Conversion of Carbon Emitted from Vehicles to Ink

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***Abstract*—This report presents the information and knowledge gained during the project. Pollution became as dangerous as disease, so pollution traps and smoke absorbers were developed to control it. Advanced pollution control devices are also being invented. So that we can control pollution and keep it safe. In the future, it will be mandatory to have a smoke absorber in every house. A pollution trap not only keeps your surroundings pollution-free, but can also prevent diseases. Advanced pollution catcher equipment makes it easy to get rid of pollution without wasting human energy. In the last few decades, Asia has grown exponentially, but this growth has come at a cost of air pollution due to increase in carbon-footprint. AIR-INK is the first ink made entirely out of air pollution. After capturing air pollution through pilot trials of kaalink and other pollution sources the carbon rich pollutants are converted into tools for art. Research has shown that many premature deaths are directly related to soot in the environment. Our vision is to arrest the urban PM air pollution in a way that it doesn't reach our lungs or waste streams. The process of creating AIR-INK carefully ensures that the end product is safe-to-use. The pollutants which could have been in the lungs of millions of people, or mixed into our water, land streams are now beautifully resting as art.**

***Index Terms*—Pollution Control, Smoke Absorber, Air Ink, Respiratory Problem, Soot**

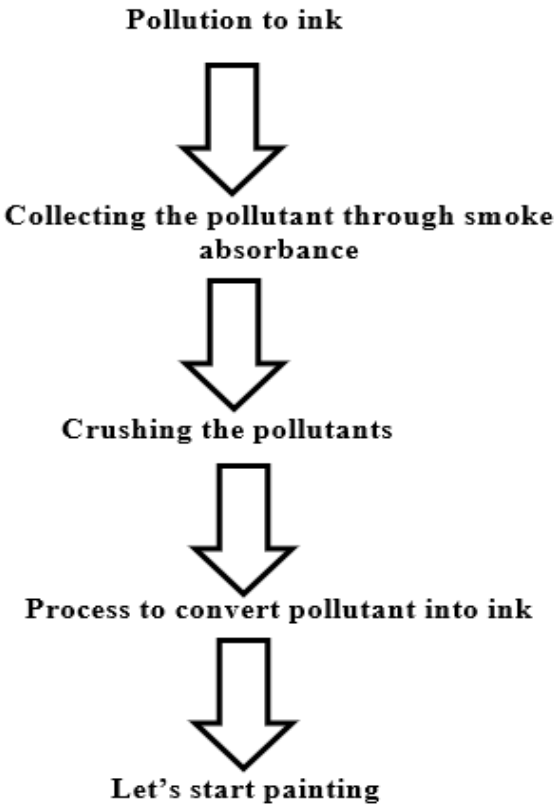
1. INTRODUCTION

It is a device that filters the air in the interior and removes vapours and particles in the air created during metal soldering. This helps maintain better indoor air quality. Removes solder fumes, heat, noxious odours and other airborne particles that could have adverse health effects. It comes with a mechanical fan that extracts all toxic fumes, bacteria, gases and particles through a carbon filter. A smoke absorber plays a key role in removing fumes and harmful gases. Having a smoke absorber with a built-in fume extractor is important because of the hazards & health effects of solder fumes. It is necessary to have one in areas reserved for industrial/mechanical tasks that create hazardous fumes and smoke. Recycling environmental air pollution and convert it to paints/ pigments and printing ink. Firstly, AIR INK products were used in August 2016 in association with Tiger Beer to create art. Founded by Graviky Labs, a spin- off group of MIT Media Lab. Kaalink is a contraption retrofitted to the exhaust pipe of vehicle to capture the outgoing pollutants. This does not affect vehicle performance. Inhaling fumes while soldering can lead to dangerous health consequences due to toxic metal particles in the fumes. Unfortunately, few people are aware of this risk because most believe that opening the windows or turning on the fan will solve the problem. Unfortunately, fans will only circulate the smoke to other areas, increasing the risk of exposure to harmful toxins. Inhaling fumes while soldering can lead to dangerous health consequences due to toxic metal particles in the fumes. Even opening the windows does not help, because the outside air pressure is greater than the air pressure created by the fan. As a result, some smoke returns to the room. Fortunately, new inventions in workplace safety are making it easier to absorb smoke to improve indoor air quality. Smoke absorbers are a great example of an efficient solution with a carbon filter and smoke exhaust fan. A smoke absorber is a mechanical device that absorbs smoke from a closed environment. some common places where smoke absorber is used are kitchens, factories, laboratories, etc. Smoke absorbers are used to extract smoke, odour, hot air and other toxic air from an enclosed environment. This article is written with a vision of utilizing resources that have been ignored until now. Air pollution can be harvested and made into a substance as useful as ink. The Smoke Absorber is a device that smartly detoxifies heavy metals and carcinogen particles from soot or carbon. Pollutants that can damage our lungs can reach our

