

DEVELOPMENT OF MAN-MADE GAS WASTE PROCESSING TECHNOLOGY

¹Karimov Begzod Abdiquil ogli, ²Jalolov Ibrohimxon Saydijamol ogli
^{1,2}Almalyk branch of Tashkent State Technical University after Islam Karimov

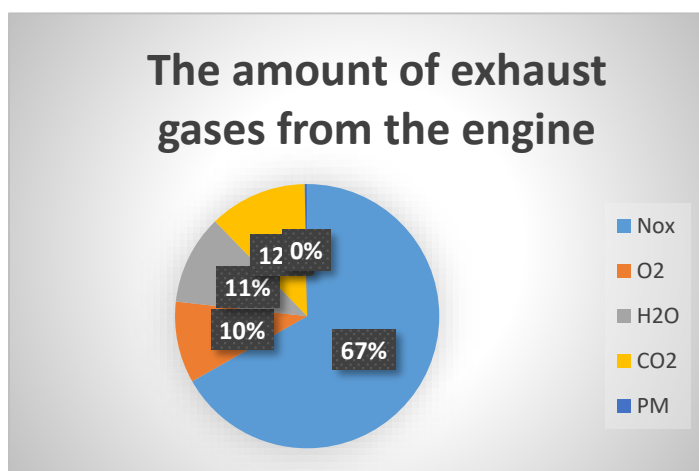
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Abstract. This article focuses on cleaning the air of big cities and getting clean air necessary for people's lives. In particular, the development of technology for the production of oxygen suitable for disposal of urban air in Tashkent, the capital of the Republic of Uzbekistan, the air of which is currently considered the most polluted, and consumption by processing man-made gas waste.

Keywords: exhaust gases, particle filters, electrofilters, electrode, ion, PM filter-catalyst.

INTRODUCTION

In the production process, in various plants, factories and the Energy system, based on the information provided on the quality of energy and its economic consumption, new projects are being implemented every day in all areas, including the economical use of energy resources, the use of energy-efficient equipment for production processes. Implementation projects are of great importance in the development of the country's economy and in raising the quality of production and bringing it to a new stage [1]. Nowadays, one of the global problems around the world is air pollution. There are many reasons for the origin of this problem, including the addition of various gases and man-made gas emissions to the composition of the air without processing. Environmentalists constantly complain about the gasoline and diesel internal combustion engines (ICE) used in vehicles and the man-made gases released into the atmosphere by factories and



factories. Due to the increase in toxic compounds for the human body, such as carbon monoxide CO, hydrocarbon CH, nitrogen oxide NO_x in the exhaust gases, they are the cause of their dissatisfaction. The latest discoveries of scientists have proven that about 6% of all deaths are related to environmental pollution. Children and the elderly are a special group of people who are quickly poisoned, their bodies cannot be quickly cleansed of

microscopic fuel molecules. The higher the exhaust temperature, the faster the combustion products are formed, which leads to an increase in the concentration of harmful substances during the exhaust. Doctors diagnose hypoxia in drivers who spend a lot of time on the road. Among them are truck drivers, taxi drivers, carriers and others. Initially, these problems were solved in one way - by improving the energy system. This was not enough for gasoline engines, so a catalytic converter was created, which was installed in the exhaust system. The situation with diesel engines was simpler, but only until the beginning of the new millennium, more precisely, until the introduction of Euro 4 (2005) and Euro 5 (2008) standards. As soon as the new requirements of

the environmentalists were announced, the developers of diesel fuel systems, together with the car manufacturers, focused on improving their designs and exhaust systems, introducing more efficient particulate filters and catalytic converters.

