Depletion of Smoke By Smoke Free Tower

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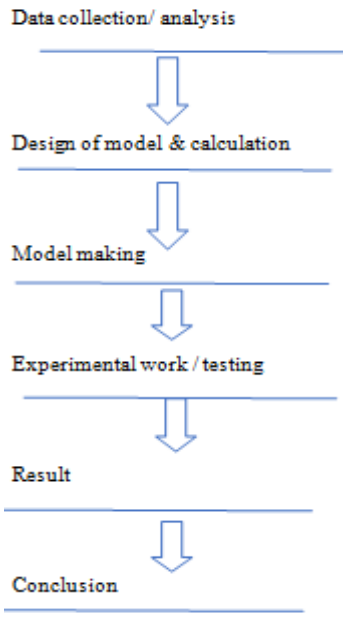
Abstract- *The ever-increasing population has caused increase in overall pollution. As in urban areas the density of population has increased considerably. In order to overcome this problem, we are attempting to make smoke free tower. This tower mainly works on ionization process. The type of gases found are carbon monoxide, VOCs, particulate matter. The negative ion generator helps in depleting the smoke generator. Smoke free tower mainly helps in decreasing cardiovascular diseases and asthma., etc. although the intention of this paper is to reduce the smoke generated due to indoor air pollution. The research suggests that adequate government regulation, public awareness.We are planning to investigate the ion concentration according to the presence of cigarette smoke in the room and according to the change of lit cigarette distance from the supply of ionized air.*

Keywords- VOC's – Volatile organic compounds, ionization, negative ion generator, smoke.

I. INTRODUCTION

Indoor air pollution is the pollution which is been produced from the household products such as lightning of candles, dhoop & incense sticks, wood & coal burning, gas stoves, heaters, fire places and chimneys. Indoor air pollution sources that releases gases or particles into the air are primary cause of indoor air quality problems. Inadequate air ventilation can increase indoor pollutant levels by not bringing in enough outdoor air to dilute emissions from indoor sources and by not carrying indoor air pollutants out of the area. Indoor air pollution contains gases like carbon monoxide, Particulate Matter, Nitrogen Gas, concentration of many VOC's (volatile organic compounds). The main motive of our project is to deplete the smoke produced due to indoor air pollution using Smoke Free Tower Dutch designer and architect Daan Roosegaarde has visited the capital of China -On July 2015, he and his team of experts have created the Smog Free Project and launched their idea at the Kickstarter site. In their presentation, they promised to build a tower, which purifier the air from the smog in the area. After being filtered, the clean air is returned to the environment without the smog particles. Furthermore, instead of throwing the waste back in the environment they decided to transform it into beautiful jewelries and use it as a reward for the people helping them funding their idea. After only about month, they managed to do both gathering all themoney needed as well as building the first tower in Rotterdam

II. METHODOLOGY



III. IDENTIFY, RESEARCH AND COLLECT IDEA

Materials used:

Use of cardboard is done for construction of tower. A negative ion generator is used for elimination of smoke particles using ionisation technique. The smoke is sucked inside the tower with the help of exhaust fan installed inverted position.

Fig. No. :- 1- Smog free tower model

Table no: -1 National Air Quality Standard

Sr.no.	Pollutant	Average time	Air quality standard	
			Industrial, Residential and other places (micro gram/m^3)	Silent zone as per central government guideline (micro gram /m^3)
1	(SO2)	Annual	50	20
2	(NO2)	Annual	40	30
3	(O3)	8 hours	50	50
4	(PM 10)	Annual	60	60
5	(PM 2.5)	Annual	40	40

Table no :- 2 Annual Report Of Air Pollution Level In Pimpri-Chinchwad Municipal Corporation Area

		Pimpri Chinchwad Municipal Corporation building	MCCIA Bhosari building	
Sr.No.	Month	Sulphur dioxide µg/m3	Nitrogen dioxide µg/m3	RSPM PM 10 µg/m3
Standards		50	40	100
1	Apr 2017	25.6	39	102.8
2	May 2017	26.6	24.2	73.6
3	June 2017	17.6	32.8	44.2
4	July 2017	18.6	31.8	26
5	Aug 2017	15.2	36.6	32.8
6	Sep 2017	20.2	36	33.8
7	Oct 2017	13	49.8	101.8
8	Nov 2017	17	101.8	136.6
9	Dec 2017	27	77.6	150.2
10	Jan 2018	26.4	70	130.2
11	Feb 2018	26.4	91.6	127
12	Mar 2018	37.8	91	102.6

IV. MODEL – EXPERIMENTAL WORK

Design of model:

The Smoke Free Tower was designed with the help of dimensional analysis. The dimensions of the model were calculated by geometric design by considering 1:15 ratio ofthe original sized tower.

After the calculation the dimensions of tower were47 x 27.5cm and the shape of model was considered hexagonal.

Working of model:

The smoke free tower is installed in a glass box and the tower includes a mini exhaust fan which allowsfitted below the exhaust fan which releases negatively charged ions which attracts positively charged smoke particles and smoke is depleted. Thus, purified air is released through the slats provided

V. CONCLUSION

The smoke produced is depleted within the glass box and harmful smoke particles are eliminated. Visibility and air quality is improved.

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