

AUTOMATIC FIRE EXTINGUISHING ROBOT

<https://www.youtube.com/watch?v=CxYpy2ZPktc>

The Firefighting Through High-Resistance Robot – Android Bluetooth Controlled is a robotic system designed to assist in firefighting operations in hazardous and high-temperature environments where direct human intervention may be dangerous. The robot is controlled wirelessly through an Android application using an HC-05 Bluetooth module, allowing the operator to control its movement remotely. A PIC microcontroller acts as the main control unit and receives commands from the Bluetooth module to drive the robot's DC motors through an L298 motor driver. A fire sensor is used to detect the presence of fire, while a DC water pump controlled through a relay sprays water toward the fire for extinguishing. The system also includes a buzzer and LED indicator to provide warning and status indications. A regulated power supply and battery power source provide the required operating power for the controller and robotic components. The proposed system reduces the risk to firefighters by enabling remote operation and can be useful for industrial areas, warehouses, laboratories, and other fire-prone environments. To perform this intelligent task, Microcontroller is loaded with a program written in embedded 'C' language.

Objectives:

- To design and develop a firefighting robot for operation in high-temperature and hazardous environments.
- To control the robot's forward, backward, left, and right movements through an Android application using HC-05 Bluetooth.

- To detect the presence of fire using a fire sensor.
- To automatically activate the DC water pump through a relay for fire extinguishing.
- To provide buzzer and LED indications during fire detection and system operation.
- To reduce the risk to human firefighters by enabling remote firefighting operations.

The major building blocks of this project are:

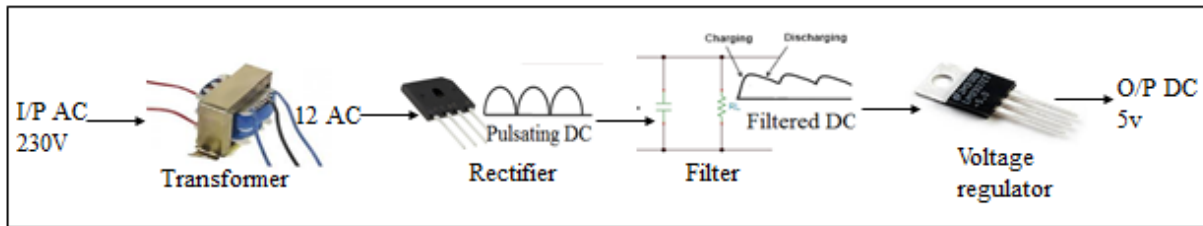
1. Battery Power Supply.
2. Fire Sensor.
3. DC Motor with driver.
4. Reset button.
5. Crystal oscillator.
6. LED indicators.
7. PIC Microcontroller.
8. HC-05 Bluetooth module.

Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.

3. Express SCH for Circuit design.

Regulated Power Supply:



Block Diagram

