

AirSential

**Advanced Smart Device for Air Quality Monitoring,
Gas Leak Detection, and Emergency Response-**
Safeguarding Respiratory Health with Intelligent Hazard Prevention

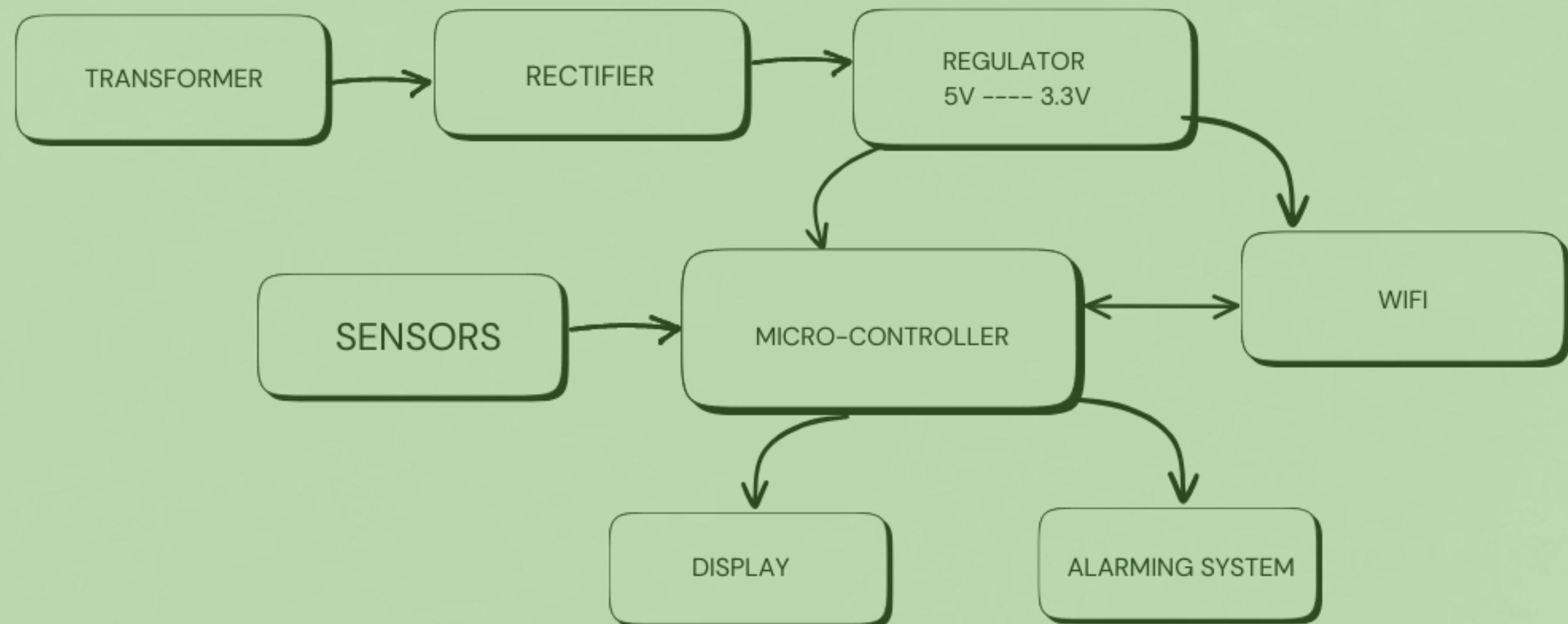
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This advanced device is designed to assist individuals with respiratory illnesses while enhancing safety in homes and offices. It features real-time air quality monitoring and gas leak detection, with intelligent systems to differentiate between harmless smoke (such as from incense or cigarettes) and dangerous smoke or gas leaks. Equipped with a small camera for human face detection and integrated smoke and gas alarms, the device covers large areas efficiently. It can automatically alert authorities in case of prolonged hazardous gas levels or fire emergencies, ensuring timely intervention.

FUNCTIONS OF MY DEVICE

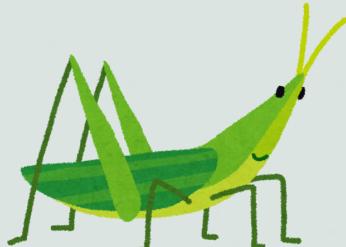
- SENSOR TO DETECT AIR QUALITY AND CONTENTS PERCENTAGE WISE
O₂-% CO₂-% ETC
- LIGHT FOR INDICATION (RED YELLOW GREEN)
- DISPLAY AIR QUALITY
- ALARMING SYSTEM IN CASE OF FIRE
- LARGE RADIUS
- CAN TELL THE DIFF BETWEEN ACTUAL SMOKE AND A PERSON SMOKING
- WIFI connectivity
- RUNS ON BATTERY FOR POWER SUPPLY
- ECONOMICAL
- All combined in one single device that can be hanged on the wall

Sample Circuit Block Diagram



COMPONENTS

1. Microcontroller
2. Wi-Fi Module
3. LCD Display
4. DC Fan
5. Diodes
6. IC && IC Sockets
7. Regulator
8. Transformer
9. Sensor
10. Capacitors
11. Transistors
12. Breadboard /cables /wires /PCB /switch /push buttons
13. Potentiometer
14. Buzzer
15. Resistors
16. crystal Oscillator
17. LEDs



