

# Fabrication of Silent Air Purifier And Humidifier Using Water As A Filter

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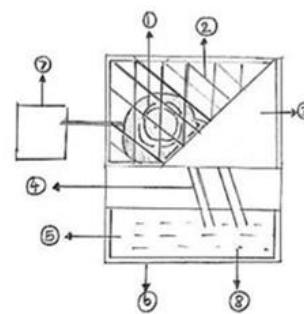
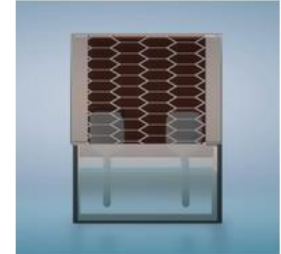
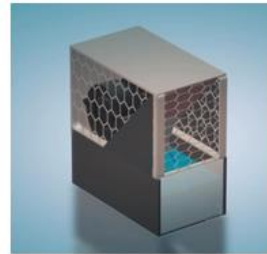
**Abstract-** Air pollution has crossed all bounds in 2021. WHO estimates that around 7 million people die every year from exposure to polluted air. The spread of air pollution is so high that about 91% of the world population is exposed to air pollution. Well, this also means that the air you breathe in your house is polluted. To counter this issue, we here develop a mini air purifier with that does not use expensive filters but rather uses water as an air filter. Also, it acts as an air humidifier and can be used as oil diffuser too which helps you relax and kills certain bacteria and viruses present in the air. Poor indoor air quality is commonly found in homes in larger cities, and it's result of a growing industrialization that pollutes air we breathe with contaminants like Industrial dust, smoke, and other particles from traffic. The solution from user perspective, is to use an air purifier that clean the air from these particles inside the users Home. An air purifier can also be used to ease annoyance for people suffer from allergies. This matter thesis concerns the design and development of the next Generation of the air purifier for indoor use. The project has been conducted with human center design process and co-design approach

## I. INTRODUCTION

**AIR PURIFIER:** An air purifier or air cleaner is a device which removes contaminants from the air in a room to improve indoor air quality. These devices are commonly marketed as being beneficial to allergy sufferers and asthmatics, and at reducing or eliminating second-hand tobacco smoke.

**HUMIDIFIER:** A humidifier is a device, primarily an electrical appliance, that increases humidity (moisture) in a single room or an entire building. In the Home, point-of use humidifiers are commonly used to humidify a single room, while whole-house or furnace humidifiers, which connect to a home's HVAC System, provide humidity to the entire house. Medical ventilators often include humidifiers for increased patient comfort. Large humidifiers are used in Commercial, institutional, or industrial contexts, often as part of a larger HVAC system.

## II. DRAWING & DIAGRAM



1. AIR BLOWER PUMPS
2. PROTECTIVE MESH
3. SUPPORTING FRAME
4. PIPE
5. WATER TANK
6. BASE FRAME
7. TRANSFORMER/ADAPTER
8. MONITORING GLASS

## III. PHOTOS



## IV. WORKING PRINCIPLE

The system makes use of 2 x high power low noise centrifugal fans that are used to suck in air through a protection mesh. The pulled air is then passed through a water tank situated at the bottom of the purifier. The air passed through water gets auto purified as water traps dust, fungi,

bacteria etc. in the water. The resulting air rising through the water is a high humidity cool air.

Also added essential oils to the system allow for humidifying the area/room with essential oils which are researched to kill certain types of bacteria fungi in air and help humans relax. Also, some essential oils are researched to provide various health benefits when inhaled.

## V. BASIC PRINCIPLE

An air purifier is usually equipped with a fan that absorbs air and lets the air pass through a filter media where particles get stuck. Usually there is a pre-filter That captures larger particles. Behind the pre-filter, some air cleaning technology, usually a finer filter, captures smaller sized particles (Figure 1). The air that Comes through is clean from harmful particles

### PARTS OF SILENT AIR PURIFIER AND HUMIDIFIER MACHINE COMPONENTS:

- Air Blower Pumps
- Axial Cooling fan
- Water Tank
- Pipe
- Pipe Fittings
- Valve
- Pipe Connector
- Transformer/Adapter
- Protective Mesh
- Monitoring Glass
- Mounts and Joints
- Base and support Frame

## VI. OPERATION

- Initially we supply current to the system (230v, 10 Amps).
- Adaptor converts the AC current to DC current and supplies it to the air blower pumps.
- Air blower pumps converts the electrical energy into mechanical energy and the fans starts rotating. Due to rotation of fans, it sucks the air from, Atmosphere And that air is transported to pipes by air blower pumps.
- The pipes transport the air to the water tank. At the end of pipes nozzles are fitted which are used to increase the velocity of the pump and the air enters water. Water eliminates the impurities like dust, fungus etc. from the air Due to water the humidity percentage of the air gets increased.

This purified and humidified air comes out from the system.

## VII. ADVANTAGES AND DISADVANTAGES

### ADVANTAGES:

1. A Low-Cost Purifier
2. No Expensive Filters Just Water
3. Quiet Operation
4. Easy Maintenance
5. Also acts as a Humidifier

### DISADVANTAGES:

1. It doesn't kill combat mold and fungi.
2. Periodicals water change and clean the tank
3. Doesn't remove odors as well as an active car Costs of filter replacement
4. Costs of filter replacement
5. Some air purifiers produceozone

## VIII. APPLICATION

Some major industrial applications for air purifiers include removal of dust, toxic fumes, volatile organic matter, oil mist, and harmful of enhance performance of production machines as well as industrial occupants working in high precision environment.

## IX. CONCLUSION

The outcome of this project is a next generation air purifier with a new filter innovation. The new filter makes it possible to have a smaller housing compared. With competitors but still having high performance. This means that it does not take up as much space and is easier for the user to move around from place to Place inside the apartment; it is also equipped with a handle. The 360o Air is also easier to fit in more places in a home because its design does not restrict its Position as much as competitors changed. The filter also has A low pressure drop which results in less generated noise and lower energy consumption. All these advantages that is the outcome of the new filter Innovation makes this a product that stands out from competitors and makes it easy to sell for sellers and should generate revenue for the brand owners. The air purifier is a product that solves the problem of bad indoor air quality.

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