

## EFFICIENCY OF USING COMPRESSED NATURAL AND LIQUID GAS FUELS IN TRANSPORT VEHICLES

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### ABSTRACT

This article lists the most basic indicators of the efficiency of the use of compressed and liquefied gas in cars. The use of gas fuel in reducing the negative impact of cars on the environment will not only improve environmental performance, but also extend the performance and service life of the engine, maintain the condition of parts for a long time and achieve a number of other positive indicators.

**Keywords:** transport, automobile, liquefied and compressed gas, gas cylinder, operational, natural gas, gasoline, diesel, engine.

### INTRODUCTION

Uzbekistan is one of the few car-producing countries. During the years of independence, the republic has taken measures to provide the domestic market with fuel and energy resources. Refining of oil, gas and gas condensate is being provided, and liquefied gas production is increasing. Comprehensive measures have been taken to convert some vehicles to liquefied and compressed gas, as well as a comprehensive infrastructure for their maintenance.

The growth of the economy and the associated increase in the number of vehicles is leading to an increase in demand for automotive fuel, including liquefied and compressed gas. Nowadays, there is no clear strategy for increasing the use of liquefied and compressed gas, the development of compressor stations for filling cars with gas and gas stations for cars.

It is necessary to timely provide vehicles with environmentally friendly fuels, replace gasoline with natural gas, and further develop the transport infrastructure of the country[5, 7, 12].

Today, nearly a billion vehicles on Earth emit about 300,000,000 tons of various toxic gases, dust, dry matter, and other solid particles into the atmosphere each year. In addition,

the heavy weight of the car also leads to an increase in fuel consumption, which in turn leads to an increase in the amount of toxic gases and noise (engine noise) released into the environment, which is the most pressing environmental problem today.

## METHODOLOGY AND ANALYZING OF REFERENCES

A gas cylinder vehicle is a vehicle that runs on compressed or liquefied combustible gases, and the gas cylinders are mounted on the car's chassis, sometimes on top. Natural gases, gases from oil refining and extraction, and coke ovens from coal are compressed. The compressed gas is pumped into the cylinder with a pressure of up to 20 MPa. Liquefied gases: propane-butane and propylene-butylene are liquefied at normal temperatures and pumped into cylinders at a pressure of 1.6 MPa; The liquefied methane gas is liquefied at atmospheric pressure and at a temperature of -161.3 and pumped to isothermal cylinders at a pressure of 1 MPa. The advantage of a car with a gas cylinder over a car running on liquid fuel is that it consumes less engine parts, increases engine power by increasing the degree of tension, saves fuel, reduces the toxicity of exhaust gases.

Today, vehicle exhaust is a major source of air pollution. To reduce emissions from vehicles, vehicles should be inspected quarterly. During the ecological inspection, the amount of exhaust gases from vehicles is checked and diagnosed using gas-smoke meters. Our department has a diagnostic point equipped with the necessary gas and smoke meters. In cases where the amount of smoke and gas exceeds the established standards, the use of vehicles is allowed only after their diagnosis and repair.

## RESULTS

The car fleet of the Republic of Uzbekistan is constantly replenished with new models of buses, trucks and cars produced in the country and abroad[4, 7]. In order to increase the competitiveness of cars produced in the automotive industry of the country, it is necessary to improve the design and performance of cars, improve their performance in alternative energy sources[8, 10]. In addition, the conversion of cars to compressed and liquefied gas, the use of polymers and composite materials, fully complies with fuel economy standards. The use of polymer and composite materials in the construction of domestic cars (mainly in the body and cabin), most importantly, the conversion to compressed and liquefied gas, has a positive impact on a number of environmental

indicators.

This is due to the following reasons:

1. Improvement of combustible mixture composition and combustion processes;
2. Improvement of fuel transmission and ignition systems;
3. The use of an electronic engine control system that neutralizes exhaust gases and traps gasoline vapors.

The most effective ways to improve the design in gasoline cars are as follows:

- recirculation of exhaust gases (reduction of NO<sub>x</sub> by 40-60%) and application of two-component catalytic neutralizer (reduction of CO and C<sub>x</sub>H<sub>y</sub> by 75-90%);
- control of fuel injection into the intake manifold (emissions are reduced by 25-30%);
- application of a computer system that controls work processes and exhaust gases, including dose spraying, electronic control system and three-component neutralizer;
- control of dosing spraying on multi-valve engine cylinders (charge moves slowly and exhaust gas toxicity reaches EURO-3 standards-CO up to 2.3 g / km C<sub>x</sub>H<sub>y</sub> 0.2... .0.3 g / km); 76
- control of standard parameters of gasoline by application of carbon-almond sorbents (evaporation of light hydrocarbons from gasoline is reduced by 85-95%). In diesel vehicles;
- turbocharger and air intermediate cooling (NO<sub>x</sub> and solid particles are reduced by up to 30%);
- Using of catalytic oxidation neutralizer with exhaust neutralizer (CO-85-95, C<sub>x</sub>H<sub>y</sub> -75 -80, NO<sub>x</sub> reduced by 20%);
- increase the injection pressure to 18... 20 MPA and its electronic control (fuel turns into very fine particles, burns quickly and completely, solid particles are reduced by 40-60%). Equipping series-produced cars with devices that reduce emissions;
- using of contactless ignition system (engine power increases by 3-5%, fuel by 7%, harmful emissions are reduced by 15-20%);
- use of a contactless ignition system with a forced economizer (30% reduction of harmful emissions);
- two-component catalytic neutralizer (replaced every 160,000 km);
- The catalyst, which is installed inside the neutralizer, is

contaminated with liquid and solid components of the exhaust gases during operation, covered with sulfate.

Therefore, after every 20... 25,000 km, it should be sprayed with compressed air, rinsed in hot water for 3, 4 hours, and then dried. After such regeneration 3 times the catalyst is replaced:

- using of compressed natural gas or liquefied gas (propane) as fuel;
- using of asbestos and lead-free coatings on brake pads and coupling discs (30% asbestos and 5% do not spread on dust);
- In order to reduce fuel consumption and environmental pollution, the design of nuclear cars produced in the automotive industry of the country is constantly being improved.

## DISCUSSION

Protection of the environment from the harmful effects of road transport is carried out mainly in two directions:

- 1) Improving the design of cars and their engines;
- 2) combating the harmful performance of vehicles in use.

New models and modifications of cars are becoming more sophisticated than existing cars, and modern tools and devices are emerging in their structure. However, the effective using of cars depends not only on the improvement of the design, but also in many cases determines the quality of maintenance during operation[3, 6, 9, 11].

Improving the engine operation, improving the design of cars and their engines, the use of various auxiliary equipment and high quality fuel, timely and quality maintenance and repair work and low-harmful, gas turbine, internal combustion engine, electric cars, injectors are being made with the production of engines.

## CONCLUSION

In conclusion, the using of gasoline and diesel fuel in automobile engines is a great harm to the environment and people, emits toxic gases, and overheats the engine, causing major operational and environmental problems that are compressed as alternative energy sources for cars. and the use of liquefied gas fuels provides many effective results. The using of gaseous fuel in automobiles is used as an environmentally friendly fuel for the environment, ensuring proper and long-term operation of parts in engine

operation.

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