

THE ROLE OF MOTOR VEHICLES IN CREATION OF UNFAVOURABLE SITUATION IN CITIES

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Abstract. In the article it is written about the alternative energy sources, how motor vehicles pollute the environment and the ways of these problems solution.

Key words: hydrogen, synthetic motor fuels, hydrocarbons, sulphur, oxides, nitrogen, fuel, emissions, pollution, health.

Introduction

One of the most acute problems connected with environmental pollution of cities in Ukraine is the motor transport. The influence of this transport on city environmental problems are stipulated not only by air pollution but also by pollution of water pools (drains from automobile washing shops, parking lots, garages) and soils (wastes dirtied by mineral oils). At the same time the pollutants from vehicles are accumulated in the lowest layers of the ambient air which results in the accumulation of lead and other toxic and cancerogenic substances in organisms of people and environment injuring health.

Harmful influences of vehicles on atmospheric air have a number of vital issues which demand cardinal measures and decisions. There is no state strategy of transport development and oil-and-gas producing industry.

Quality of fuel used now does not meet even the existing requirements. Leaded gasoline and diesel fuel with high content of sulfur are used. Deterioration of vehicles influences on the emissions.

More than 50% of state vehicles and 40% of private vehicles are more than 10 years old. Thus it is necessary to note that imperfect designs of motors, poor maintenance services increase harmful emission.

Inefficient traffic control together with poor roads and bad road network increases the level of emission too. Enterprises of Ukraine do not

have any proper diagnostic equipment to control fuel quality, do not have enough exhaust gases toxicity control and 40% of the available ones are not in proper order. As a result the ecological state of about 150 thousand vehicles are not checked every day.

It is necessary to underline that there is no control of agricultural and road-building machines emissions too.

Analysis of fuel-sources and of ecological problem in this connection

Now fuel, energy and environmental problems are the most actual and global. They are connected with the shortage and price increase of power resources the demands in which are satisfied basically by fossil fuels. That is the exhaustion of natural resources in conditions of their inefficient use and worsening of the environment quality especially in cities are the major components of fuel-ecological crisis.

Today in the world there are more than 800 million automobiles with internal combustion engines. For the last 30 years the total number of them has increased three times and nowadays their manufacture grows constantly. In the next 10 years the number of automobiles will increase up to one billion and the fuel-environmental problems will become aggravated. Therefore in the nearest years almost all countries of the world are planning to decrease the consumption of oil motor fuels by 20 – 30 %.

Alternative energy sources and the ways of decreasing motor fuels consumption

The first real practical value of oil motor fuels consumption decreasing have two directions:

- considerable increase of automobile profitability including the application of more perfect power installation with high fuel efficiency and parametrical reliability;
- replacement of oil fuels by alternative energy carries

We can refer to alternative energy sources the following ones:

- natural gas as the most efficient energy source for the transition period;
- electricity(electro mobile);
- bio fuel (vegetable origin);
- synthetic motor fuels, including alcohol;
- hydrogen can be used as the highly effective additive to gas mixtures and as a necessary component during the production of synthetic motor fuels.

Motor transport as a source of air pollution

Motor transport is not only a power-intensive consumer of material resources including oil fuels but the principal in one ecological (thermal, chemical, physical and acoustic) environmental pollution especially of atmosphere in cities. The integrated toxic indicators of automobile engines are substantially defined by their operational fuel efficiency, parametrical reliability and fuel quality being used, including their power indicators, levels of carbon content, hydrogen, heavy metals, aromatic hydrocarbons, sulphur and other elements.

The analysis of atmosphere pollution of cities with intensive traffic has shown that the most dangerous is the influence of nitrogen oxides and cancerogenic hydrocarbons on a human body. Their share at the estimation of ecological danger of automobile engines makes 95% and even more.

Problems of reduction of the negative influence of motor transport on the environment can be solved only at scale building of interchanges in the most traffic, heavy places, better organization of traffic an optimum location of garages and more parking lots for automobile and car washing shops in cities.

The most actual problem of pollution of the environment by motor transport is emission into air. A tendency of emission growth into atmosphere is being observed now. To preserve an automobile for the mankind it is necessary to minimize its harmful emissions

Main principles of reducing the harmful effect of motor transport

Here different works are conducted all over the world and yield certain results. Now automobiles produced in industrially developed countries emit harmful substances by 10-15 times less than 15 years ago. In all developed countries there marked a tendency of engine emission of harmful specifications.

In 2000 more strict norms were introduced. There takes place not only a quantitative toughening of norms but also their qualitative changes. So instead of restrictions on smoke-screen there were introduced norms on firm particles. The list of substances being controlled extends constantly.

However for decreasing of harmful influence of vehicles on the environment it is necessary to undertake the following measures:

- to improve fuel content, to refuse ethyl gasolines, to apply additives to fuels reducing the appearance of toxic components;
- to increase the use of hydrogen fuels in the form of compressed gases;
- to use sun mobiles, electro mobiles;
- to improve internal combustion engines to reduce fuel consumption per unit of mileage;
- to develop and use effective neutralizers of exhaust gases reducing toxicity of motor transport in Ukraine;
- to equip all automobiles to be produced with neutralizers.

Conclusion

1) The reduction of the consumption of traditional motor fuels of petroleum origin and to decrease the levels of ejections maximally dangerous for human unhealthy substances and also SO₂ with waste gases of vehicles are the tasks being determined nowadays. For decreasing the consumption of petroleum fuels there are two ways: considerable increasing of the fuel efficiency for automobiles and their

substitution by the alternative energy carriers (natural gas, electric power, synthetic fuels).

2) Quality, quantity and cost of fuels nowadays determine the structure of the motor fleet and the level of energy-ecological requirements to automobiles of different categories. At the same time Ukraine doesn't have a balanced and detailed program concerning automobile fuels on the basis of raw materials of this country, economic possibilities of using modern technologies for production high-quality petroleum and synthetic fuels.

3) It is necessary for Kharkov region administration of power engineering, transport and recourses economy (with the attraction of scientists and specialists) to conduct an audit of regional energy resources and to prepare a long-range program of step by step reduction of consumption of petroleum fuels by motor transport and of natural gas in stationary power engineering, industry and in life.

In 2009 it is important to coordinate with a number of urban motor transport enterprises (including private enterprises) of building several modern gazomobiles and electromobiles (giving some significant privileges to these enterprises) with the intention to organize in Kharkov the production of vehicles operating on natural gas ad synthetic fuels.

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