

Catalytic fuel converters

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Abstract: In recent days, one of the major global issues is air pollution. The increased rate of air pollution is due to increase in automobile count. These emissions contaminate the air and leads to serious problems such as photo chemical smog, global warming, green house effect etc. To face this problem many government/organization has been trying to implement measures on pollution control, which haven't worked great. The exact solution for pollution control could be control of emissions. This report suggested catalytic fuel converters for reduction of air pollution in the automobiles.

Keywords: air pollution, catalytic, fuel converters, automobile

1. INTRODUCTION

1.1 Pollution:

Pollution is the introduction of contaminants into the natural environment that causes adverse change. Pollutions are caused by the pollutants which are produced due to human activities.

1.2 Air Pollution

Air pollution is the major pollution. Emissions are the root cause of air pollution; these emissions are produced by industries and auto mobiles.

1.3 Emissions

In recent years the increase in air pollution can be directly related to increase in auto mobiles. Industries have been another cause for emissions. Emissions of many air pollutants have been shown to have variety of negative effects on public health and natural environment. Emissions that are principal pollutants of concern include.

1.3.1 Hydrocarbons:

Hydrocarbons are major contributor to smog, which can be a major problem in urban areas. Prolonged exposure to

hydrocarbons contributes to asthma, liver disease; lung disease & CANCER. Regulations governing hydrocarbons vary according to the type of engine & jurisdiction, while in other cases TOTAL HYDROCARBONS are regulated.

1.3.2 Carbon Monoxide:

The product of incomplete combustion, carbon monoxide reduces the blood's ability to carry oxygen: overexposure (carbon monoxide poisoning) may be fatal. Carbon monoxide poisoning is a killer in high concentrations.

1.3.3 Oxides Of Nitrogen:

It generated when nitrogen in the air reacts with oxygen at high temperature and pressure inside the engine. Knox is a precursor to smog and acid rain. Knox is the sum of NO & NO₂. NO₂ is extremely reactive. Knox production is increased when an engine runs at its most efficient part of the cycle

1.3.4 Particulate Matter:

PM is a smoke made up of particles in the micrometer size range. PM emission is very negligible, it is of 0.002% from the whole emissions. PM emissions arouses from tire friction .etc.

2. STEPS TAKEN TO CONTROL EMISSIONS

- Throughout the 1950s and 1960s, various federal, state and local governments in the United States conducted studies into the numerous sources of air pollution.
- By 1967 the state of California created the California Air resources Board and in 1970, the federal United States Environmental Protection Agency (EPA) was established.
- Similar agencies and regulations were contemporaneously developed and implemented in Canada, Western Europe, Australia and Japan.

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- In India many regulations were taken by government as odd even act at Delhi, ban for diesel vehicles more than 2000cc. India also participated in global summit 2015

3. STEPS TAKEN TO REDUCE HARMFUL EMISSION

3.1. Exhaust Gas Recirculation

In the United States and Canada, many engines in 1973 and newer vehicles (1972) have a system that routes a metered amount of exhaust into the intake tract under particular operating conditions. These in turn, reduces the formation of Knox.

3.1.1. defects:

It can't able to reduce the pollution accurately; exhaust neither burns nor supports combustion so this method is not efficient.

3.2 Catalytic Converter

The catalytic converter is a device placed in the exhaust pipe which converts hydrocarbons, carbon monoxide and Knox into less harmful gases by using combustion of platinum, palladium and rhodium as catalysts. There are two types of catalytic converter, TWO WAY & THREE WAY CONVERTER. Two way converters were common until the 1980s, when three way converters replaced them on most automobile engines.

3.2.2. Defects:

Often maintenance is required, it is high in cost. These inventions are not a perfect solution to control emission, so new product is needed in market to reduce the pollution control & to solve the problem.

4. CATALYTIC FUEL CONVERTER

4.1. The Main Idea:

The basic idea of Catalytic Fuel Converter (CFC) is to reduce the emissions & to convert the emissions into fuel. The CFCs output will be FUEL.

EMISSIONS \longrightarrow FUEL

4.2. Types of Cfc's:

The CFC'S are of two types which is classified into CFC1, & CFC2

CFC1; EMISSIONS INTO METHANE

CFC2; EMISSIONS INTO METHANOL

4.3. Advantages OF Cfc's

- The emissions are reduced to 0.02%, as emissions are letter as oxygen & nitrogen (AIR). CFCs output is safe to our world.
- Often maintenance is not required as only two catalysts are used in the process.
- CFCs is cheaper than the catalytic converter
- CFCs is profitable to the consumers as it converted into methane, by which we can use it as a fuel or we can sell methane in methane banks.