the DSE 7210 diesel generator module. The DSE 7210 generator was manufactured by Deep Sea Electronics.^[1]It has basically three types of alarms. They are low oil level, high temperature and low fuel level. When the alarm is acknowledged it sends the notification to the relevant person about the

type of the fault occurred. To keep the alarm history, web page was used to store and view the alarms.

2.1.1 Flow of control

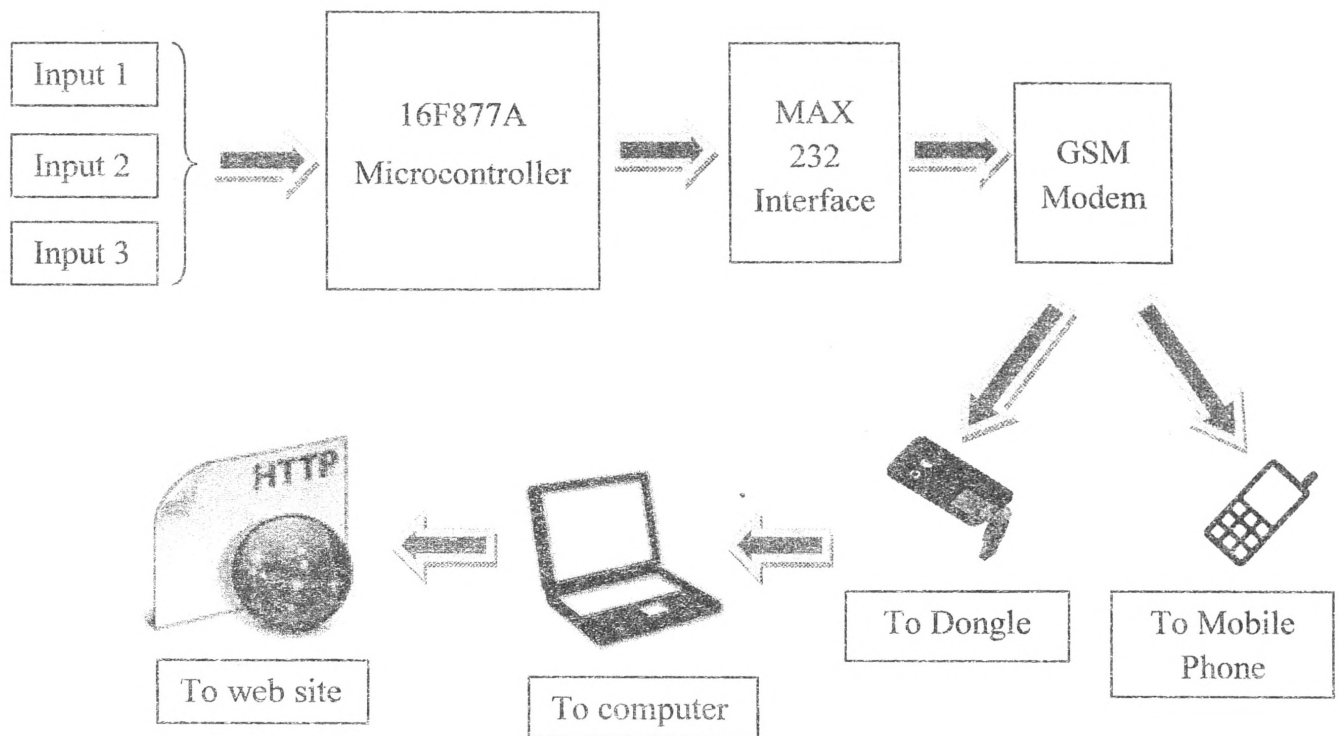


Figure 1: Block diagram of the Generator Alarm Monitoring System

3.0 RESULTS AND DISCUSSION

This generator alarm monitoring system is designed to monitor and maintain the fault alarms of the generators. This was designed to use in two ways. If generator detects any trouble it will send the SMS for the relevant person who was engaged with the generator trouble shooting. In another way is send all the SMS to the desktop computer and it will upload all the SMS into the web page. Then anyone can view the alarms by connecting to the web page.

This will reduce the maintenance cost of the generators. Engineers can discuss about the fault and get the correct solutions for that without visiting to the site. And they can carry away all the required tools for the repair. Therefore they do not need to worry about the requirements after visiting to the site. It is helpful to do their works effectively and efficiently.

This system includes three main sections. There is a controlling part, SMS sending part and web site. The controlling part was designed using the 16f877A microcontroller. It gets the input signals from the power generator and then sends the SMS about the fault and site name to the relevant phone number. To send the SMS this system used GSM modem. The type of GSM modem is TC 35. TC 35 modem is manufactured by SIEMENS (pvt) Ltd. This modem is support for the AT commands. AT commands are the instructions used for controlling a modem. AT stands for Attention. Each and every command line starts with "AT" or "at". Because of this modem commands are called AT commands². After receiving the fault message receiver can identify the type of fault and the site name. It is useful for the technicians to do the repairs. The result is shown in following figure.

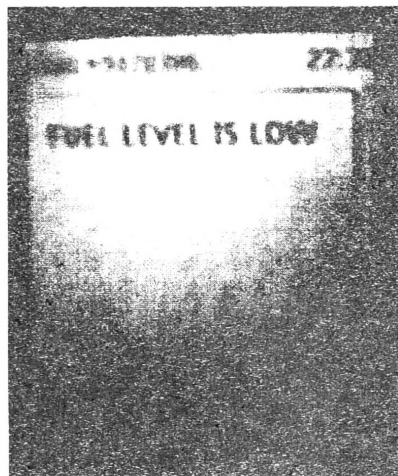


Figure 2: Results

One of the weaknesses of this system is that it requires a computer which runs 24×7. If the computer turns off, the data saving and uploading process has to be completed from the beginning. The reason to start the process from the beginning is the written script to run and save SMS from inbox of the SIM and saved into the file. And also there is another script to upload the file into the web page. This system should require a dongle with the internet connection.

4.0 CONCLUSION

Even though this is a preliminary study, the results predict the possibility of that system use for monitoring the alarms of generators. This system must be connected to the all sites. This is a low cost system comparing with that of other alarm monitoring systems. This is just a proposed model which when implemented would surely give a very big support to the monitor the faults of generators. The time for receiving messages may vary due to the public GSM network traffic but still it is effective.

ACKNOWLEDGEMENTS

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