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To Reduce the Pollution from the Earth which is exhausted By Vehicles?

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Abstract
1.1 Objectives
To reduce quantity of pollute gases from the atmosphere. Also reduced effect of the exhaust gases on human being.To get some products which may use in different purposes.

1.2 Beneficiaries
For better environment near the cross roads.Also for society and world by reducing CO2.Get product was economic and use for environment.

1.3 Value of result
We can use these on crossing roads in urban area.We can also use these at toll plaza on highway.We may also use at that where daily traffic are very high. Also
for industrial purpose.

1.4 Unique selling point
"Stay comfort, because we steal your detriment"

I. Background

There are major four gases exhausted from vehicles

1.1 CO_2

CO_2 accounted for about 87% of all INDIA green house gas emission from human activities. In India,gramatic growth in fossil-fuel CO_2emissions averaging 5.7% per year and becoming the world third largest fossil fuel country. Some time fatal condition characterized in humans by headache, nausea, and visual disturbens.

1.2 CO

A NASA reports indicates that carbon monoxide is responsible for a 13% reduction in hydroxyl concentration and through other reaction a 9% drop in sulphate concentration. Carbon monoxide is only a weak greenhouse gas; its influence on climate goes beyond its own direct effect. CO can cause harmful health effect by reducing oxygen delivery to the body's organs and tissues. An extremely high level, CO can cause death.

1.3 NO_X

One member of the NO_X, nitrous oxide, is a green house gas. It accumulates in the atmosphere with other greenhouse gases causing a gradual rise in the earth's temperature. Nitrate particles and nitrogen dioxide can block the transmission of light, reducing visibility in urban areas and on a regional scale.

Ground level smog is formed when NO_X and volatile organic compounds react in the presence of heat and sunlight people with lung disease such as asthma.

1.4 Hydro Carbon (HC):

Hydro carbon enter the environment mostly as releases to air from volcanoes, forest fires and exhaust from automobile and truck. Studies in the Animals have also show that hydro carbon can cause harmful effects on skin, Bodyfluid and the body's system for fighting disease after both short and long Term exposures.

Table 2.1:- Quantity of exhaust gases in major cities

CITY	CO	NO_x	HC	PM
Delhi	421.84	110.45	184.37	12.77
Mumbai	189.55	46.37	89.93	10.58
Kolkata	137.50	54.09	47.63	10.80

(ppm per day)

II. Statement of Problem

2.1 Succinct definition of problem

"All gases which are exhaust from the automobile and industries are affected on the nature of the environment and human health. It required destroying it."

III. Research

3.1 Present methods of tackling the problem

Emissions by reducing the use of carbonaceous fuel. Energy improvement also include recycling the oxidative abilities of contain oxygen in CO_2. Such Reduction into fuel is better than just capture in CO_2 in pushing it back into the ground.

Underground geologic sequestration of the CO_2into deep underground rock formation.

The method for reduce CO_2 of the present disclosure included in "electrochemical cell"

Step A: - preparing electrochemical cell.

Step B: - applying negative & positive voltage to the working electron to reduce CO_2.

Electrochemical is a prepared first electrode chemical cell comprises and electrode continues consist at least one nitrite selected from the group consisting of nitrite. Tantalum nitrites particles obtain by nitridaton are dispersed in an organic solvent to prepare slurry solution.

In conventional multi-cylinder motor vehicles, an exhaust-gas purification device containing acatalyst isarranged in an exhaust line of theinternal combustion engine and the air/fuel ratioof the internal combustion engine is set in sucha way that a lambda value of approximately one is established in the o verall exhaust flow from all the cylinders.

