

# Review paper on- Diesel Generator Automatic Monitoring System

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**Abstract:** In our research paper "Diesel Generator Automatic Monitoring System" we monitor parameter like water level, diesel level and temperature sensing of diesel generator through IOT on Android Application. We display all parameters continuously on mobile phone so that person in charge can take action on time. We are using Arduino as controller and Wi-Fi module ESP8266 for data transmission. We are using Ultrasonic sensor for water level detection and diesel level detection. Water in radiator heated due to continuous working so we use LM35 temperature sensor to sense temperature of water. If water level decreases or water heats up to maximum than threshold then water will be automatically filled by water pump.

**Keywords** — Arduino, Diesel Generator Automatic Monitoring System, ESP8266, IOT, LM35, Ultrasonic sensor, LM35

## I. INTRODUCTION

As in our daily life electricity plays an important role. Electricity is get used nearly every place in the world. At most of the places we required uninterrupted electricity supply so that we use diesel generator as our secondary source of electricity. The diesel generators are used as backup power supply at places where uninterrupted power supply is essential requirement (online exam hall, operation theatres, movie theatres etc). And the diesel generator required minimum one person to control it and for maintenance. That person required to be physically present there at generator to monitor all parameters related to it (diesel level, oil level, generators temperature, output current & voltage). So if we design such a system which can monitor all parameters related to generator then we can save a lot of human time & efforts. We are trying to design such system which can monitor parameters of diesel generator then display it on android app with the help of IOT and also ON/OFF the system through app. Also in some diesel generators water is used for the cooling of the generator so timely refilling of the water is required so we are trying to refill water automatically by using motor.

## II. HISTORY OF DIESEL GENERATOR AUTOMATIC MONITORING SYSTEM

Gbenga obikoya designed system which uses the floater & potentiometer combination for the fuel level sensing. This is one of the traditional ways of level sensing. The system sends the status of the generator when owner send query SMS. Alert & controlling signals also send through the

SMS. This system uses a lot of mathematical calculations to make this system more accurate. [1]

S. boopathi designed a system which uses an AT89C51 microcontroller. This system monitors fuel level, oil level and temperature of generator and display it on 16x2 LCD. This system use GSM to send & receive commands. This system is able to ON/OFF the generator with the help of SMS. The disadvantage of this system is it doesn't send continuous data on owners mobile. To see parameters you need to go at the generator physically. [2]

R. Vidhya proposed quite similar system as above mentioned with more parameter monitoring. [3]

Edemdonald & Ezeofor chukwunazo made a system which monitors the fuel level and battery levels in cell sites. Battery level sensing is one of the most unique and challenging feature in field of generator monitoring. This system takes data from analog sensor and converts into digital with the help of ADC. This converted data is displayed on 16x2 LCD display and also send through SMS on owners mobile. This system is quit expensive because it sending SMS very frequently. [4]

Mr.Kalamkar Pankaj made a system which uses the raspberry pi module for controlling purpose. This system monitors same parameters like our proposed system and additionally it monitors fire sensing & humidity sensing. Bluetooth module is used to transmit data at end software (Linux kernel software). The main limitation of this system is short range between Bluetooth device and end software. [5]

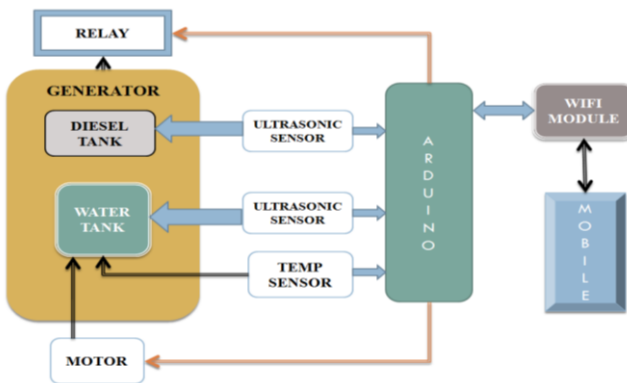
Soumya Das, Susmita Dhar, Pratyusha Biswas Deb, Dwaipayan Biswas and Dr.P.S.Majumdar designed a system which monitor and control the water level. They used four wires inserted in water tank to measure the level. They use the water conductivity for level measurement. [6]

Eka Cahya Prima, Siti Sarah Munifahab designed system which perform water level monitoring & control by using arduino. This system is reference point for our system for water monitoring & control. [7]

Nor Alina Khairi, Asral Bahari Jambek and Teoh Wei Boon designed a system for automatic temperature detection. This system use the LM35 sensor, ADC & microcontroller. [8]

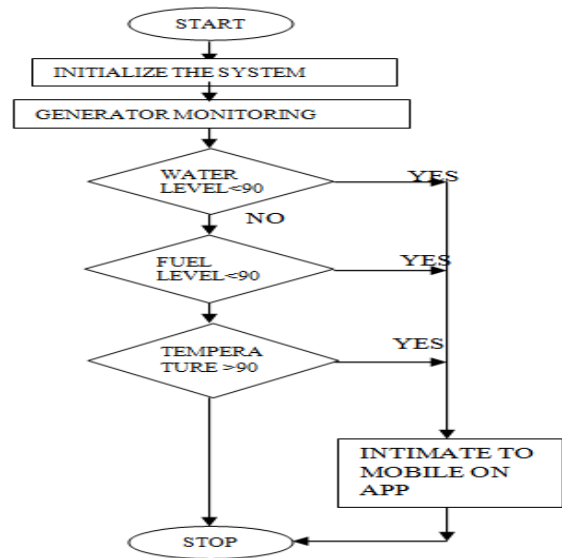
### III. WORKING WITH DIESEL GENERATOR AUTOMATIC MONITORING SYSTEM

Figure 1: Block diagram



Our system continuously monitors system parameter like diesel level, water level in radiator tank and temperature. We have used ultrasonic sensors for diesel and water level sensing. Ultrasonic sensor senses the level of fuel and water and sends the status to Arduino. The Arduino calibrate this data and transmit it on IOT platform with the help of WI-FI module. This status will be displayed graphical on android application in the percentage form. We have also placed temperature sensor LM35 in water tank for measuring temperature. When water level goes below required level or water get heated over threshold level then water pump started by Arduino and water get filled in the tank. We have also provided provision of switching system ON/OFF through Android application just on one touch by using Relays.

### IV. FLOW CHART



### V. APPLICATIONS

- Organizations were power backup and continuous generator monitoring is required.
- School, Colleges, Hotels, Small Scale Industry.
- Hospitals and nursing homes.

### VI. WHY THIS SYSTEM (ADVANTAGES)

- User friendly
- Real time operation
- Operated by only one person
- Time efficient
- Required less maintenance

### VII. COMPARISON (OLD SYSTEM VS OUR SYSTEM)

Table 1: Comparison

Parameter	Old existing monitoring systems	Our monitoring system
1) data transmission device	GSM	ESP8266
2) transmission cost	Cost of SMS	Cost of internet
3) real time operation	No	Yes
4) data sampled & displayed	Comparatively less	More
5) user friendly	Less	More
6) data storage option	No	Yes

### VIII. CONCLUSION

This system is step towards wireless and more hassle free environment for monitoring of diesel generator. This system will be very useful in future for those people who are most dependent on generators and also in those industries where continuous work of generator is very essential. It is very cheap and time saving alternative for manual maintenance.

It also reduces required human power to maintain the generator.

#### ACKNOWLEDGMENT

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