ACHIEVING REDUCTION IN TOXIC GASES BY IMPROVING THE ONIX CAR'S MUFFLER.

Quzibolaeva Dilnoza Tokhtasinova- doctoral student,
Nasirov Ilham Zakirovich- professor,
Andijan State Technical Institute
Republic of Uzbekistan, Andijan region

Abstract.

Currently, the biggest problem in engines is to reduce the full combustion of fuel and the toxicity of processed gases. Even in engines brought to the most optimal setting, 15-20% of fuel is released into the atmosphere through the exhaust system without burning. To burn these non-combustible hydrocarbons in extinguishers and detoxify toxic substances, incendiary swatches were placed in the extinguisher of the Onix car, which is being produced at the AJda "UzAvtomotors". Based on the results of tests in laboratory conditions, an option was selected in which 2 fire extinguishers were installed on the usual extinguisher of the Onix car, all indicators of which were the highest.

Introduction.

Currently, there are many environmental problems such as an increase in the population around the world, the occurrence of various environmental problems, environmental pollution. Therefore, our Honorable President Shavkat Mirziyoyev proposed at the meeting of the Supreme Assembly on November 20, 2024 to declare 2025 as the "year of environmental preservation and "yasil" economy" in our country. In addition, the decree of the president of the Republic of Uzbekistan dated April 21, 2017 No. PF-5024 "on improving the system of Public Administration in the field of Ecology and Environmental Protection", the decree of the president of the Republic of Uzbekistan dated October 3, 2018 No. PQ-3956-"on additional measures to improve the system of Public Administration in the field of Ecology and Environmental Protection- to a certain extent, the fact that it serves in the implementation of the tasks set out in the legal documents indicates to what extent our attitude towards the environment is worthy of attention by the head of our country [1-3]. According to recent data, one of the factors causing atmospheric air pollution worldwide is vehicles, which are found to account for about 70% of the total atmospheric air pollution.

The volume of vehicle use is increasing in order to ensure the safety of life for people, to facilitate the lifestyle of living, to increase the productivity of work and to reduce the amount of time spent. For this reason, vehicles have become an integral part of the vital activity of people. But we are all aware that an increase in the amount of toxic gases emanating from vehicles leads to the above environmental problems. Therefore, achieving a reduction in the amount of toxic gases emitted from vehicles into the atmosphere determines the relevance of the topic.

According to reports, at present, in the last 10 years around the world, on average, more than 90 million cars equipped with internal combustion engines are produced every year. On average, there are about 3 billion cars worldwide, almost all of which are equipped with an internal combustion engine. The level of motorization is calculated by the number of cars per 1,000 people: 646 in Italy, 630 in Canada, 629 in Finland, 343 in the US, 209 in Kazakhstan, 118 in Azarbaijan, 87 in Uzbekistan [4]. The increase in the number of cars equipped with internal combustion engines from year to year is causing an increase in demand for fuel products. Currently, the gas reserves determined by the surface of the earth, with an average gas reserve of 179.4 trillion M3, with no change in annual consumption volume, are predicted to reach 56 years, while the oil reserves reach an average reserve of 240 billion tons and an average reserve of 52 years.

Methods.

According to the International Air Quality Index (IQAir) portal, the amount of PM2.5 particles in the air of the capital city of Tashkent has increased by 26.1 times more than that of Meyer, recommended by the World Health Organization (WHO) [4].

Toxic substances in atmospheric air (PEM) worldwide environmental pollution remains one of the most important issues for human health [6]. The main source of atmospheric air pollution is Motor Transport and accounts for about 70% of atmospheric pollution. In addition, small particles that come out of motor vehicles, including rubber particles that come out of the car car's car, are dangerous for breathing, in general, for life (as a result of car decay alone, 10 kg of powdery rubber particles are mixed in atmospheric air in a year).

Results.

The composition and quality of atmospheric air is influenced by the following emissions of automobiles as polluting factors:

- Carbon monoxide: is Gas-CO and carbon dioxide-CO_2 (50% of waste);
- Sulfur oxides: SO_2 and SO_3 (16 %);
- Volatile organic compounds: methane-CH4, benzene-C6H6, chlorphtoruglerodes (15%);
- Nitrogen oxides: NO, NO_2 and N_2O-(14%);
- Hanging particles: dust, soot, asbestos, lead salts, margimush, sulfuric acid N2SO4, oil etc.k.- (5%);

Compared with the latest data, used gases, which are only excreted into the atmosphere by internal combustion engines of vehicles, have been found to contain more than 500 organic compounds, and they are several tens of times more than processed gases, which are separating from the pipes of the boiler house, factory - factories [5].

Therefore, finding new innovative solutions that fully burn fuel in vehicles and maintain environmental friendliness is one of the most important challenges facing scientists around the world today.