3.2 Proposed Solution

Exhaust gases draught from the atmosphere through the exhaust fans. Then exhaust gases and air mixture passed in the air/gas separator where air and gas (CO_2&CO) are separate. Then air was released in the atmosphere and exhaust gas stored in the gas storage tank at atmospheric temperature and pressure.

$$CO_{2\,(g)} + H_2O_{\,(l)} \longleftrightarrow H_2CO_{3\,(l)} \quad \textbf{(4.2.1)}$$

In above equation, CO_2 combined with water at 25° C temperature and 35 Psi (2.41 bar) pressure to form carbonic acid in process tank. This is come out from the bottom.

$$CO_{(g)} + H_2O_{(g)} \longleftrightarrow CO_{2\,(g)} + H_{2\,(g)} \quad \textbf{(4.2.2)}$$

In above equation, CO combined with water vapour at high temperature and high pressure to form CO_2 (carbon dioxide) and H_2 (hydrogen) gases. Hydrogen gas stored in gas storage tank and CO_2 used for remain process.

$$CO_{2\,(g)} + H_{2\,(g)} + H_2O_{(l)} \longleftrightarrow H_2CO_{3\,(l)}\, H_{2\,(g)} \quad \textbf{(4.2.3)}$$

In above equation, H_2 does not combine with water. Only CO_2 combined with water at 25° C temperature and 35 Psi (2.41 bar) pressure to form carbonic acid in process tank. This is come out from the bottom.

3.3 Alternate Solution

Exhaust gases draught from the atmosphere through the exhaust fan. Then exhaust gases and air mixture passed in the air/gas separator where air and gas (CO_2&CO) are separate. Then air was released in the atmosphere and exhaust gas stored in the gas storage tank at atmospheric temperature and pressure.

$$CO_{2\,(g)} + H_2O_{\,(l)} \longleftrightarrow H_2CO_{3\,(l)} \quad \textbf{(4.3.1)}$$

In above equation, CO_2 combined with water at 25° C temperature and 35 Psi (2.41 bar) pressure to form carbonic acid in process tank. This is come out from the bottom.

$$CO_{(g)} + H_2O_{(g)} \longleftrightarrow CO_{2(g)} + H_{2(g)} \quad \textbf{(4.3.2)}$$

In above equation, CO combined with water vapour at high temperature and high pressure to form CO2 (carbon dioxide) and H2 (hydrogen) gases. Hydrogen gas stored in gas storage tank and CO_2 used for remain process.

$$CO_{2(g)} + H_{2(g)} + NaOH_{(l)} \longleftrightarrow NaHCO_{3(s)} + H_{2(g)} \quad \textbf{(4.3.3)}$$

In above equation, H_2 does not combine with sodium hydroxide. Only CO_2 combined with sodium hydroxide to form sodium bicarbonate ($NaHCO_3$).

3.4 Novelty of Approach

It is very less expensive method and eco-friendly for the atmosphere. In this method resources consumption are very less. More efficient compare to the current method. Operational and maintenance costs are low.

IV. Technical Report

4.1 Description of concepts, theories or approach involved in the Proposed solution

Metro cities suggest that automobiles could be major contributor to the overall pollution problem in that city. Reduce quantity of overall pollution and also effect of pollution on environment and human being. The exhaust gas utilised for acquiring some product.

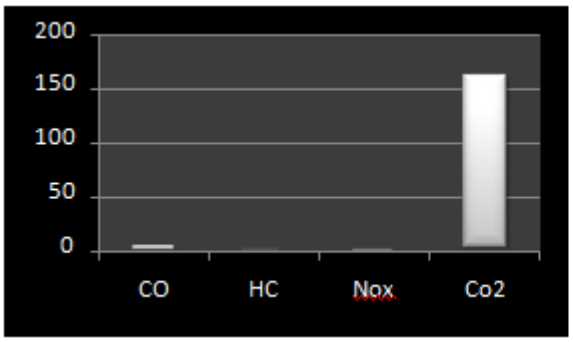
The detailed report containing the actual test data with different fuels, details of the vehicles tested and suggested emission factors are given as table This report gives the summary emission factor along with detailed data for,

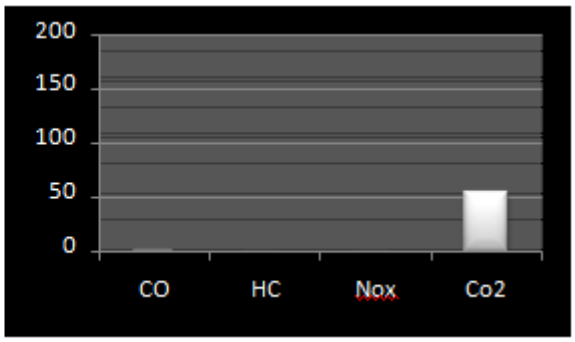
- Emission Factors for Indian Vehicles With BS-II Fuel,
- Emission Factors for Indian Vehicles With BS-II and BS-III Fuels,
- Emission Factors for Indian Vehicles With BS-III Fuel.