eyes in the form of art. They can adversely affect health leading to shortness of breath, asthma, stroke, cancer, heart attack, bronchitis and premature death. Over time, technology has proven that substances that cannot be touched can also be recycled and reused in the form of ink. It is an extension of technology to create an environmentally friendly environment. This developed idea combines science, technology and art. Polluted air is rich in carbon due to the burning of fossil fuels. The proposed device is designed as a smart and smart combination of electronic sensors, collection system and mechanical actuators.

2. MATERIALS AND METHODS

A smoke absorber is a mechanical device that absorbs smoke from a closed environment. some common places where smoke absorber is used are kitchens, factories, laboratories, etc. Smoke absorbers are used to extract smoke, odour, hot air and other toxic air from an enclosed environment.



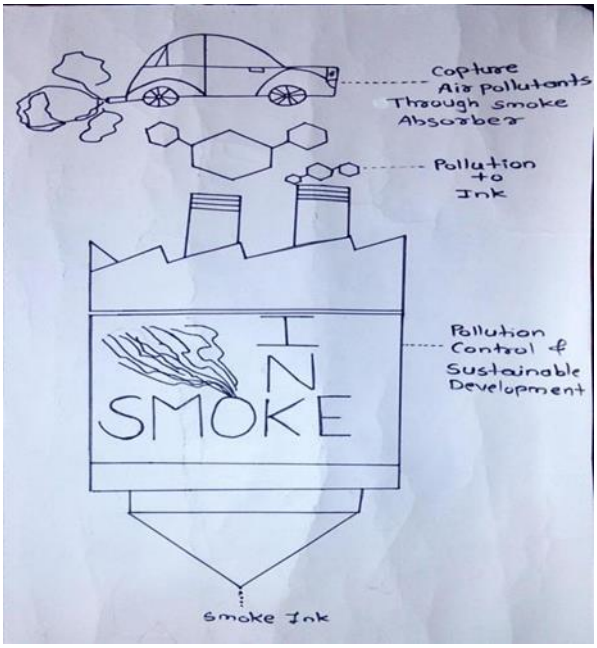


Figure 1.1 Carbon Converted to Ink

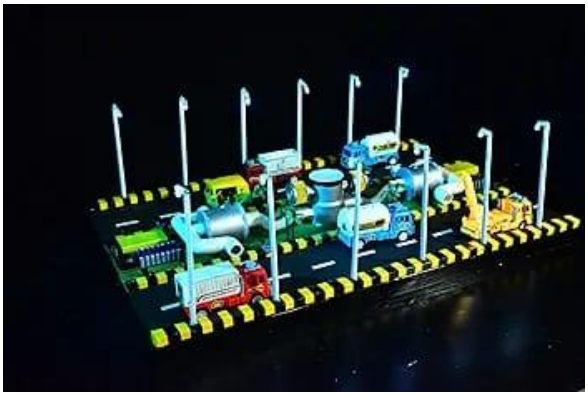


Figure 1.2. Carbon Converted to Ink from Vehicles Setup

3. DEVICE DESCRIPTION AND INK PREPARATION

The waste plastic bottle is used for this project. The plastic bottle is connected with the exhaust fan for the working of exhaust fan DC motor is connected to the fan. The below part is applied with the petroleum jelly. The exhaust fan placed at the front of bottle. When the unit is started the harmful air pollutants/smoke is absorbed through the exhaust fan and passed towards the petroleum jelly wall. The collected sample is crushed into mortal pestal to get fine powder of it. The fine powder is then mixed with alcohol and mixed

well. This mixture can be used as a primary ink.

