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Modified Air Purifier

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ABSTRACT: This review discusses the impact of air pollutants with special focus on indoor air pollutants and the Air pollution has become the world's single biggest environmental health risk, linked to around 7 million deaths in 2012 according to a recent World Health Organization (WHO) report. The new data further reveals a stronger link between, indoor and outdoor air pollution exposure and cardiovascular diseases, such as strokes and ischemic heart disease, as well as between air pollution and cancer. The role of air pollution in the development of respiratory diseases, including acute respiratory infections and chronic obstructive pulmonary diseases, is well known. While both indoor and outdoor pollution affect health, recent statistics on the impact of household indoor pollutants (HAP) is alarming. The WHO factsheet on HAP and health states that 3.8 million premature deaths annually - including stroke, ischemic heart disease, chronic obstructive pulmonary disease (COPD) and lung cancer are attributed to exposure to household air pollution. Use of air cleaners and filters are one of the suggested strategies to improve indoor air quality. Benefits of air filters in improving indoor quality modified air purifier.

KEYWORDS: HEPA, Air purifier, Nano filter, Wireless, Air Pump, Air quality index

I. INTRODUCTION

Air pollution has become one of the most significant and deadliest causes of deaths today. The World Health Organization (WHO) stated that around 6.5 million deaths were caused by air pollution in the year 2012 translating to 11.6% of total global deaths . WHO states that air pollution is the cause of one-third of deaths caused due to stroke, lung cancer, and chronic respiratory diseases? Are beyond the permissible limits prescribed by WHO. There are three basic strategies to tackle indoor air pollution. .The first is Source Control where in, the source of pollution is considered, and steps are taken to eliminate or decrease pollutants right from the source. If feasible enough and practically possible, this is the most effective method of reducing air pollutants. Ventilation is another method of reducing indoor air pollution. The fundamental for attaining a good ventilation system is very simple. An efficient system of exchange of air between inside and outside of a closed space needs to be ensured. Infiltration refers to the induction of outside air into a closed space through openings, joints or cracks in walls. Infiltration falls under natural ventilation which on a broader spectrum refers to the inclusion of outside air into a room or building without the aid of any external promoter. The third method of reducing indoor air pollution is usage of air purification systems also known as air purifiers. Air purifiers have been in trend lately because of their high efficiency of purifying polluted air. There are various OEMs that manufacture air purifiers with different technologies and mechanisms of air purification. It can be stated here that an air purifier is not self-sufficient to tackle indoor air pollution but requires a good ventilation system in conjunction. The job of an air purifier is twofold reduction of pollutants, they being particulate matter (PM) and gaseous pollutants. The most common air purification media are being discussed here.

II. RELATED WORK

The basic aim of this paper is to study and know the research Dual Shaper machine reduces the production cost as well as the time. In this project, a dual side shaper machine is designed with the help of quick return mechanism, the rotary side Many industries strive to be at top position in their specialty. To be at top position they have to be best in every aspect that includes finishing jobs at time, providing better quality, etc. the machines like shaper machine, planner, broaching machine have more cycle time which reduces production rate of the jobs. It's true that



