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GREEN TREE THE QUALITATIVE SOLUTION TO GLOBAL WARMING AND ENVIRONMENTAL POLLUTION

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ABSTRACT:
According to the Asia pollution index report 2019, India (Faridabad) secured polluted city rank third in the Asia. India (Faridabad) contributes to 95.45 (µg/m3) pollution index. Similarly according to the report of Maharashtra government regarding clean city-green city, alarming situation occurs for Nashik city by achieving sixth rank as clean city in Maharashtra. Nashik city rapidly changes its identity from healthy clan city to moderately polluted city in Maharashtra. Use of daily vehicles on road and industrial sector in Nashik leads to daily growing of environmental pollution. On April 18, MPCB show cases notices under Section 31(a) of Air Pollution Act to the industries in Nashik those undergoing increased pollution levels. Also, as per daily air quality index (µg/m3) report Nashik averagely Contributes to PM2.5-40, PM10-112, NO2-66, NH3-9, SO2-11,CO-45,OZONE-44.This pollution level not only affect the environment but also affect human health daily living in the Nashik city. Therefore, in order to reduce the environmental pollution and reduces the pollution impact on the green planet we have designed the structure called "Green Tree-Ultimate solution to global warming and the environmental pollution". This initiative provides the ultimate solution to the environment pollution in the perspective of air pollution and helping in providing prevention for human diseases and problems, animals and trees/plants problems. According to our initiative, still time left in the hands of global institutions, governments and local bodies to use the advance pollution control resources to balance the environment for living and initiates the breathed intellectuals to live friendly with environment.

Keywords: *- Air Pollution, Air quality index, Environment Pollution, Remedies*

I. INTRODUCTION

This invention is related to the reduction and control of pollution and greenhouse gas emission. In 2017, energy related emissions climbed 1.4 % to 32.5 gigatons. The increased is equivalent to adding 170 million cars to the road. Basic question arises from the world's commitment to reducing carbon levels because CO2 emissions growth increases rapidly. As per survey, Asia accounted for two third of the increase in global carbon emissions. CO2 emissions also climbed in the European Union. An improved economic landscape worldwide resulted in 2.1% increase in demand for energy. 72% of that increase was met by the use of fossil fuels. This

invention technically included in the field of environmental education.Worldwide global warming issues arises rapidly and conventional methods of CO2 emission reduction (involves construction, design etc) involve high capital investment. Conventional methods of global warming reduction such as energy conservation and recycling was not good enough. Global temperature control using energy conservation has disadvantages such as increased population, demand for more energy. This leads to create gap between energy supply and demand. Increased population demand for more energy consumption. Which is again creates cause for increased global temperature. Secondly, recycling at industrial stages reduces CO2 emissions up to a certain level but remaining portion of CO2 is left present in the atmosphere.

II. WORKING OF PROJECT

Fig.2.1 Project model

The problem related to global warming and pollution using this invention can be reduced up to 80%. This invention comprises of a tree structure inside which pollution absorption and control filters are included. In the invention, CO2 absorption and filtration (control) stages are divided into in to four layers. CO2 can be absorbed by the use of lime water solution pouring on the spung bed and filtration stages consist of activated carbon and copper strips which can effectively eliminates the remaining pollutants. Atmospheric CO2 can be extracted through Inlet Draught (ID) fan attached at the base of the tree. In the invention, CO2 can be reduced up to 80% and it can be collected in the form of hydro carbons. Collected hydrocarbon can be effectively utilized in glue industry, paint industry, cement industry and other chemical processes. Collected hydro carbon can be easily removed and fresh air will be released to the atmosphere. Similarly use of algae at the base level of the filter provides natural and effective solution to the CO2. Algae naturally convert CO2 into fresh oxygen. At the top, use of solar panels with battery charger not only help in working of ID fan but also provide additional energy to the user. This will help in free energy generation and energy conservation. The said invention also helpful in effective utilization of renewable energy. Use of lime water with limited amount causes no harm to the

atmosphere. Referring to the figure, it can be seen that invention is divided into four basic stages including inlet air, four levels, and outlet air and energy generation. In the inlet air stage, we have to use ID fan which works on the DC supply taken from battery charger unit. Function of ID fan is to absorb atmospheric pollutants (pollution gases). In the second stage, four filtration stages are subdivided into in to two groups. First subgroup consist of algae layer, lime water absorption spung and second subgroup consist of copper strips along with activated carbon. Lime water stages absorb atmospheric pollution (exhaust gases) and convert it into hydro carbon. Hydrocarbon can be collected in the tray. This lime water tray can be removed easily for filling and extracting. Remaining CO2 and gases can further passed through copper strips stages where copper strips can absorb exhaust gases and thereby help in circulating fresh air in the atmosphere. Copper strips helps in absorbing exhaust gases in the second stage. Copper strips absorb fumes and pass fresh air in the atmosphere.