3.1 Device Performance

The whole process of manufacturing the smoke ink and absorbing the soot from polluted air makes it environmentally friendly and carbon-neutral. It captures more carbon emissions than usually required to produce ink. Smoke ink is better than regular black ink since it doesn't burn extra fossil fuels. The developed ink is better, thicker and darker than the traditional ink. Carbon dioxide will still reside in the air but the proposed device will try to reduce the level of carbon soot which is the reason for pollution called PM 2.5. Smoke ink is used to capture soot which is then processed to make air ink. The unit captures 75% of particulate matter without inducing back pressure.[2]

3.2 Smoke Absorber Use

1. Harmful chemical gases will be removed from the air
2. The environment is kept safe and cleans thanks to a smoke absorber that removes harmful chemical gases.
3. Different types of filtrations
4. There are various filter devices available in the market; we have the best filter device which is the most effective activated carbon filter that absorbs fumes, harmful smoke and strange odours.
5. Protect the respiratory system
6. A smoke absorber can be a very effective and useful device to help prevent respiratory problems. It extracts harmful fumes far from the surrounding environment and keeps the air clean and breathable.

3.3 Block Process

3.3.1 The Hardware

The unit automatically turns on when an engine is activated and gases start flowing through the exhaust. This activates the flow and thermo sensor, which, in turn, engages a mechatronic capture system. All fine particle matter is then captured within the walls of the unit; however, gases are allowed to pass through, leaving the engine unaffected. When the lights on the exterior of the unit turn from blue to red, the catchment is full.

3.3.2 Harvesting Pollution

We fitted the devices to trucks, generators and ferries across Asia and over a period of months, captured billions of particles that would otherwise be in our air…or lungs.

3.3.3 Creating Ink

Back in the lab, the captured pollution is taken through a process that removes trace heavy metals and carcinogens. The purified soot goes through several industrial processes to make different types of inks and paints.

3.4 Features

a) Every 45 min worth of car emissions- 30 ml of ink.

b) 600 ml spray- holds the equivalent of 2000 hrs of pollution.

c) It not only stops CO_2 gas enter into air but also captures a dangerous carbon soot called PM 2.5, here P.M Particulate matter 2.5 size of particle in microns.

d) Each device can collect up to 95% of pollutants.

3.5 Future Scope

In future the overall air pollution will be controlled and health problems which effecting by air pollution will be reduced like premature death, heart attacks, and strokes, bronchitis and aggravated asthma among children.

As we are using pollution as an ink which can be used to print, draw and do various creative things, so it will be a new exposure to emerging as well as professional paint artists.

3.6 Observation

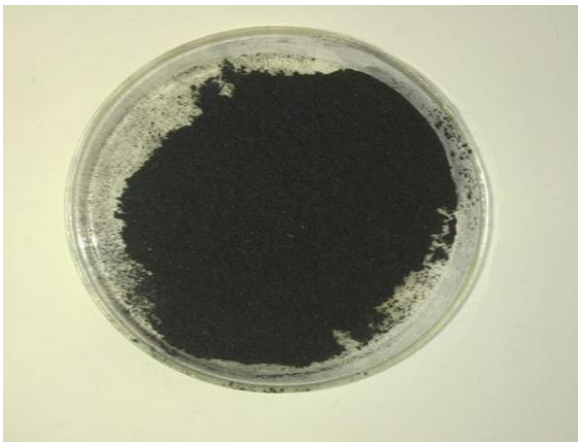


Figure 3.1 Sample Collected from Smoke

Figure 3.2 Primary Ink Preparations in Laboratory

4. Result and Discussion

Smoke absorption machine is a type of machine that has its own function to save the environment by reducing the air pollution that comes from the open combustion process. While for open burning process it means that the smoke that comes from open burning process does not have heavy particles in the smoke compared to industrial smoke. If this idea gets the recognition and recognition it needs, it can work its way to releasing oil paints, textile paints and other outdoor paints and many more. Even if a replacement for fuels such as gasoline and diesel can be found, it will certainly take several years. The ink produced is not edible and has not yet been determined to be safe for children. In conclusion, the goals of this machine can reduce air pollution and smoke absorption machine have been achieved, and they can be used especially in personal home.

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5. CONCLUSION

a) It will the best for controlling air pollution in environment and best for living things to protect the health.
b) When we are using these the whole world be having less respiratory diseases
c) It's very useful to our life cycle to protect from diseases.
d) It gives a different perspective to emerging environmentalist artists to create their idea.
e) If this idea gets the desired acknowledgement and recognisation, it can be worked towards releasing oil-based paints, fabric paints and other outdoor paints and many more. Though the substitute for fuels such as petrol and diesel can be found it will definitely take some years. The ink produced is not edible and is yet to be declared whether it is safe for children below the age of six years.

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