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Environmental Issues in India: An Experimental Analysis

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***Abstract*---**Now from recent period, air pollution is responsible for undesirable matter such as smoke, particular matters & aromatic hydrocarbons in air which causes harmful effect on Human health, agriculture and environment. Air pollution causes due to exhaust mostly by Automobiles, industries etc. Air pollution is also responsible for global warming and the increases the climatic temperature at a rate of 0.13±0.03 °C per decade. In urban heavy traffic, the toxicity of smoke, particular matters & aromatic hydrocarbons can be minimized but the technology is time consuming and it is not cost effective. So India is lagging behind as compared to other countries. Pollutant gas absorbing duct system consists of which act as casing, suction fan, circulating pumps, different filters and absorber. The present our research restricts itself to minimization of smoke, particular matters & aromatic hydrocarbons. This system is cost effective and reduces the maximum possible percentage of pollutant gas.

***Keywords*---**air pollution, environmental, experimental analysis, human health, pollutant gas.

Introduction

The pollution is the one of the greater issue in the world today. Now day by day the pollution problems are go on increasing in the world. The pollution due to the air is also global serious issue today in the world. There are various sources of the air pollution such as natural, manmade sources etc. These all the source causes the harmful effect on of our environment and all living organism, so there is need to control the pollution. Due to heavy industrialization in the world the air pollution problems are also becoming a serious problem. Harmful air pollutants are emitted in the atmosphere from the industries during the processes. So there is need to control the pollutants which are emitted in the atmosphere from the industries. There are want to some control methods to control the pollution of air from the industries. The current topic "Through the Experimental Analysis Effects of Pollutants Air and Reduce Environmental Contaminates, Smoke & Particular

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Matters" is related with the control devices, which are used for the control of gaseous air pollutants from the industries. It also includes the given introduction and sources of gaseous pollutants and of techniques involved in the control of gaseous air pollutants such as absorption, adsorption closed collection and recovery system etc (Široký et al., 2011; Argyle & Kendon, 1967).

Literature review

Hendy Thee Thee et al. (2012), this work deals with, the important implications on the operating condition and the design of the absorber and a regenerator units for carbon absorbing systems employing unprompted and borate promote potassium carbonate solution. In this research paper, Potassium carbonates based solution, have the potential for absorbing CO2 from emission sources and such as Power stations burning fossil fuels. Bologa et al. (2009), this work deals with; the novel wet electrostatic precipitator is designed for effective control of different partials and fine aerosols from humid gases in the atmosphere. It is operate on the principle of a uni-polar particle charging in the corona discharge and the particle precipitation under the field of their own space charge. In this research paper, the new precipitator is characterized by high gas velocity in the ionizing stage (Jay et al., 2007; Cashmore & Richardson, 2013).

Saiyasitpanich et al. (2007), this work deals with, the laboratory-scale, single-stage electrostatic precipitator was designed built and operated in a wind tunnel.In this research paper show that, a wire radius in the case of the air velocity, is appears turbulence intensity and the applied voltage. To the diameter of the discharge wires and the wire to plate spacing is set smaller, so that, the higher collection efficiency has been obtained. Nagendra & Khare (2002), this work deals with, the Line source emission modellingsystem, is an important tool in control and management of vehicular exhaust emissions in urban environment. This paper represents a review of Line source emission modelling is used to carry out dispersion studies of statistical, vehicular exhaust emissions, numerical, based on deterministic and artificial neural network techniques (Kampa & Castanas, 2008; Agrawal et al., 2003).

Corsmeier et al. (2005), this work deals with, the quality of an emission of NOx, smoke and particular matters etc. It is calculation model based on emission factors. It is measured on roller test stands and statistical Traffic data was evaluated using different source strengths and the emission factors are calculated from real world exhaust gas concentration. Gokhale & Khare (2007), this work deals with, the statistical distributional form fitting to the concentrations data; this is based upon several factors that is pollutant types, source types, emission patterns, averaging times and meteorological conditions. The Modeling distribution of air pollutant concentrations is that, identification of statistical models. This paper is basically study the statistical characteristics of dispersion of air pollutants in the atmosphere and the represented by successive random dilution process (Archana et al., 2016; Giler & Cedeño, 2020).

Nagendra & Khare (2004), this work deals with the results demonstrate that, Neural network models are able to the explain a effects of traffic wake on the carbon monoxide dispersion in the near field regions of a roadway. These works is

provided theoretical estimates of air pollution concentrations, as well as temporal, spatial variations for present and future conditions (Aleixandre et al., 2004; Tsujita et al., 2005).