What Gases will be detected

1. Carbon Dioxide CO₂
2. Oxygen O₂
3. Carbon Monoxide CO
4. Hydrogen Cyanide HCN - Zyklon B
5. Phosgene COCl₂
6. Chlorine Gas Cl₂
7. Ammonia NH₃
8. Nitrogen Oxides NOx
9. Nitrogen Dioxide NO₂
10. Sulfur Dioxide SO₂

9.Methane CH₄

10.Inert Gases

-Helium He

-Argon Ar

-Nitrogen N₂

10.Nerve Agents(Chemical Warfare Gases)

-Sarin(GB)

-VX

-Soman (GD)

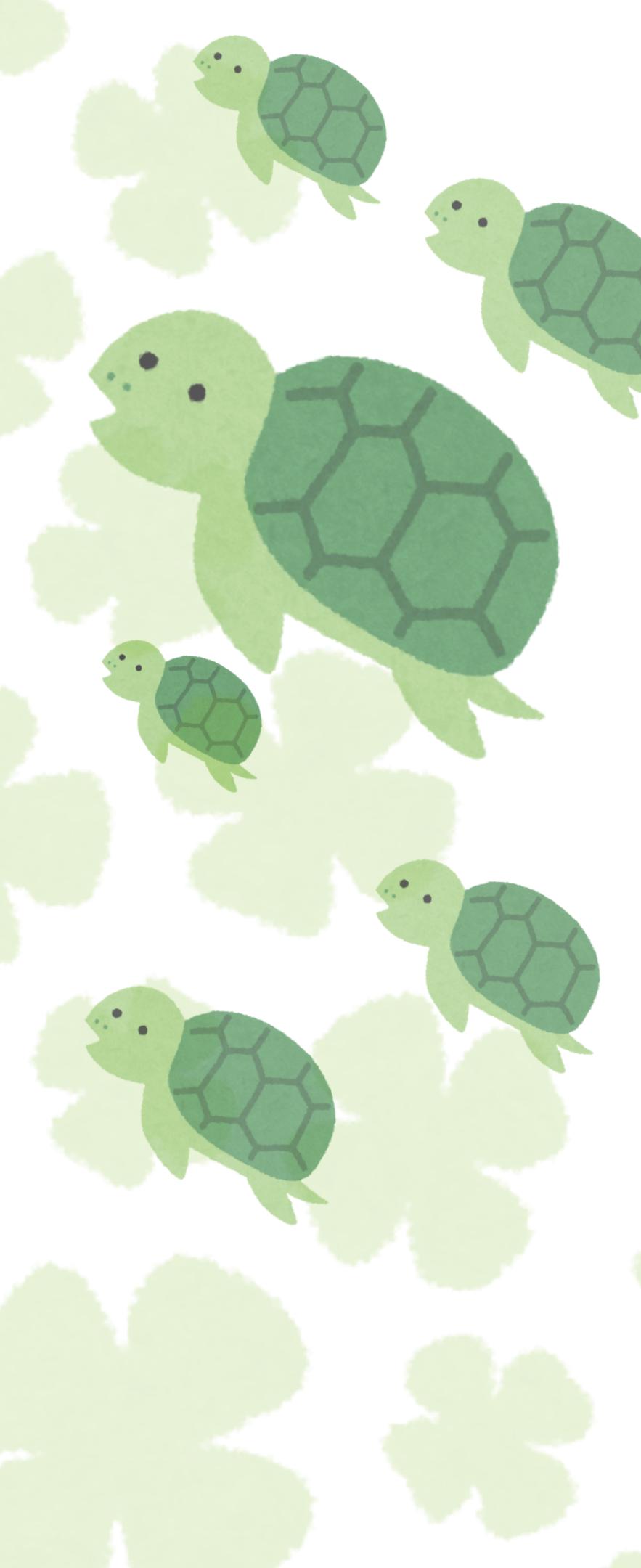
-Tabun (GA).

11.Liquefied Petroleum Gas (LPG)

Composition: Primarily propane (C₃H₈) and butane (C₄H₁₀).

12. Natural Gas

Composition: Mostly methane (CH₄), with small amounts of ethane, propane



Increase Precision of the device Sensors

Different Sensors combined using Sensor Fusion for more accuracy and detection

- GAS SENSORS
- FIRE/SMOKE SENSOR
- TEMPERATURE SENSOR
- RAIN/HUMIDITY SENSOR
- PIR SENSOR

With multiple sensors present the detection of severity of situation is found i.e. Smoke generated from a wild fire and smoke from a cigarette is properly recognised and alerting system is activated accordingly



Alerting System

With wi-fi connectivity internet is accessible and therefore the right person / authority can be alerted

GPS can help with location

While the microcontroller will be able to set the range of emergency from 1-10 which will help authorities determine the level of severity and take necessary actions to prevent accidents.

Emergency Buzzer will help the resident and their neighbours to be informed about danger

if a gas leakage happens when resident is not present these automatic alerting system can be very useful.



DISPLAY

Air Quality can help in detection of pollution and provide a comparision of pollution/air quality in different areas

Red-Yellow-Green light indicator can help in showing severity to a person from non-technical backgrounds, kids, senior citizens etc.

Detection of poisonus gases can help in preventing many severe accidents



Thank You