METHODS

Particulate filters can have a separate housing or be located "under one shell" with the catalytic converter. The working element of particulate filters is usually made of ceramic or cermet, often with a special design on its surfaces that ensures uniform accumulation of soot. The principles and functions of the neutralizer and filter are significantly different. If the first turns toxic gases into harmless ones, the second mechanically traps soot particles, which leads to an increase in back pressure in the exhaust system. On average, this back pressure should not exceed 150 mbar, as determined by engine manufacturers. When the resistance of the filter approaches this threshold value due to thick clogging, it should be replaced or cleaned (restored), burning solid particles in the filter. Currently, the second type of design is more widely used.

In order to significantly reduce the concentration of all components of exhaust gases, it has been proposed to combine the oxide catalyst with SCR and filter systems. In order to control the possible blocking of the filter channels during the short-term operation of the vehicle and the movement of small loads (this is a typical situation in the operation of forklifts), various methods of active regeneration of the company have also been proposed by scientists. With the help of an atomizer, diesel fuel is sprayed onto the catalyst, which causes its oxidation and, as a result, heat.

We can also widely use PM filter-catalyst. The PM filter-catalyst works on the principle of parallel flow penetration.

This guarantees continuous operation of the engine even if it is not completely regenerated. As a result of the reaction with NO_2 , the size of the preserved particles of the bound oxidation catalyst is constantly reduced. The PM filter-catalyst cannot be damaged and itself cannot damage the diesel engine and fuel consumption will not increase when used. In addition, this filter does not require maintenance for the entire life of the vehicle. The emission of harmful fine particles is reduced by more than 90%, the total number of particles by 80% and the mass of particles by at least 30%.

Electrofilters are widely used today. An electrofilter is a device that cleans gases, that is, the formation of aerosol, solid or liquid particles under the influence of electric forces. as a result of the effect of the electric field between the electrodes, the charged particles are directed to the gas being cleaned.

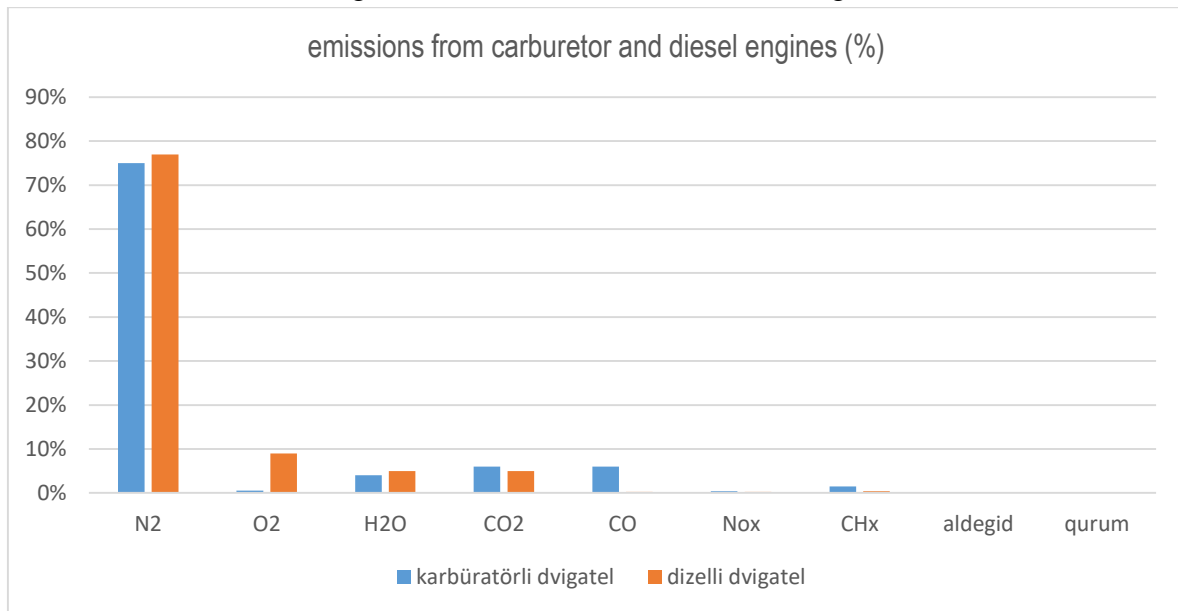
The charge of the particles occurs in the area of corona separation. An electrostatic precipitator has a straight or cylindrical shape and corona electrodes of various designs (depending on the purpose and scope of application of the electrostatic precipitator). A high-voltage power supply of 50-60 kV with rectified electrodes of the enterprise is connected. Solids collected in electrostatic precipitators are removed by vibration, solids collected on its electrodes are called dry.