III. COMPONENTS

1. PVC PIPE:

In this invention, 6 inches PVC pipes are used as support structure. PVC pipes are divided into various sections like inlet ID fan section, filter section, exhaust (outlet) structure. These sections can be joined to each other by using PVC couplings.

2. SOLAR CELL:

Solar Cell converts light energy into the electrical energy. A solar cell is basically a p-n junction diode. It utilizes photovoltaic effect to convert light energy into electrical energy.

Solar cell used in this invention is used to generate electrical energy and to provide power to street lamps. It also provide power to the ID and FD fans. Electrical energy generated by solar cell is first stored in the battery.

Fig 3.1. Image of Solar Plate

Table 3.1. Specifications of Solar Cell:-

Sr. No	No. of cells	Nominal Voltage (Volt)	Current (mA)	Wattage (W)
1.	1	12 Volt	6 Amp	25 att

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3.SOLAR CHARGE CONTROLLER:

A solar charge controller manages the power going into the battery bank from the solar array. It ensures that the deep cycle batteries are not overcharged during the day and that the power doesn't run backwards to the solar panels overnight and drains the batteries. Some charge controllers are available with additional capabilities like lighting and load control but managing the power is its primary function. A solar charge controller is available in in two different technologies PWM and MPPT. An MPPT controller is more expensive than a PWMcontroller.

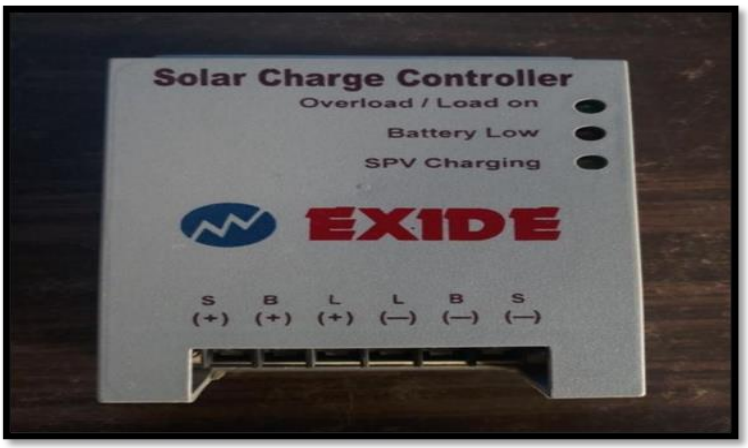

Fig 3.2. Image of Charge Controller

4.RECHARGEABLE BATTERY

Fig 3.3.Image of Battery

Function of rechargeable battery is to store electrical energy generated by solar panel. Stored electrical energy in the form of electrical energy is also utilize for the operation of 12 Volt ID and FD fan and to ignite the street lamps.

A battery is an electrochemical cell (or enclosed and protected material) that can be charged electrically to provide a static potential for power or released electrical charge when needed.

A battery generally consists of an anode, a cathode, and an electrolyte.

5.FILTER UNIT

Filter unit used in this invention consist of five basic stages including algae, lime water, 1% drop of benzene, activated carbon and copper strips. Filter unit is made up from iron cage of circular shape. This filter has five basic stages for placing algae, lime water, 1 % drop of benzene, activated carbon and copper strips

Fig 3.4 Image of Filter Unit

.Algae

A simple, non-flowering, and typically aquatic plant of a large group that includes the seaweeds and many single-celled forms. Algae contain chlorophyll but lack true stems, roots, leaves, and vascular tissue. The "green algae" is the most diverse group of algae, with more than 7000 species growing in a variety of habitats. Most green algae occur in fresh water, usually attached to submerged rocks and wood or as scum on stagnant water; there are also terrestrial and marine species. Free-floating microscopic species serve as food and oxygen sources for aquatic organisms. Green algae are also important in the evolutionary study of plants; the single-celled Chlamydomonas is considered similar to the ancestral form that probably gave rise to land plants.

Lime Water

Lime-water is the common name for a diluted solution of calcium hydroxide. Calcium hydroxide, $Ca(OH)_2$, is sparsely soluble in water (1.5 g/L at 25 °C). Pure lime-water is clear and colorless, with a slight earthy smell and an alkaline bitter taste of calcium hydroxide.

