Exploring use of Cow Urine for Emmison Control

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ABSTRACT

Air pollution is becoming increasingly important for us due to the rising number of petrol and diesel engine vehicles, which is leading to a significant increase in pollution and contributing to global warming. Therefore, it is crucial that we work towards reducing air pollution. This study focuses on an experimental investigation to lower the emission of toxic gases, such as Hydrocarbons (HC), carbon monoxide (CO), carbon dioxide (CO2), and Nitrous Oxide (NOX), from the internal combustion engine of automotive vehicles, which are released as a result of fuel combustion, thereby reducing environmental pollution. One effective method to reduce the discharge of toxic substances during combustion in automotive vehicles is through the use of noble metal-based catalytic converters. These converters convert toxic CO and HC gases into CO2 and H2O, respectively. However, to address concerns related to the use of noble metals, a novel approach is proposed, utilizing natural liquids to minimize emission levels. As part of the study, the pH values of natural fluids, such as cow urine, were tested and then injected into the silencer as separate liquid. This research aims to find an alternative and eco-friendly solution to curb automotive emissions and combat air pollution effectively.

Keywords— Air Pollution, Emmision, cow urine, Hydrocarbon, carbon monooxide

I. INTRODUCTION

In Internal combustion (IC) engine, the emission of toxic gases like HC, CO and NOX occurs due to restricted combustion process by engine's cycle. The discharge level of these toxic gases are more at idle and deceleration state where less amount of air is taken by the engine for combustion. The main reasons for the formation of these gases are less oxygen intake during high air to fuel mixture, High temperature causing nitrogen to react with oxygen, Presence of lean mixtures, porous deposits and oil absorption. These gases mainly affect the environment causing greenhouse effect, acid rain, global warming, etc. Numerous substitutes like pretreatment of fuel, usage of renewable resources, adding additives to fuel, etc. have been developed to minimize the emission level of the engine. It is proposed in this project to construct device/model that controls vehicle emissions. The proposed model is low cost and can be attached to all types of vehicles. It utilized Cow Urine to absorb the harmful gases. Gases from the exhaust of the engine come in contact with fine spray of cow pee through nozzle. Due mixing of cow pee and gases, the harmful content present in emission gases reduced to greater extent. These gases are then allowed to pass to atmosphere. In this experimental work; the objective is to modify the silencer of a two-wheeler to incorporate a natural liquid injection system. The selection of natural liquids for the system will be based on their physical and chemical properties, as well as their availability and cost. The modification of the silencer will be carried out in a manner that does not compromise the performance of the two-wheeler. The natural liquid will be injected into the silencer chamber, where it will blend with the exhaust gases, leading to a reduction in pollutants like carbon monoxide, hydrocarbons, and nitrogen oxides.

II. EXPERIMENTAL PROCEDURE

In this experiment Firstly we need to identify the pollutants emitted by two-wheelers whereas the initial step is to identify the various pollutants that are emitted by two-wheelers. Common pollutants include carbon monoxide, hydrocarbons, nitrogen oxides, and particulate matter. Then after studying the properties of natural liquid which having different natural liquids, such as water, cow urine, vegetable oil, and ethanol, have shown potential in reducing emissions from internal combustion engines. The properties of these natural liquids, along with their impact on engine performance, will be thoroughly studied. Lastly modifying the silencer which the silencer or muffler is a critical component of any vehicle designed to reduce engine noise. The modified silencer

will be specifically designed to effectively mix the natural liquid with the exhaust gas, thus curbing the pollutants emitted by the engine.

Figure 1 : Experimrnt set up with cow urine

The first step is to design a mixing chamber that will be responsible for blending the natural liquid with the exhaust gas. This design should ensure uniform mixing while maintaining the engine's performance unaffected.Once the modified silencer is ready, it is imperative to conduct experiments to assess its efficiency in reducing emissions. Emissions testing will be performed both before and after installing the modified silencer. After conducting the experiments, the collected data will be thoroughly analyzed to determine the effectiveness of the modified silencer in reducing emissions.

In starting we obtain a standard two-wheeler in good working condition to be used for the experiment. After that we construct a modified silencer capable of injecting the natural liquid into the exhaust stream of the two-wheeler. This can be achieved by attaching a container of the natural liquid to the silencer and connecting it to a tube leading into the exhaust pipe of the two-wheeler. Select a suitable natural liquid known for its ability to reduce exhaust emissions from internal combustion engines. In this experiment we select cow urine for experiment. But we having options may include a plant-based biofuel or a specially formulated additive designed for emission reduction. After selection of cow urine we set up measurement equipment, such as a gas analyzer, to measure emissions from the two-wheeler with and without the natural liquid injection system. Conduct a baseline test without the modified silencer and the natural liquid injection system to establish the emissions produced under normal conditions. Then install the modified silencer and natural liquid injection system on the two-wheeler and conduct another test under similar conditions as the baseline test. Record emissions measurements and compare them to the baseline results. Analyze the data collected from the tests to assess the effectiveness of the modified silencer and natural liquid injection system in reducing emissions from the two-wheeler. During the testing process, the selected liquids will be introduced into the liquid inlet valve as the flue gas passes through the silencer. The injected liquid will combine with the flue gas, resulting in the discharge of gases. Emission measurements will be taken using a gas analyzer to evaluate the results for each tested liquid.

When water is introduced into the silencer, it will react with carbon monoxide, leading to the release of carbon dioxide and hydrogen gas. Similarly, when cow urine is injected into the silencer, it will react with carbon monoxide, nitrogen oxide, and oxygen, releasing carbon dioxide, nitrogen, and water, water and cow urine will react with the flue gases within the silencer, transforming them into non-toxic gases such as carbon dioxide, nitrogen, and water, thus resulting in controlled emission of exhaust gases.

III. RESULT AND DISCUSSION

The test results demonstrate that both the modified silencer and the natural liquid injection system effectively reduce emissions from the two-wheeler. The data gathered from the tests indicates that the combination of the modified silencer and natural liquid injection system significantly reduces the release of harmful gases, such as carbon monoxide and hydrocarbons, which are known to be detrimental to the environment and human health.

The incorporation of natural liquid into the modified silencer proves to be a promising approach for curbing emissions from two-wheelers. It is worth noting that further testing and research may be necessary to develop more advanced and efficient technologies for pollution control from internal combustion engines. Nevertheless, this experimental setup exhibits positive results in reducing emissions from two-wheelers and lays a strong foundation for future research in the field of pollution control.

In conclusion, the modified silencer and natural liquid injection system have the potential to contribute significantly to a cleaner and healthier environment by effectively reducing the emission of harmful gases.

Table 1: Idling Emission

Parameter	Pollutant (as applicable)	Units (as applicable)	Average Reading	
			Before Expriment Set Up	After Experimern Set Up
Idling Emissions	Carbon Monooxide (CO)	Percentage (%)	0.53	0.48
	Hydrocarbon (HC)	ppm	174	81

IV. CONCLUSION

The importance finding emerged from this investigation, can be as follows:

1. It can be possible to reduce emission by using natural resources like cow urine.
2. If we see result regarding Hydrocarbon it reduce by 50% with cow urine set up.

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