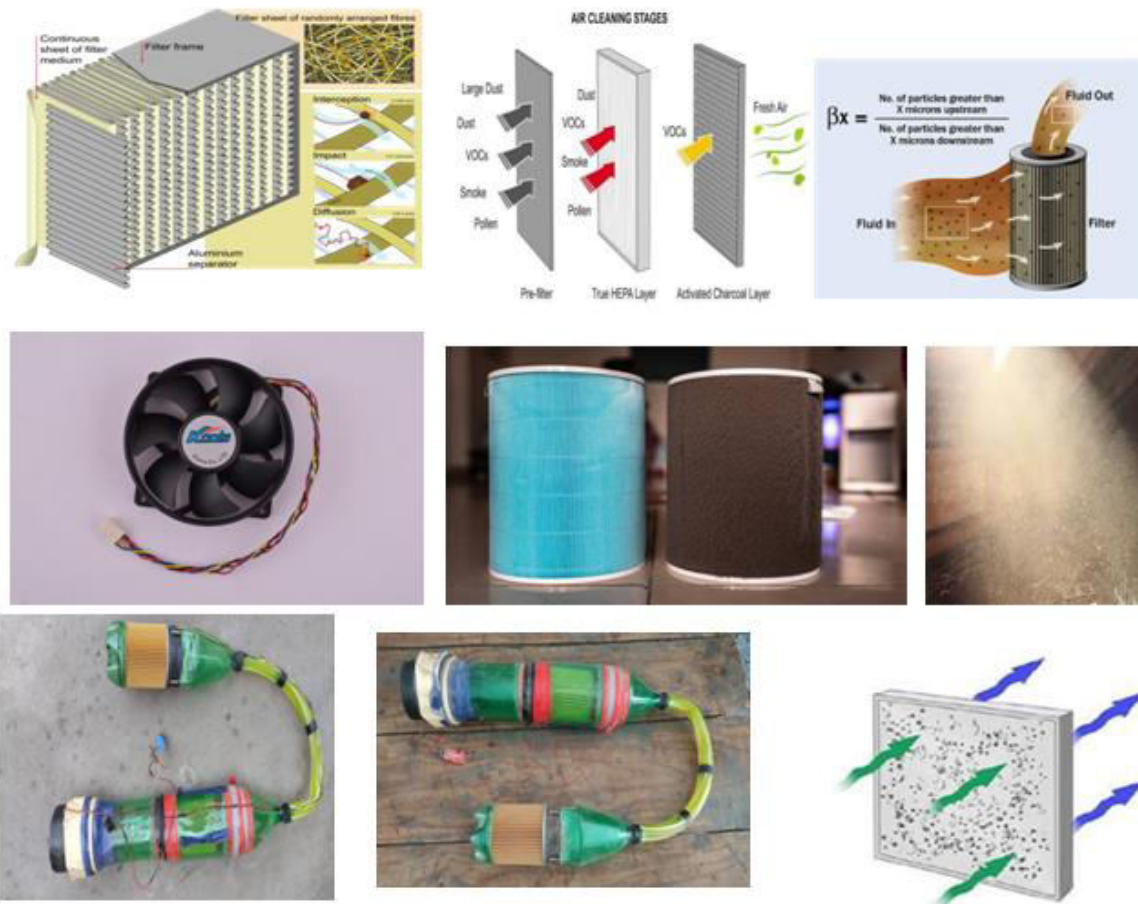
machines like CNC are cut over these machines but they are rather costlier. The modification in old shaper machine can be done to increase production rate at These machines are used for machining very small area of plain surface, vertical surface, angular surface, grooving etc. It removes the materials from job only at forward stroke. So it takes more machining time to complete The height of the table can be adjusted to suit the work piece, and the table can traverse sideways underneath the reciprocating tool, which is mounted on thermal. Table motion may be controlled manually, but is usually advanced by automatic feed mechanism acting on the feed screw. The ram slides back and forth above the work. The ram slides back and forth above the work. At the front end of the ram is a vertical tool slide that may be adjusted to either side of the vertical plane along the stroke axis. This tool-slide holds the clapper box and tool post, from which the tool can be positioned to cut a straight, flat surface on the top of the work piece. The tool-slide permits feeding the tool downwards to deepen a cut. The tool-slide permits feeding the tool downwards to deepen a cut. When a load is placed on the input rod of the scotch yoke by an actuator, sideward thrust causes the input rod and yoke arm to bow and twist.