Lime-water is prepared by stirring calcium hydroxide in pure water and filtering off the excess undissolved $Ca(OH)_2$. When excess calcium hydroxide is added to lime-water, a suspension of calcium hydroxide particles results, giving it a milky aspect, in which case it has the common name of milk of lime. Milk of lime or a saturated solution of lime.

Activated Carbon

Activated charcoal is charcoal that has been treated with oxygen to open up millions of tiny pores between the carbon atoms.

Activated carbon is a carbonaceous, highly porous absorptive medium that has a complex structure composed primarily of carbon atoms. The networks of pores in activated carbons are channels created within a rigid skeleton of disordered layers of carbon atoms, linked together by chemical bonds, stacked unevenly, creating a highly porous structure of nooks, crannies, cracks and crevices between the carbon layers.

Activated carbons are manufactured from coconut shell, peat, hard and soft wood, lignite coal, bituminous coal, olive pits and various carbonaceous specialty materials. Chemical activation or High Temperature Steam Activation mechanisms are used in the production of activated carbons from these raw materials.

The intrinsic pore network in the lattice structure of activated carbons allows the removal of impurities from gaseous and liquid media through a mechanism referred to as adsorption. This is the key to the performance of activated carbon

6.COPPER STRIPS

Table 3. 2. Feature of Copper strips:-

Sr. No.	Resistivity (micro ohm-cm)	Percentage Conductivity	Material
1.	1.69	100	Copper

IV. OBSERVATIONS AND CALCULATIONS

Table 4.1.Energy Generation (Solar PV Panel)

Sr. No	Voltage (Volt)	Current (A)	Power (Watt)	Make
1	12	2.08	25	TP Solar

Table 4.2: Energy Stored (Battery)

Sr. No	Voltage (Volt)	Make	Max. Initial Current (A)	Capacity (Ah)	Power (W)
1	12	Amron	2.16	8	25.92

Table 4.3: Energy Utilized for ID/FD fan

Sr. No	Voltage (Volt)	Current (mA)	Power Utilize (W)
1	12	3	0.04

Table 4.4: Energy Utilized for Street Lamps

Sr. No	Voltage (Volt)	Current (mA)	Capacity (mW)	Power Utilize (W)
1	12	27.6	10	0.33

4.1. Energy Conserved

Total Energy Conserved (Watt)

= Output of solar stored in battery - (Power utilize by ID/FD fan+Power utilize by street lamps)

=25.92- (0.37)

=25

RESULT ANALYSIS

Table 5.1: Result Analysis for Pollution Control:-

S. N	Parameter (Reducing Agent)	Percentage Pollutant (Greenhouse) Decreased			
		CO	HC	CO2	Remark
1	Algae	100	95.41	100	Excellent AQI
2	Lime water	97.95	89.23	84.21	Excellent AQI
3	1 % Benzene	46.93	74.94	-5.26	Moderate AQI
4	Activated Carbon	75.51	76.11	31.57	Good AQI
6	Combine Elements	97.95	95.3	100	Excellent AQI

Table 5.2: Result Analysis for Improved Air Quality (Oxygen) and Fuel Purification:-

Sr. No.	Parameter (Reducing Agent)	Percentage Oxygen (O2) Improved	Fuel Quality (P.E.F) Improved	Remark
1	Algae	14.3	0.75	Excellent AQI with improved fuel Purification
2	Lime water	13.91	0.75	Excellent AQI with improved fuel Purification
3	1 % Benzene	6.35	0.56	Good AQI with improved fuel Purification

4	Activated Carbon	9.36	0.56	Moderate AQI with improved fuel Purification
6	Combine Elements	14.41	0.75	Excellent AQI with improved fuel Purification

V. CONCLUSION

With the use of green tree structure, it is clear that…

1) Percentage reduction in Carbon Oxides is **97.95 %**

2) Percentage reduction in Carbon dioxide is **95.3 %**

3) Percentage reduction in Hydro carbon is **100 %**

4) Percentage increase in purified oxygen is **14.41 %**

5) Percentage increase in purified fuel supply is **0.75 %**

These approximate values represent that the greenhouse gas and environmental pollution gases are reduced qualitatively. This will definitely increases the air quality index in the atmosphere. It not only reduces the harmful effects to environment including living components but also helps in energy conservation.

Energy need with great energy conservation is qualitatively achieved with the use ofbasic as well as less costly organic science elements hence named as “Green Tree-A Qualitative Solution”