If system efficiency up to 66.37% works by the system properly allay quantity of gas in atmosphere shown in chart.

TABLE 5.1:- Emission from different vehicles

Sr. No.	Type of vehicle	Sub Category	Vintage	Fuel	Emission factor (g/km)			
					CO	HC	NO_x	CO_2
1	Scooter (2 Stroke)	< 80cc	Post 2000	BS-II	2.37	2.05	0.03	27.08
2	Scooter (2 Stroke)	> 80cc	Post 2000	BS-II	3.02	2.02	0.03	29.6
3	Scooter (4 Stroke)	>100cc	Post 2000	BS-II	0.4	0.15	0.25	42.06
4	Three Wheelers (4Stroke)	<200cc	Post 2000	BS-II	4.47	1.57	0.61	57.44
5	Three Wheeler Diesel	<500cc	Post 2000	BS-II	9.61	0.63	0.93	140.87
6	Passenger Cars (Petrol)	<1000cc	Post 2000	BS-II	4.53	0.66	0.75	106.96
7	HCV Diesel Bus	>6000cc	Post 2000	BS-II	3.97	0.26	6.77	735.51
Avg.	–	–	–	–	4.0528	1.048	1.338	162.791





Values in (g/km)

Fig 5.1(a):- before applying system Fig 5.1(b):- after applying system

4.2 Technical aspect of proposed solution

Exhaust Gas Separation System for Higher Efficiency has developed and called exhaust gas separation system.This separates the scavenged gas into two groups of exhaust gases. One is a fresh air and other is exhaust gas. Exhaust gas with a high temperature and gas that is almost at combustion temperature are fed into a high-temperature receiver, while exhaust gas with almost scavenged fresh air is fed into a low-temperature receiver.

Table 5.2.1:- About exhaust fans

Size dia.(mm)	Phase	Voltage (V-Hz)	Power (W)	Speed (rpm)	Air delivery (m^3/min)	Noise (dB)
350	Single	220~240V-50Hz	60	1400	57	59