The development of scientific and technological development in the automotive industry is focused on the production of the most high - speed, comfortable cars today. Of course, for cars to move quickly, fuel with the highest octane number will be needed, of the highest quality. Until the 1980s, for example, gasoline with an octane number of at most 76 was used, but today it has become necessary to have an octane number of more than 90, since European and jaxon standards are increasingly reducing the minimum amount of carbon monoxide in processed gases [6]. Automobile manufacturing businesses are also increasingly complicating automotive structures to meet these requirements. That is, they are installing catalytic neutralizers and filters in the exhaust pipe of processed gases. These works continue to make oil reserves more bearable. For example, who used 3.2 kg of oil to produce 1 kg of a - 76 gasoline, would need to use 4 kg of oil to produce Ai - 91 gasoline. If 85 o.k. when the "Neksiya" car for ga used 6.5 L of gasoline every 100 km of road. Similarly, only the car “Neksiya-3”, which has a catalytic neutralizer installed in the exhaust pipe, uses 8.8 l of gasoline. That is, oil cools into the air without frost in both directions [7].

Discussion.

In the last decades, work on improvements to the engines of cars has been carried out mainly on fuel dosing and exhaust systems of processed gases, but less attention has been paid to improving the passage of the combustion process. As a result, dvigetel became so fast - moving that all processes in it - dosing, insertion, fuel spraying, ignition, combustion-began to pass in hundredths of a second of the time. As a result, conventional oil and natural gas fuels will not be able to burn during these processes and will be released into the environment along with

processed gases. As a result of the burning of fuel, products appear that poison the human body and pollute the environment.

Therefore, at present, the biggest problem in engines is to reduce the full combustion of fuel and the toxicity of processed gases. In a carburetor engine brought to the most optimal setting, 20-25%, in an injector engine - 5-10%, in a gas-powered gasoline engine-10-15%, in a diesel engine-12-15%, fuel is released into the atmosphere through the muffler without burning. To trap these fuel particles in the exhaust gases, a catalytic neutralizer and 1 to 3 absorbers are installed in the exhaust system, but the amount of toxic substances in the composition of the gases that pass through them is exceeding the permissible Meyers.

As of 2024, the Andijan region has used official data obtained by the Andijan Regional Directorate of Ecology and environmental protection in terms of total number of cars and fuel types. Based on this information, the county had a total of 211,397 cars, of which 130,806 gasoline-fueled cars, or 61.8%, 5,408, or 2.6%, diesel-fueled cars, and 75,183, or 35.6%, gas-fueled cars. When burning 1.0 tons of fuel in a car engine, from 150 kg to 800 kg of harmful substances are thrown into the atmosphere. Each light car, on average, throws up to 60 m3 of exhaust gases into the atmosphere per hour, and the truck throws up to 120 m3 of exhaust gases. In particular, each car throws up to 5 m3 of carbon monoxide into the atmosphere in an hour [8].

Research work shows that it is possible to achieve a reduction in the amount of toxic gases being released into the atmosphere by improving the exhaust system of vehicles. An exhaust system is a device used to reduce atmospheric emissions and air noise. At one time, cars were produced without an output system at all. Smoke clouds appeared from the short exhaust pipes, which made a terrible noise that absolutely did not correspond to the small indicators of the engines at that time. However, protests from the surrounding Infantry (which at the time were larger in numbers than cars), as well as horse panic (horses were the main tractive force in their transport at the time), led to the need for noise reduction device - dampers.

The first muffler was installed on the car "Panar-Levassor" in 1894. From then until the present time, all suckers in production use the same principle of operation and structure as in 1894. The evolution of the muffler structure continues mainly towards improving the composition and production technology of the materials used to make it (for the body, resonator, conductor and other parts). The absorbers produced so far are pushing out unburned hydrocarbons, ugelerod oxide, ugelerod 2-oxide, nitrogen and sulfur oxides without being able to catch them.

As an example for burning these non-combustible hydrocarbons in extinguishers and detoxifying toxic substances, the “Onix” car muffler (Figure 1), which is being produced at the “UzAvtomotors” JSC, has been improved, that is, firing svechs were placed in the initial intake pipe of the muffler (figures 2).

Figure 1. Onix car muffler

Figure 2. Improved Onix car muffler

To remove and compare the mufflers of the new construction, swabs were selected, which are mainly being installed on cars under the production of the "UzAvtomotors" JSC. In laboratory tests, the efficiency of the mufflers was compared according to the following indicators: engine power, number of revolutions of the crankshaft, clock consumption of fuel. For this, a Gazoline 1200 engine (Figure 2)-based stand [9,10] and a gazoanalyzer made at the institute were used.

1- table.

Results of laboratory tests

№	Indicators name	Unit of measure ment	Ordinary extinguisher (Control)	1 fire extinguisher is installed on the usual extinguisher	2 fire extinguishers are installed on the usual extinguisher
1.	Engine power	kVt	2,7	2,8	2,8
2.	Circulation of the elbow	1/min	3200	3200	3200
3.	Fuel consumption	g / kWh	114	110	107
4.	Carbon monoxide CO	%	4,15	3,26	2,87
5.	Unburned hydrocarbons CN	%	5,26	3,58	3,16

Conclusions.

