|| Volume 2 ||Issue 11||JUNE 2017||ISSN (Online) 2456-0774
INTERNATIONAL JOURNAL OF ADVANCE SCIENTIFIC RESEARCH
AND ENGINEERING TRENDS

Eco-friendly Co_2 Capture and Storage (Review Paper)

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***Abstract*— A System to capture the exhaust gases from vehicles mainly co2 where gases from muffler enter into the catalytic converter where gases like CO(carbon Monoxide), HCs(Hydrocarbons) and NOx (Nitrogen Oxide) gets converted into CO2, H2O and NO2 respectively. These gaseous mixture are then transferred to two small cylinder arrangements for separating the CO2 from other flue gases via hydrate separation method. At the end of day this stored CO2 is dumped into the artificial green house installed at petrol pump in which natural conversion of CO2 to O2 takes place.**

***Keywords*:** Capture collect, Exhaust gases, Vehicles, Catalytic converter, Cylinder, Hydrate separation..

I INTRODUCTION

Global warming is one of most alarming problem that is increasing everyday and its can be seen anywhere in the abrupt atmospheric changes. One of the major reason of the global warming is the Co_2 emission from cars. A car which covers an average distance of 70-80 km daily, emits about 10.1- 10.3 liter Co2 daily . So, thousands of cars emits lacks of liters of Co2 in the atmosphere daily. Catalytic converter is used to convert the harmful gases to less harmful gases by using the Palladium, Platinum and Rhodium layer. But the efficiency of the average catalytic converter is about 60-70%. So the gas now evolved from catalytic converter consists mainly of Co_2, No_2 and H_2o. Now the separation Efficiency of the hydrate separation method is almost 80-90% under standard conditions. Now the separated Co_2 from cylinders arrangement get stored in a 10 liter cylinder . Now the stored Co_2 is dumped into the Artificial Green House. Artificial green house takes an area of approx 25 * 50 m^2. In the green house there are approx. 8-10 plants and each plant consumes about 0.6-0.9 liter of Co_2 on daily basis. There are total 45000 petrol stations in India and if this setup is available even in half of them, it can stop the emission of Co_2 by 60000-70000 liter per day. This technique can contribute largely to the prevention of Ozone Depletion and the other effects that are threatening the human life.

II PROBLEMS IN THE EXISTING PRODUCT

Environment Degradation -: Due to excessive emission of Co_2 by vehicles environment is more prone to cause disasters in future**.**

Health Hazards – Uncontrolled emission of Co2 in atmosphere causes problems like difficulty in breathing, bad effects on skin etc.

III OUR INNOVATION (SOLUTION)

Innovation is done by first passing the exhaust gas releasing from the catalytic converter through the hydrate separation mechanism in which two separate cylinders are employed. Gas first passes through the first cylinder in which Co_2 hydrates are formed with the help of hydrate promoters and the remaining exhaust gases are passed to the atmosphere through separate passage. Once the hydrates are formed, now the hydrate solution is pumped to the next cylinder where due to the pressure pumping these hydrates are broken and then Co_2 is released.

This Co_2 is then stored in a 10 liter cylinder employed inside the car (because a car travelling an average distance of 10.1-10.3 liter of Co_2) and at the end of day this Co_2 is dumped at artificial green houses which are situated at the petrol pumps. Artificial Green House is a small covered area which consists of plants that are given suitable conditions artificially to promote the growth of plants in it . Thus by using this technique and by employing artificial green house even at half of petrol pumps in India, it can lessen the amount of Co_2 content in atmosphere by 60,000-70,000 liter per day.

IV METHODOLOGY

In this technique we operate all the functions externally and there is no interference in the existing design. We collect the gas by separating it from other gases and then store it. The stored gases are then dumped in the artificial green house where all the Co_2 gas is converted to the O_2 directly.

Advantages

a) Reduces the amount of Co2 greatly from the atmosphere.
b) Helps in reducing the depletion rate of ozone layer, adversing climate conditions.
c) Making the vehicles more eco-friendly.
d) Improving the environment conditions and more suitable for living.

Disadvantage

a) Solution is slightly costlier to handle.
b) Ideal conditions are difficult to maintain.
c) Constant heat generation during the process which makes it difficult to maintain ideal conditions.

Flow chart

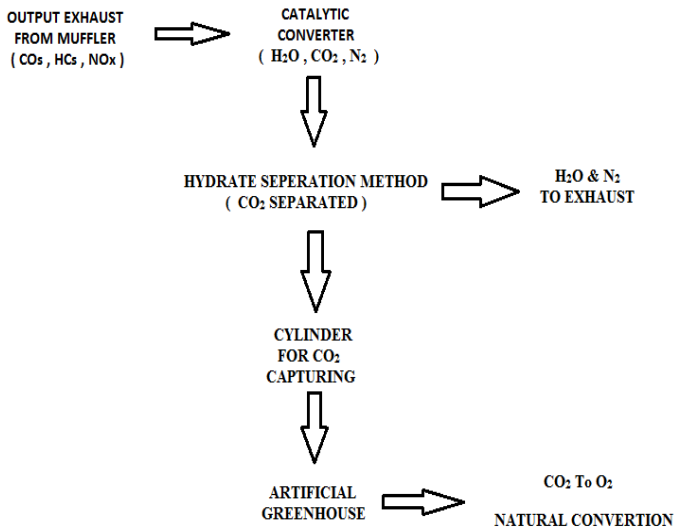

Figure1: Flow of Co2 Capture and Storage

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