4.3 Pictorial representation

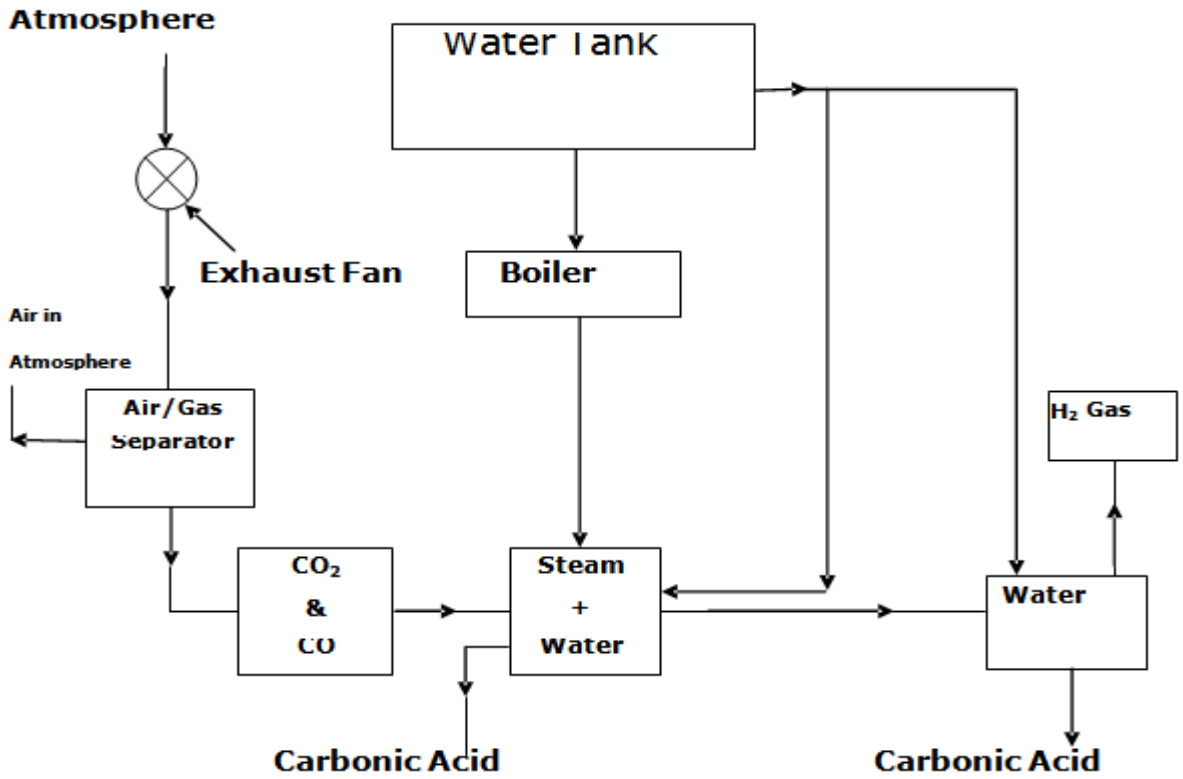


Fig. 5.3.1 Flow operation of system

4.4 Flow of Operation

Emission exhaust gases draught by exhaust fans from the atmosphere. Then exhaust gases are passing through the Air and Gas separator where air without Carbon Dioxide and Carbon Monoxide is drawn away with the help of pipe at a sufficient height.

Carbon Dioxide and Carbon Monoxide are lead to 1^{st} process tank where it process with water and steam which will make Carbonic Acid, Hydrogen and Carbon Dioxide. Density of Carbonic Acid is more than water so it will be at below water level. Carbonic Acid is drawn out by pipe in a tank and other two gases went to 2^{nd} process tank. Hydrogen does not proceed with water since Carbon Dioxide will proceed with water and make Carbonic Acid again. Hydrogen is in gaseous form so that it will go upper side and collect in tank. Carbonic Acid drawn out by pipe again.

4.5 Performance estimate

Performance estimate is depends on meet quantity of exhaust gases and also differs affection on efficiency of separator. If system works properly, performance estimate of system will be 66%. (Based on analysis)

4.6 Workability

Experiments can't do without Government Authority. So that experiment facility is not available.

4.7 Video link of prototype

http://youtu.be/AlOtv-pyXLI

V. Result

5.1 Actual findings, Significant output and analysis

Exhaust gasesaccounted for about 87% of all INDIA greenhouse gas emission from human activities. In India, gramatic growth in fossil-fuel CO_2emissions averaging 5.7% per year and becoming the world's third largest fossil fuel country. As per system efficiency it will reduce 66% but we ignore industrial and natural activities, we can conclude at least 30% quantity of exhaust gases reduce and we can contribute to the world.

5.2 Problems encountered, credibility of result and accuracy estimates

- Problems encountered in system are air-gas separator accuracy and excavation of road.

Based on BS-1, BS-2, BS-2 and Indian Standard credibility of system is very much.

- Accuracy estimate is most important for getting products because this product is used for drinking purpose.

5.3 Pros and Cons

- Pros:
  - It reduces the effect of exhaust gases on wearing course, termite, and bitumen.
  - Its operating cost is low.
  - Its maintenance cost is low.
- Cons:
  - Its Capital cost is high.
  - For this system, we have to excavate the pavement. It increases the labouring cost.

5.4 Utility of Result

- This system can reduce Global Warming effect.
- By this system, effects on human beings by exhaust gases can be reduced.
- It also reduces the effects on civil properties affected by exhaust gases.

VI. Application

6.1 Idea as a solution

In India,gramatic growth in fossil-fuel CO_2emissions averaging 5.7% per year and becoming the world third largest fossil fuel country. So as per our idea we can control situation and improve condition of atmosphere.We can get the by-product which is cheaper than market cost.

7.2 Additional applications

- Hydrogen fuel can provide motive power for cars, boats, and aeroplanes portable fuel cell application or stationary fuel cell application which can power electric motor.

7.3 Benefits to users

- It can make cheaper cold drinks than current expenditure.
- It can reduce greenhouse effect hence it reduce Global Warming effect if it applied by Government.

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