# IOFRESH

# Product Features/Specifications:

- Time controlled air freshener with IoT integration.
- Periodic Air Quality monitoring.
- A user friendly mobile application for monitoring and controlling of IOFresh.
- Alexa and Google Home Integration to make the user experience more versatile.

# Product Summary:

IOFresh is an IOT based Air Freshener. It comprises a basic Air Freshener which is integrated with an Air Quality monitoring module. This Air Quality module provides us with a standard Air Quality Index and also with the composition of the surrounding air (mainly Carbon Monoxide(CO), Methane(CH4) and LPG)

This device will be user controlled using a user friendly mobile application developed in accordance with this specific device. The mobile application will provide us with features like Periodic Air Quality Monitoring, ALERTS regarding the Air Quality in its surroundings, Timer for the Air Freshener and finally Google Assistant and Amazon Alexa integration to improve the user experience.

# Business Case

- In our day to day life, we come across a plethora of bad odours. Our product IOfresh primarily aims to target that problem so that the user doesn't have to worry about the odour of their surroundings. We aim to automate the process of air freshening and additionally providing the user with the facility of doing it manually/on-demand by a simple touch of their mobile phones.
- Secondarily, we aim to measure air quality of our user's surroundings and provide them with a live feed on the app on their phone. It will also provide an alert if there is a LPG leak all using the same sensor.

# User Persona

## Persona 1: Working Professional

In today's day and age we observe that a house is empty for upwards of 10 hours a day and any LPG leakage or toxic gases produced due to fires will not be attended to immediately. IOFresh's suite of sensors will report the ongoings in their house in real-time allowing them to take necessary action like alerting emergency services.

## Persona 2: Families

 IOFresh would be a great addition to people and families that like to entertain. The Air Freshener aspect of IOFresh provides a way to set the atmosphere for a gathering or a party by infusing the air with pleasant aromas.

# Components Used:

NodeMCU **ESP8266** or **ESP32** Microcontroller.

### Specifications:

- Microcontroller: Tensilica 32-bit RISC CPU Xtensa LX106
- Operating Voltage: 3.3V
- Input Voltage: 7-12V
- Digital I/O Pins (DIO): 16
- Analog Input Pins (ADC): 1
- UARTs: 1
- SPIs: 1
- I2Cs: 1
- Flash Memory: 4 MB
- SRAM: 64 KB
- Clock Speed: 80 MHz
- USB-TTL based on CP2102 is included onboard, Enabling Plug n Play
- PCB Antenna
- Small Sized module to fit smartly inside your IoT projects

**MQ9** Carbon Monoxide, Methane, LPG Gas Sensor.

The MQ9 gas sensor is highly sensitive to Carbon Monoxide, Methane and LPG. This sensor is used to detect different gases containing CO and combustible gases.

- Input voltage: DC 5V
- Power: 150mA
- DO output: TTL digital 0 and 1 (0.1 and 5V)
- AO output: 0.1-0.3V (relatively clean), the highest concentration voltage is about 4V.

**LM1117** 9V to 5V buck converter,

We are using this particular buck converter instead of a simple resistor to drop the voltage because it increases the overall power efficiency of the product which in turn prolongs the life of the product.

- Available in 1.8 V, 2.5 V, 3.3 V, 5 V, and Adjustable Versions
- Output current: 800 mA
- Temperature range:
  - LM1117: 0°C to 125°C
  - LM1117I: −40°C to 125°C

# 1 channel 5V Relay

**Specification and Features :-**

- 1 channel relay board
- Operating Voltage 5V
- Max Current : 20mA
- Relay Contact Current Capacity at AC250V: 10A
- Relay Contact Current Capacity at DC5V: 10A
- One normally closed contact and one normally open contact
- Triode drive, increasing relay coil
- High impedance controller pin
- Pull-down circuit for avoidance of malfunction

## 9V battery

Standard 9V battery.

**Rumit Kumar Sharma - 1MS19EE047**
**Supreeth Rao - 1MS19EE057**
**Akshat Gupta - 1MS19EE006**
**Aviral Agarwal -1MS19EE013**
**Shubham Singh - 1MS19EE055**