Temperature Detection And Fire Monitoring At Municipal Waste Land fill.

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ABSTRACT:

Nagpur have large population and this population make lots of waste. Nagpur municipal corporation (NMC) do the best waste management. Nagpur municipal corporation (NMC) gather all waste from home and store all waste in various dumping ground. But those dumping ground are very big problem to store that waste safely, It catch fire very quickly. After those toxic gases such as dioxins, furans, mercury and polychlorinated biphenyls might be released into the atmosphere, which pollutes air emanating foul smell.

Our proposed project is based on fire alarm and fire extinguisher for the dumping ground. Our project show warning when waste on dumping ground catch. We created Small Circuit which run on battery power smoke sensor and Temperature sensor and Wi-Fi Module. Our Sensor finds the smoke and Temperature, If it finds temperature is high or find smoke then and signal from Wi-Fi Module which is connected in dumping ground office show the Alarm.

Keywords: - Node MCU micro-controller, LM35D Analog Temperature Sensor , MQ-6 GAS SENSOR , Buzzer, Fire Alarm, Fire Extinguisher, Dumping Ground.

INTRODUCTION

Fire on garbage at Bhandewadi landfill is causing pollution now no longer simply in the Japanese a part of the city however is poisoning the first-class of air in whole Nagpur. It handiest reaffirms the area health agency record launched which ranked Nagpur due to the fact the sixth most polluted metropolis of the state, forty-nine in the U.S. And a hundred seventy-five withinside the international. garbage dumped right proper right here is often blended waste – with paper, plastic containers, bottles, cans and at instances digital items. Moreover, even as it accumulates with decomposable wastes from meals, useless animals, disposal ground is for the ones closest to the hearth who may additionally inhale the smoke. Other people on-internet web website online and rancid- internet site on line will also be affected, counting on factors consisting of the space to the hearthplace, exposure duration, quantity and form of cloth burned, man or woman sensitivity, elements Dr Dilip sarda, former president of Indian clinical association (IMA)[1], Maharashtra. Creation debris or maybe commercial enterprise waste then it's miles in fact an excessive health issue. Burning even small quantities of plastic and rubber releases chemical materials which are unsafe, well-known shows Dr Hemant purohit, deputy director of countrywide environment engineering research institute (NEERI)[2]. Open burning is an inefficient combustion technique that releases large portions of air pollutants and ash, and dense white or black smoke, the scientist explained. The greatest health threat from the hearthplace on rubbish at a waste.

Problem Statement

Nagpur municipal corporation (NMC)[3] store waste on dumping ground mostly on summer time, waste temperature is increase and waste catch fire this event creates lots of pollution.

When we visit Nagpur municipal corporation (NMC) dumping ground they have lot of facility for other work, But they do not have any project for fire management on dumping ground waste. Our proposed project do this work, Our proposed project warn dumping ground officials when the temperature of waste store in dumping ground is increase. It also warns when the waste store in dumping ground catch fire.

Main reason of frequent fires is attributed of non- segregation of waste. The dumped waste contains big volume of light weight plastic and paper, which gets blown off due to heavy winds and touches the high-tension wire present over the dumping yard and those light weight plastic and paper catches fire. Due to peak summer the dumped waste is dry, which catches fire from burning light weight plastic and paper. This fire is very small and hard to notice but after some time this spark of fire become a big and spared very fast and soon it become a big problem.

Another reason of frequent fires is and experts say, the generation of methane gas and heat when the breakdown of organic waste in the absence of oxygen takes place. This process is called anaerobic decomposition. The amount of methane and other gas in and around the dumping ground is very high compared to the normal air and if there is anything combustible at the dumpsite, it can catch fire.

Objective

Objective of our Proposed Project is to give Warning to Dumping Ground official when Temperature of Dumping Ground waste is more than 45 Degree or when waste catches fire so to work on Fire Extinguisher.
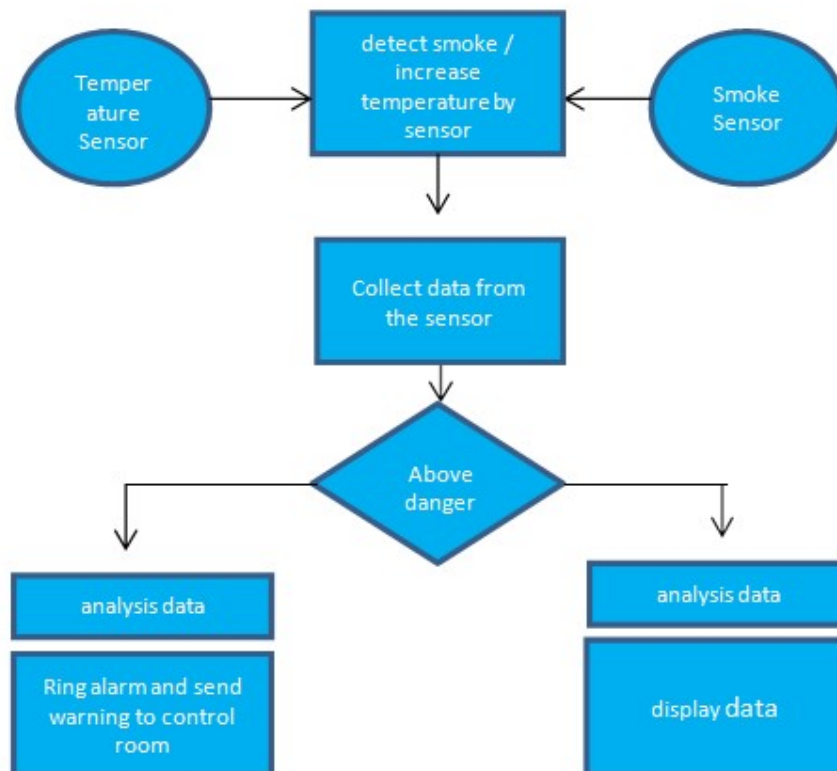
Our project is a cloud[4] base project. All reading from Sensor is store on website so and dumping ground officials and view that current data on there website as well as we create an android[5] application which get data from the website and show it on officials' mobile phone. If dumping ground catch any fire then warning is show on their mobile phones.