III. METHODOLOGY

Exemplar based Inpainting technique is used for inpainting of text regions, which takes structure synthesis and texturesynthesis together. The inpainting is done in such a manner, that it fills the damagedregion or holes in an image, with surrounding colour and texture. The algorithm isbased on patch based filling procedure. First find target region using mask image and then find boundary of target region. For all the boundary points it defined patch andfind the priority of these patches. It starts filling the target region from the highestpriority patch by finding the best match patch. Thisprocedure is repeated until entire target region is inpainted. Studied the positive impact of mechanical air filters on indoor air pollution. Mechanical air filters refer to a meshed structure through which contaminated air is made to pass. The pore size of mesh is the most important factor for deciding the efficiency of mechanical filters. Contaminants having sizes greater than the mesh pore size are unable to pass and thus get separated leading to air purification. Such air filters are responsible for filtering out PM pollutants from indoor air. High Efficiency Particulate Air (HEPA) filters are the most used filtration media in today's air purifiers for filtering out PM. They have an efficiency of removing 99.97% of particulate matter of size less than 0.3 microns from contaminated air ensuring a flow rate anywhere between 150-400 cubic feet per minute depending on the clogging of their pores. HEPA filters appear in the form of pleated paper which is actually a very dense network of glass fibers. HEPA filters work on the principle of Brownian motion pertaining to which, there are three different mechanisms of trapping dust particles viz, impact, interception and diffusion. It is customary to use a pre-filter with HEPA filters in order to increase their life between subsequent replacements. Profilers are essentially a fiber mesh of comparatively larger pore sizes. Pre-filters are essential to trap the relatively larger particulates present in air so that they do not unnecessarily clog the HEPA pores. The algorithm automatically generates mask image without user interaction that contains only text regions to be inpainted.

IV. EXPERIMENTAL RESULTS

molecules interact with the pores and get trapped as shown in Figure 1.2. Chemisorptions follows the process of physical adsorption. The remaining gas pollutants react with chemical media of the activated Carbon layer to form a compound which get trapped in the filter material. Results showed that granular activated Carbon filter performed better than bonded activated carbon In terms of retention of mass of isopropanol at a given run time before reaching 1% of threshold limit value Pollutantssolution to this problem, HEPA filters were designed which are a multi layered Studied the effects of an activated carbon layer in the path of impure air. Activated carbon is used for filtering out the Gaseous pollutants present in air. There may be two forms of activated carbon viz., granular and bonded as studied by Chamber. It exhibits a high degree of porosity and a large surface area for interaction with pollutants. This enables it to attain very good adsorption characteristics. The principal governing the operation of activated carbon is based upon the concept of adsorption. There are two main types of adsorption that take place viz., physical adsorption and chemisorptions. The preliminary process is physical Adsorption wherein, Brownian motion of molecules is the dominating factor. Van der Waals' forces promote adsorption in which case, the gas



V. CONCLUSION

Air pollution has become one of the largest sources of all reported deaths in the past few years and it would not be wrong to say that mankind has been shaken by its very existence. Air pollutants can be subdivided into categories but the most harmful of them all are particulate matters of sizes less than 2.5 microns and Knox emissions. Human body is equipped suitably to trap the particulate matter entering while we exhale but the problem occurs in dealing with PM 2.5 as their size becomes so minute that it is not technically possible for our body to trap them. In an effort to find a solution to this problem, HEPA filters were designed which are a multi layered structure of glass fibers in order to trap the PM 2.5 particles. They do promise a very high efficiency of 99.97% but all of this comes at a cost owing to the expensive and intensive process of production. A very attractive method of curbing industrial air pollution is to use electrostatic smoke precipitators, their advantage lying in the fact that they can nearly filter out every possible category of air pollutants starting from particulates to odor. The downside is that they require a very high voltage and current supply making their use unfeasible for indoor home applications. UV light proves to be a suitable method to fight the bacterial pollutants that may be present provided the wavelength of light being used is not harmful for humans. Activated carbon is one of the conventional methods of purification with little to no disadvantages. This paper presents a compilation of some of the most recent methods of purifying air which are cost effective and efficient at the same time.

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