Automatic Epoxy Flooring

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Abstract- *The epoxy floor coating is the most widely used for commercial and industrial flooring.They are normally applied over concrete floors to provide a high performance, smooth and durable surface that can last many years and withstand heavy loads.This project develops a fully automated epoxy flooring machine,which can be used for both industrial and commercial flooring purposes.This robot can be controlled manually with our mobile phones,which makes it a much more user friendly and also this robot reduces the flooring time when compared to the manual flooring .Many industrial sites,warehouses and commercial buildings rely on epoxy floors to maintain clean and safe condition for workers ,equipment and inventory.*

Keywords- Automatic flooring, Robotics, Epoxy flooring

I. INTRODUCTION

In the current scenario the epoxy flooring can be used for both commercial and industrial workplace due its some dominant properties.The epoxy flooring is synthetic resin flooring system that is applied over the concrete substrate.There are different types of epoxy flooring is available in the current world based on the purpose of the environment it may differ.The thermosetting resin is coated,trowelled or poured over the concrete surface during flooring.Once the layers are the completely cured it creates a well built surface.This type of resin floor has an advantage of mechanical and chemical resistance properties .One of the main significance of this type of flooring is we can create wide range of designs during flooring.Another outstanding properties of epoxy flooring is it has highest strength ,good dimensional stability,heat and chemical resistance and extremely low shrinkage.It is a best option to adopt this type of flooring for repairs and other improvement projects,compared to other type of flooring it has no known negative effects.

Compared to other type of flooring epoxy floors are more bright and professional. The surface of epoxy floor is very smooth and easy to maintain. Another distinct feature is that the per square foot cost is low compared to the others. They are highly resistant to oil, bleach, gasoline, cleansers ,transmission fluid and more. This makes them to be used in garages and automobile industry.If epoxy floors are properly installed it will last for decades without cracking or peeling.This type of flooring enhances visibility by reflecting light off the floor.The another vital feature of these floors are resistant to bacteria and germs,which makes them very easy to sanitize,hence it is an best option to use in hospitals and clinics.This flooring also safeguard underlying concrete substrate from moisture,stains,grease and cracks.There are variety of choices makes it an economical way to upgrade plain concrete and enhance the ambience of home or industry.

II. DESIGN

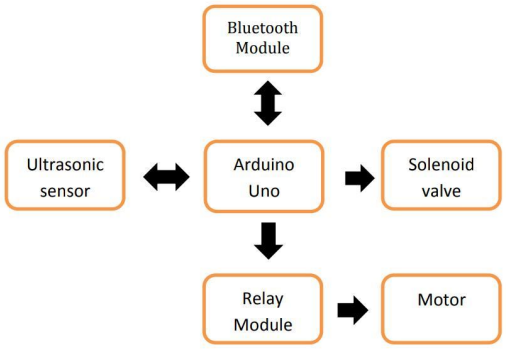

Figure 1: block diagram of arduino and sensors

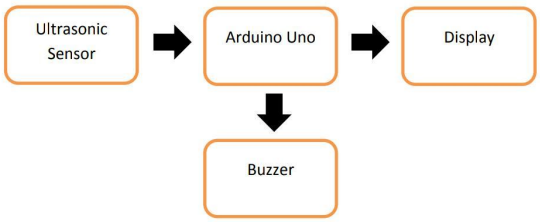

Figure 2: block diagram of arduinoand display

III. CIRCUITS

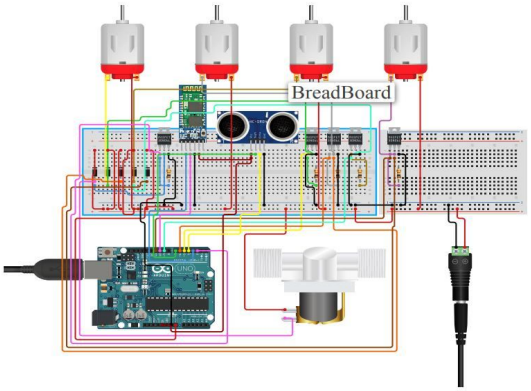

Figure 5: complete circuit of automatic flooring machine using arduinouno

1. The digital pin 2 of the arduino is connected to the gate pin of MOSFET.
2. Digital pin 3 of the arduino is connected to TX pin (output) of the Bluetooth module.
3. Digital pin 4 of the arduino is connected to ECHO pin (output) of the ultrasonic sensor.
4. Digital pin 5 of the arduino is connected to the SIGNAL pin of 5V relay.
5. Vin pin (power) of the arduino is connected to N-terminal of P-N junction diode.
6. GND pin of Bluetooth and ultrasonic sensor are both grounded.
7. 5V pin of the arduino is connected to Vcc (+5V) pin of the ultrasonic sensor.
8. SOURCE pin of MOSFET is grounded.
9. GATE pin of MOSFET is connected to 10k ohm resistor.