The deposited particles are washed away from the electrodes by the liquid or collected by the liquid, such substances are called wet substances.

Purified gas passes sequentially according to the number of electric fields, electrostatic precipitators are divided into single and multi-field. In an electrostatic precipitator, the treated gas passes through the active zones in vertical or horizontal directions, so the electrostatic precipitator can be vertical or horizontal [2].

	aldehyde	N ₂	O ₂	H ₂ O	CO ₂	CO	NO _x	CH _x	alighting
carburetor engine	0,10%	75%	9%	4%	6%	6%	0.4%	1.5%	0,02 g/m ³
diesel engine	0.01 %	77%	0.5%	5%	5 %	0.25%	0.25%	0.4%	0,08 g/m ³

When two different cars were compared, the composition of the gas emitted from them was studied, and a table was formed according to their amounts. In accordance with this table, we selected an electrofilter among the filters in order to clean harmful gas substances.



The electrofilter is the best design in terms of performance, its efficiency is 99%. The electrofilter keeps the harmful particles in the air and releases oxygen into the air. When we use an electrofilter, we use a high frequency, and we do this with a frequency converter. There are several types of frequency converters, including:

1. Variable and constant voltage frequency converters (V/Hz): These frequency converters maintain a constant ratio between the voltage and frequency at the electrode.
2. Vector frequency converters: Vector frequency converters provide precise control of the vector field on the electrical electrode, which allows to achieve speed and high accuracy.
3. Direct management. This type of controller provides direct control of the speed and position of the ions on the electrode without the need for feedback.
4. Sine wave frequency converters: Sine wave frequency converters generate a sinusoidal voltage and frequency to control the ion in the electrode. They have high accuracy and low noise level [3]. When we use an electrostatic precipitator, we use a type 1 frequency converter.

RESULTS AND DISCUSSION

According to our usual understanding, only machines harm nature, leaving generators and devices for heating, water supply and other needs in the background. Car exhaust causes about 40,000 deaths each year. The world has reached an ecologically unsatisfactory state. Greenhouse effect, ozone hole, global warming and clouding. Scientists cite numbers and show graphs, politicians sign protocols. While there's still debate over how emissions change the planet's climate, automakers have long been at the forefront of the fight for cleaner air. This is because

general climate changes are one thing, but ecology in cities, especially megacities, is a little different. As a result, we have to admit: modern exhaust gas treatment components have become separate systems tightly integrated with on-board electronics. As long as the fuel is of high quality and the car is still new, there are usually no problems with them. However, they can appear over the years. The impact of changes in the composition of the air in large cities on people's lives is increasing year by year. As mentioned above, the increase in the number of cars harms the nature on both sides. One of them is internal combustion engine cars, and the other one is electric cars. Why do we call it electric cars? The reason is that not all countries currently have enough renewable energy sources. As a result, it shows that thermal power plants have not lost their place in the energy system in the activity of electricity production. Gases coming out of each thermal power plant pollute the atmosphere.

CONCLUSION

In conclusion, I can say that the city of Tashkent, the capital of the Republic of Uzbekistan, is a hollow zone and this is happening more and more every year. In this case, the proposed solution is to exploit after and from electrostatic precipitators for areas where most of the use is harmful gases. In addition, we can take examples of intersections, emergency shelters, greenhouses. Near them, electric filters recycle harmful gases and emit clean oxygen into the air. Transportation of cargo from electrofilters in the city to ensure the supply of people's lives.

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