Methodology

In this system we join the petrol and diesel engine exhaust, one valve is used for maintain the exhaust on petrol engine. The mixing of diesel engine and petrol engine pass through our device. In our device closed pack device, it takes different filters and one rotating fan. The mixing of exhaust (petrol and diesel engine) is suck the pollutant air by a fan. The pollutant air first pass through the dust filter, in the dust filter are absorbed big and solid partials is present in the engine exhaust. a dust filter is made are simple cotton. Then the engine exhaust are pass through the coal plate, the coal plate are absorbed moisture is present in exhaust and clean the engine exhaust. Then exhaust is passing through the simple normal water plate. Normal water plate are fitted in our device, it is made a cushion, in the top of the water plate put a small pipe and set tapper in the device, now top end of the plate where fitting a small pipe pass through the water, the cushion fill in the water, then pass through the exhaust in this plate so some partials of smoke and particular matters are stay in the plate, then exhaust pass through the Soda lime plate. This plat is absorb smoke and small quantity of CO2 .then the exhaust pass through the silica gal plate, in this plate are absorbed moisture and dust partials, then fresh air are go to the our device exhaust. The intensity of fresh air are tested by pollution control board (PCB) by smoke analyzers and dust filter device, attached the test report of next chapter (Kampa & Castanas, 2008; McMichael et al., 2006).

Layout diagram of experimental analysis

- Casing
  It is a very significant part of the system in which slots are plotted to fasten dust filter and absorbers in the interior of the casing. It is prepared of frame of mild steel pipe on which mild steel plates are fixed. One end of the casing is called inlet section and other end is called outlet section.

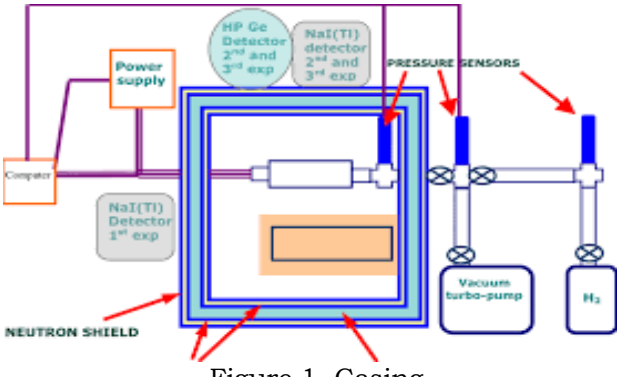

Figure 1. Casing

- Suction fan
  Suction fan is used to suck the pollute gases and air combination from the surrounding and stress create in the interior the casing. It is fixed at the inlet section of the casing.

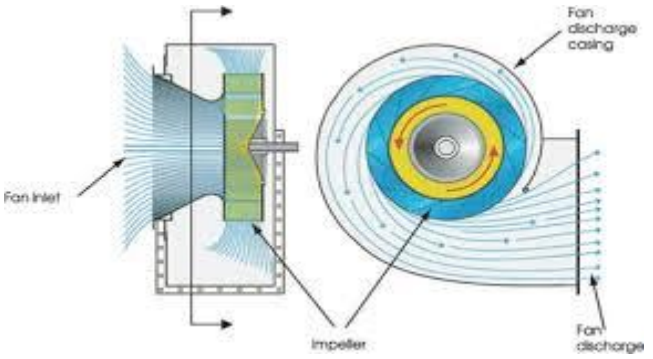

Figure 2. Suction fan

- Dust filter
  Dust filter is a device which is composed of cotton materials and used to separate fine solid dust particles, pollen and bacteria from the air. Air filter usually placed in front of the suction fan. Dust filter is made by cotton cloth which is built-in on the wooden frame, some dimension is shown below which is following as; Height of frame (outer) = 58 cm, Height of frame (inner) = 48cm.

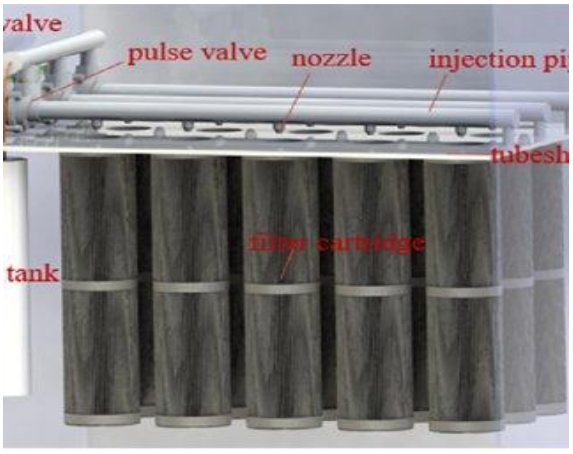

Figure 3. Dust filter

- Activated charcoal
  Activated carbon, also widely known as activated charcoal or activated coal is a form of carbon which petrol engine diesel engine valve exhaust gas (Diesel + Petrol engine) inlet water tank pump exhaust gas (Diesel + Petrol engine) outlet water spray circulating water has been processed to make it

extremely porous and thus to have a very large surface area available for adsorption or chemical reactions.