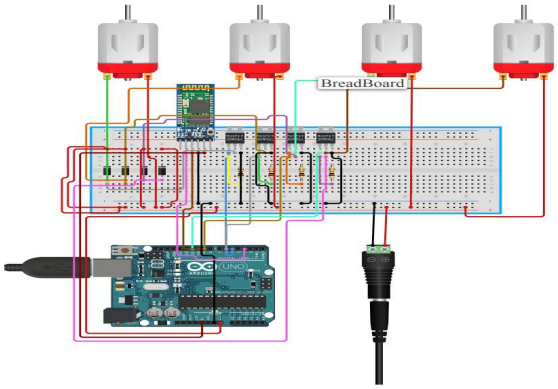

Figure 4: circuit of manual modeusing arduino and bluetooth

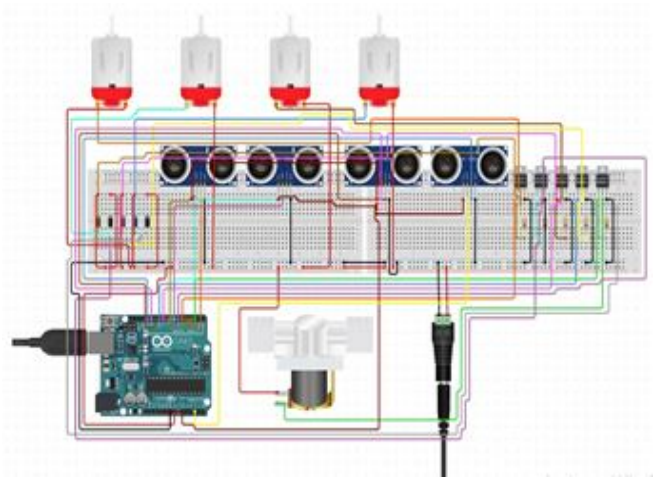

Figure 5: circuit ofautomatic mode using arduinouno

IV. SELECTION OF COMPONENTS

Components required :

1. Arduino Uno
2. Ultrasonic Sensor - HC-SR04
3. 12V Solenoid Valve - 3/4"
4. HC - 05 Bluetooth Serial Module
5. Relay Module 4-Channel

1. Arduinouno

Arduinouno is a microcontroller which consists of different analogue, digital pins and have many different useful pins. It also has a Bluetooth module connectivity. Using this module, the microcontroller is communicated with the android app. Thus, all the required data is transmitted and received between android app and microcontroller.

2. Ultrasonicsensor

The ultrasonic sensor uses the ultrasonic signals to find the distance. It transmits the ultrasonic signals continuously in limited time intervals and receive the transmitted signals. Thus, using these values, the microcontroller calculates the distance from the sensor to the object. This is used for finding the water level in the water tank.

3.12v Solenoid valve -3/4

It is used to control the fluid flow.Normally the valve is in closed position (NC) and opens when a transmitting voltage is applied.It is a directionally sensitive which means the fluid can only flow from the input to the output,not

opposite.The operating voltage required is 12V dc and also it requires a minimum pressure of 3PSI to function normally.

4. HC - 05 Bluetooth Serial Module

This module is very easy to use and designed to enable transparent wireless serial connection.One main advantage of this module is it can be used neither receiving nor transmitting data.

5. Relay Module 4-Channel

It is an electrically operated switch which allows us to turn ON or OFF a circuit by electromagnetically.The 4 channel relay module is mainly used to control high voltage and high current applications and it is compatible with any type of micro controller.

V. CONCLUSION

In this paper describes a new flooring method that can be used for both industrial and commercial environments.By adopting this type of flooring can reduce the cost compared to other flooring techniques.Those who are looking for improvement projects the epoxy flooring is a best option.The main advantage of this flooring is improved mechanical and chemical properties, allows trouble-free cleaning and sanitizing.

VI. ACKNOWLEDGMENT

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