



ADAPTATION OF THE VEHICLE SUPPLY SYSTEM TO WORK WITH COMPRESSED GAS

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Abstract

In recent years, many measures have been taken to improve the quality of services to the population in the field of motor transport, and the targeted tasks of the development of motor transport services are being consistently fulfilled.

Keywords: gas cylinder supply system, gas supply, internal combustion engine fuel, gas machine operation process.

Introduction

Economy and modernity are important in the development of any industry. For example, today there is a company or enterprise involved in the automotive industry, all of which are trying to produce a product that meets these requirements [1-4].

This is explained, first of all, by the increasing need for motor vehicles, and secondly, it is the result of the efforts of enterprises to strengthen their position in the competitive field. But in recent years, reducing the impact of motor vehicles on nature, and more precisely, on the environment of harmful substances emitted from their fuel, has become one of the urgent issues [5-9]. After all, the increase in motor vehicles in big cities causes several problems not only in keeping the environment clean but also in the healthy living of the population. Since the 50s of the last century, people began to worry about the dangers of environmental pollution. Air, water and soil are essential for all living things. But polluted air can cause illness and even death [10-19].

Materials and Methods

Installation of gas devices on vehicles is becoming popular in all countries of the world. In particular, now the management of the city of Paris has switched all public vehicles to methane gas.



In Germany, there are more than 800 branches that supply gas to cars, and measures are being taken to increase their number in the future. The expansion of the alternative energy network dramatically improves the atmosphere, as evidenced by the emission of up to 5 times less harmful gas from a single methane gas car [20-27].

Gas has other advantages besides economic efficiency. For example, it is possible to switch the car to both gas and gasoline on the way, starting from the car cabin. Even when there are malfunctions in the supply part of the gas system, the car does not stop moving. In addition, when the car's gas cylinder is completely filled, the car can move twice as much [28-35]. This makes it more convenient for long-distance drivers. Owners of expensive foreign cars equipped with a catalytic neutralizer also positively evaluate the gas fuel system. This system also has a positive effect on the car's depreciation. If gas is used correctly, the life of rubber devices will be extended by five years. It is a fact that reducing the environmental risk caused by the harmful gases emitted by a large number of motor vehicles is now of universal importance. At first, creating environmentally friendly cars was of little interest to ordinary people. The problem with these governments and Green organizations was the dates. But the steady rise in gasoline prices has fueled public interest in environmentally friendly cars and alternative fuels [35-41].

Today, in order to reduce atmospheric pollution by cars, the technical condition of cars and keeping it at the level of environmental requirements remains of primary importance. One of the directions for solving environmental problems is the transition to environmentally friendly and low-cost fuel types, along with the development of technological innovations that improve the design of any existing engines [42-49].

Results and Discussion

After the independence of our republic, the automobile industry appeared in our country, and the automobile fleet grew dramatically and is still growing. The increase in demand for gasoline and diesel fuels used as an automotive fuel has led to the use of alternative fuels, and the use of low-cost natural gas as motor fuel for automobiles is now on the rise [50-57].

It should be noted that there are many reserves of natural gas in our Republic, and these reserves contain high-quality natural gases that can be used as fuel for automobile engines without the use of excess gas processing or chemical treatment technologies, and can be used directly as fuel.



In addition, natural gas used as motor fuel is superior to petroleum products. When using them, high technical and economic indicators of the engine are achieved, because natural gas has very good anti-detonation properties, the property of forming a mixture with air is very good, and it can form mixtures with air in any ratio. In gas engines, the mixture burns almost completely, and the environment is less harmed due to the low toxicity of the used gases [58-61]. The use of gases eliminates the washing of the oil film from the walls of the piston and sleeve, and reduces the formation of soot in the combustion chambers, due to the absence of gasoline vapours, the oil on the walls of the cylinder liners does not burn, as a result, the service life of the engine and the oil change period is extended by 1.5-2 times. However, in gas cylinder vehicles, the supply system is complex, and the requirements for fire safety are high [62-67]. Gas engines have 10-20% less power than carburettor engines because gas takes up more volume when mixed with air than gasoline. Due to the large weight of gas cylinder equipment, the vehicle loses some of its carrying capacity. Also, one of the main disadvantages of natural gas as a motor fuel is the lack of volume concentration energy. If the heat of combustion of one litre of liquid fuel is 31426 kJ, this value for natural gas under normal conditions is 33.52–35.62 kJ, that is, the amount of heat in combustion is less than 1000 times. For this reason,

Conclusion

In order to use gas as motor fuel in vehicles, the gas must first be compressed to high pressure of 20-25 MPa. For this, it requires the use of special cylinders in its storage. To store gas under pressure, gas cylinders made of carbon and alloy steel and designed for a pressure of 15-32 MPa are produced. Each cylinder has a mass of 100 kg when not filled with gas, and when installing such cylinders in passenger cars, their payload is reduced. Therefore, such cylinders are mainly used in trucks and buses. To store gas under pressure, gas cylinders made of carbon and alloy steel and designed for a pressure of 15-32 MPa are produced. Each cylinder has a mass of 100 kg when not filled with gas, and when installing such cylinders in passenger cars, their payload is reduced. Therefore, such cylinders are mainly used in trucks and buses. To store gas under pressure, gas cylinders made of carbon and alloy steel and designed for a pressure of 15-32 MPa are produced. Each cylinder has a mass of 100 kg when not filled with gas, and when installing such cylinders in passenger cars, their payload is reduced. Therefore, such cylinders are mainly used in trucks and buses.



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