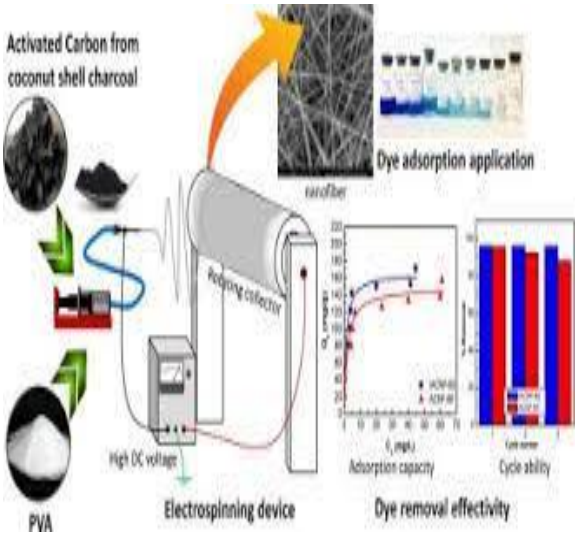

Figure 4. Activated charcoal

- Water absorbing system with KOH
  Caustic potash is an odorless white & deliquescent solid that can be absorbed the hot gases and smokes etc. Potassium hydroxide (KOH) is a good absorbent but it melts in the presence of oxygen and moisture, so it cannot be formed in plate form. Technical Specification Of The PUMP: Power = 18W, Height = 1.8 meters Output = 1100 L/ H, Volt =165/240 V

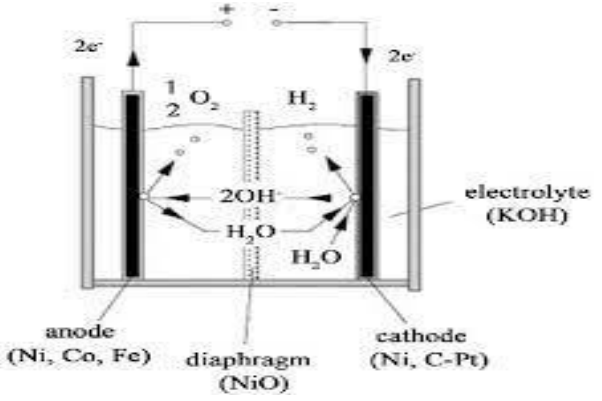

Figure 5. Water absorbing system with KOH

- Water absorbing system with soda lime
  Soda lime is contains 94% Calcium hydroxide and 5% sodium hydroxide with 1% potassium hydroxide. It absorbs carbon dioxide in the presence of water vapor or moisture. The granules have a porous structure which allows permeability of the expiratory gases into the interior where carbon di oxide is chemically converted and removed.

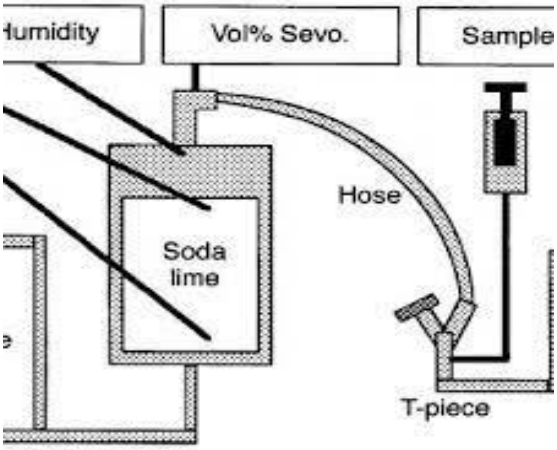

Figure 6. Water absorbing system with soda lime

- Silica gel
  Silica gel is a porous, granular, vitreous form of silicon dioxide made synthetically from silicate. A Silica gel is tough and hard, it is more solid than common household gels like gelatin and agar. It is a naturally occurring mineral that, is purified and processed into either granular or beaded form. As a desiccant, it has an average pore size of 2.4 nanometers and has a strong affinity for water molecules.

Figure 7. Silica gel

- Smoke density test graph
  The Figure 8 shows smoke density test graph. The test graph is plotted between percentage reductions in Smoke density & Exhaust flow rate. A combined exhaust from diesel and petrol engines are passed through duct of our device, Figure 8 Smoke Density Test Graph density of smoke at the inlet of device was found 17.4 HSU by smoke density analyzer. The density of smoke at outlet was found decreasing gradually at different velocities which is represented by the following graph.