As can be seen from Table 1 in the 3rd variant, which had 2 ignition switches installed on a typical Muffler in laboratory tests, the effective fuel consumption of the engine was 107 g/kWh, which is 6.54% lower than in the 1st variant, the typical engine muffler (control) variant. In terms of the carbon monoxide soot content in the exhaust gases, 2 Ignition plugs were fitted to a typical Muffler at Option 3, which was 2.87% lower than Option 1, which was 44.6% lower than engine muffler (control)-4.15% [11].

Non-combustible hydrocarbons accounted for 3.16% in Option 3, which had 2 ignition switches installed on a typical extinguisher by SN content, 66.46% lower than in Option 1, the typical engine muffler (Control) Option 1, which ran on SN 5.26% [12.13].

Based on the results of tests in laboratory conditions, option 3 was selected, in which 2 fire extinguishers were installed on a typical extinguisher with the highest indicators, and recommended for wider tests, making copies of it in a small batch.

Experimental studies of QS fuel economy in accordance with GOST 20306-90 “fuel economy of vehicles” were carried out when the Gazoline 1200 engine was operated on gasoline fuel. The tests were carried out at 3200 km/h of the fixed number of revolutions of the elbow shaft. The results of the study were evaluated in comparison with comparative technical laws.

References

1. 2025-yil “Atrof-muhitni asrash va “yashil” iqtisodiyot yili” deb e’lon qilindi// Xalq so’zi gaz. 2024 y. 20 noyabr, 1,3 b
2. O’zbekiston Respublikasi Prezidentining 2017 yil 21 apreldagi PF-5024-son "Ekologiya va atrof-muhitni muhofaza qilish sohasida davlat boshqaruvi tizimini takomillashtirish to’g’risida”gi Farmoni// Xalq so’zi gaz. 2017 y. 21 aprel, 1,3 b.
3. O’zbekiston Respublikasi Prezidentining 2018 yil 3 oktyabrdagi PQ-3956-son-”Ekologiya va atrof-muhitni muhofaza qilish sohasida davlat boshqaruvi tizimini takomillashtirish bo’yicha qo’shimcha chora-tadbirlar to’g’risida”gi Farmoni// Xalq so’zi gaz. 2018 y. 3 oktyabr, 1,3 b.
4. Индекс качества воздуха (AQI+) и загрязнение атмосферы PM2.5 в Узбекистан//https://www.iqair.com/ru/uzbekistan?srsltid=AfmBOoqL5Woo98fNYzGIpjWihYDVykPhuiRSpECiQLmAzWdGT68y8xbs
5. Бессонова В.П. Состоуание пыльцы как оказатель загруазнениуа среды с туажелыми металлами. Российскауа Академиуа Наук. Экология, №4, 1992. С. 45−50.].
6. Ajit Singh, Pallavi Pant, Francis D. Pope-Atmospheric Research‖ Volume 227, 1 October 2019, P. 220−232.
7. Насиров Илхам Закирович- т.ф.н., доцент, Қўзиболаева Дилноза Тўхтасиновна-изланувчи. Андижон машинасозлик институти, Ўзбекистон. “Ички ёнув двигателларининг энергетик ва экологик кўрсаткичларини яхшилаш”. Research and education issn: 2181-3191 volume 1 | issue 7 | 2022 Scientific Journal Impact Factor 2022: 4.628 http://sjifactor.com/passport.php?id=22258.
8. T.Tursunov, T.U.Raximova Ekologiya // O’quv qo’llanma. Toshkent − 2006 y. 47 б.
9. Насиров И. З., Юсупбеков Х. А. Ўт олдириш свечасини такомиллаштиришда «Морфологик таҳлил» методидан фойдаланиш // «Молодой учёный» № 43 (333), 2020- с.
10. Насиров Илхам Закирович, & Кузиболаева Дилноза Тухтасиновна. (2022). Результаты испытаний электролизеров. *Journal of New Century Innovations*, *17*(1), 119–120. Retrieved from http://www.newjournal.org/index.php/new/article/view/876
11. Nasirov Ilham Zakirovich- candidate of technical sciences, associate professor; Kuzibolaeva Dilnoza Tukhtasinovna- doctoral student. Abbasov Saidolimkhon Zhaloliddin ugli-doctoral student; Andijan Machine-Building Institute, Uzbekistan “Analysis of Automobile Mufflers”//“Texas Journal of Engineering and Technology” ISSN NO: 2770-4491 https://zienjournals.com Date of Publication:07-01-2023.
12. Ilkham Z. Nasirov, Dilnoza T. Kozibolaeva, Saidolimkhon Z. Abbasov Andijan Machine-Building Institute, Andijan, Uzbekistan *E-mail: nosirov-ilhom59@mail.r “New Approaches To Cleaning Exhaust Gases Of Internal Combustion Engines”.” Texas Journal of Engineering and Technology” ISSN NO: 2770-4491 https://zienjournals.com Date of Publication:08-06-2023 Peer Reviewed International Journal [46] Volume 21.
13. Nasirov Ilkham Zakirovich- Ph.D., Gaffarov Mukhammadzokir Toshtemirovich, Doctoral Student. (2023). Consequences Of Complete And Undercombustion Of Fuel. *Journal of Pharmaceutical Negative Results*, 3597–3603. https://doi.org/10.47750/pnr.2023.14.03.448.