Idea prototype

Our idea for this project is to divide dumping ground in matrix or grid. Each part of matrix is max at 1 square meter and in each part, we put our device which contain smoke detector and temperature sensor as well as Wi-Fi module which is connected to website and send current data to website. This current data is visible on website and mobile application. If smoke or temperature is cross critical level then website and mobile application is showing the warring.

Our device is power by the battery and solar panel so the solar panel charge battery and our device run without any electricity connection. In this manner we are able to manipulate the staring spark of the hearthplace.

BLOCK DIAGRAM

1. **Component Used**

   Node MCU microcontroller :- The Node MCU[6] (Node Micro Controller Unit) is an open supply software program and hardware improvement

surroundings this is constructed rounda totally less expensive System-on-a-Chip (SoC) referred to as the ESP8266.

The ESP8266, designed and synthetic through Espresso Systems, consists of all essential factors of the cutting-edge computer: CPU, RAM, networking (Wi-Fi), or even a cutting-edge working machine and SDK. When bought at bulk, the ESP8266 chip expenses simplest three hundred Rs. A piece. That makes it an first rate preference for IOT initiatives of all kinds.

MQ-6 GAS SENSOR :- ľhe MQ6[7] (LPG Gas Sensoí) is a simple-to-use liquefied petíoleum fuelline (LPG) sensor.

It may be utilized in fuel line leakage detecting device in purchaser and enterprise applications, this sensor is appropriate for detecting LPG, iso-butane, propane, LNG. Avoid the noise of alcohol, cooking fumes and cigarette smoke. The sensitivity may be adjusted with the aid of using the potentiometer.

LM35D Analog Temperature Sensor :- LM35[8] is a temperature sensor that outputs an analog sign that's proportional to the instant temperature. The output voltage can without difficulty be interpreted to gain a temperature analyzing in Celsius. The benefit of lm35 over thermistor is it does now no longer require anyoutside calibration.

The coating additionally protects it from self- heating. Low cost (about $0.95) and extra accuracy make it famous amongst hobbyists, DIY circuit makers, and students. Many low-give up merchandise take benefit of low cost, extra accuracy and used LM35 of their merchandise. Its about 15+ years to its first launch however the sensorcontinues to be surviving and is utilized in any merchandise**.**

Buzzer :- right here are many methods to speakamong the person and a product. One of the exceptional methods is audio communique the use of

a buzzer[9] IC. So for the duration of the layout process, expertise a few technology with configurations could be very helpful.

So, this newsletter discusses a top level view of an audio signaling tool like a beeper or a buzzer and itsoperating with applications.

DC Battery :- DC batteries[10] use direct current, which flows in an unmarried route and is commonly used to electricity small appliances, radios, laptops, cellular telephones and different digital gadgets.

2. MODEL IMAGES

3. WEBSITE IMAGES

REFERENCE
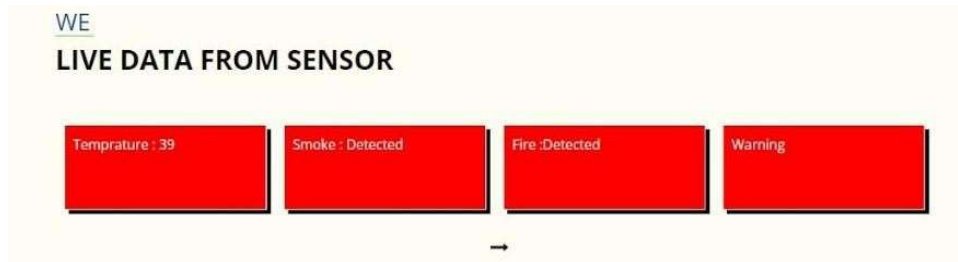
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