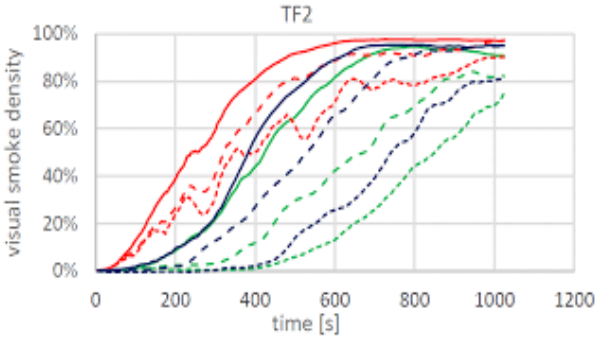

Figure 8. Smoke density test graph

- RSPM test graph
  The Figure 9 shows RSPM Test Graph. The test graph is plotted between percentage reductions in RSPM and Exhaust flow rate. A combined exhaust from diesel and petrol engines are passed through duct of our device, RSPM of exhaust at the inlet of device was found 13486.66µg/m3 RSPM analyzer. The RSPM Found at outlet is decreasinggradually at different velocities but higher velocity it is gradually increased, which is represented by the following graph.

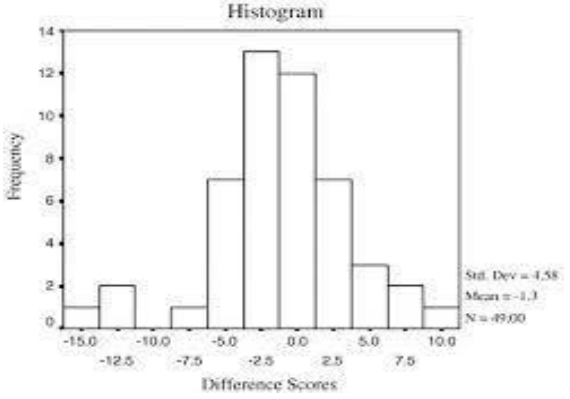

Figure 9. RSPM test graph

- Bar chart
  Smoke Density bar chart: The Figure 10 shows Smoke Density bar chart. The bar chart is plotted between Smoke density & smoke speed. This data is obtained has decreeing smoke density in the air. The apparent darkness of a smoke depends upon the concentration of the particulate matter in the effluent, the size of the particulate, the depth of the smoke column being viewed, and natural lighting conditions such as the direction of the sun relative to the observer while the accuracy of the chart.

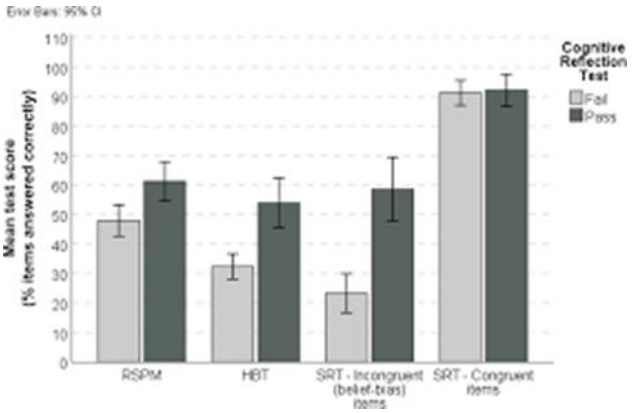

Figure 10. Smoke density bar chart

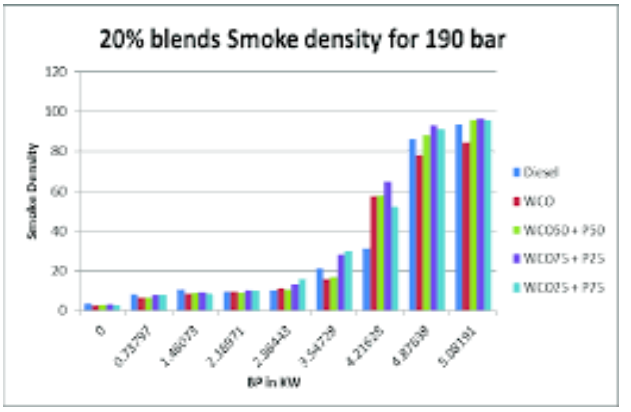

Figure 11. RSPM bar chart

Conclusion

- The "Through the Experimental Analysis Effects of Pollutants Air and Reduce Environmental Contaminates, Smoke & Particular Matters" is very useful and advantageous for our environment.
- Its remove dust particles and various harmful smoke and Particular matters etc. For those places where they are placed.
- System maintenance cost is very low.
- Working principle is not very complicated.
- They are mostly useful for industrial and trifocal areas.

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