

Environmental problems of the engine internal combustion

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The car became now the main transport for the vast majority of mankind. But it is unfortunately main global pollutant of environment. The problem of ecological safety got presently an exclusive sharpness: the share of the toxic substances which are thrown out by motor transport exceeded 60% of all emissions of the industry. Meanwhile the piston engine is irreplaceable as the most economic and dynamic.

Special governmental departments of many industrialized countries carry out comprehensive study of environmental and other problems and formulate system of norms, restrictions, requirements and incentives to producers and consumers of production. It becomes for the purpose of minimization of negative impact on the nature. Concern of the world community, the governments of many states were reflected by rates of technical development in a number of the international, European and national documents on ensuring ecological safety and protection of surrounding environment.

Therefore the majority of scientists and practitioners undertake urgent measures for decrease in toxicity of the fulfilled gases of the engine. And first of all — to reduction of quantity containing in them mono - and carbon dioxides, and also oxides of nitrogen and not burned down hydrocarbons.

The world fleet of vehicles generally consists of the cars working at gasoline. Petrol internal combustion engines do notable harm to environment.

Transfer of ICE to the liquefied and natural gas restrains need of creation of the necessary number of gas-filling stations.

For entry of the Republic of Kazakhstan into 50 most competitive countries of the world the President of Kazakhstan N.A. Nazarbayev designated strategic tasks. The great value has the solution of the tasks providing economic development at a steady ecological state of environment. In view of requirements of the resolution of the government of RK from September 27, 2007 of N 848 «About the statement of target indicators of transition to a sustainable development», definition of target indicators of pollution of atmospheric air as a specific component of environment, gets especially importance for the city of Almaty and reflects as a whole the general ecological situation of the megalopolis.

For the first time in Kazakhstan the pilot project on establishment of target indicators of pollution of atmospheric air in Almaty is executed and the plan of complex actions for decrease in pollution of the air pool and to achievement of target indicators of quality of atmospheric air is developed. «The temporary technique by definition of target indicators of pollution of atmospheric air for the city of Almaty» is developed and approved by the environmental protection Ministry from October 7, 2008 of No. 06-02-07-12/9066.

For management of an ecological situation of the city its assessment regarding existing pollution of the air pool is executed.

Continuous growth of emissions of polluting substances by motor transport became the main problem of pollution of the atmosphere of the city in recent years. Growth of number automobile and lorries, buses in recent years, objective difficulties in providing an effective traffic on the city highways, appeared automobile "jams", all this is one of the major defining factors in being observed decrease in quality of atmospheric air and increase in its pollution.

The most real alternative to gasoline and diesel fuel is the liquefied or compressed gas. Stocks it several times are surpassed by stocks of oil and technology of processing it is simpler, than technology of extraction of gasoline from oil. Besides, for transition to gaseous fuel practically it is not required to make constructive changes to internal combustion engines. As to emissions of harmful components, concentration of oxides of carbon and nitrogen in an exhaust of ICE working at gas, much lower, than in an exhaust of the petrol ICE even supplied with the most modern three-componential catalytic converter with the closed contour. At last, gas fuel practically doesn't contain compounds of lead and sulfur.

Gas perfectly mixes up with air and is evenly distributed on engine cylinders that guarantees its almost complete combustion and high fuel profitability.

Alternative fuel of gas is the cracking gas, received of gasoline directly on the car with all above-stated advantages before liquid fuel.

The offered innovative project gives the chance uses of low octane gasoline for receiving high-octane cracking gas directly in the car.

Essence of the project: process of thermal cracking of low octane gasoline occurs in the thermo reactor at the expense of heat of exhaust gases for receiving high-octane cracking gas directly in the car.

Structure cracking gas – hydrogen, methane, propane, butane and its analogs, more than 100 units having octane number.

Using cracking gas in a power supply system of the car will allow to correspond according to the content of harmful substances in exhaust gases to an environmental standard of Euro-4.

The developed scientific and technical provisions ICE functioning on motor transport on cracking gas open possibility of the cardinal solution of questions of rational use of fuel of an oil origin and reduction of harmful emissions in environment. Possibility to offer the decision for national economy on use of the gaseous energy carriers, received directly on the car as motor fuel.

Development of an innovative power supply system of petrol ICE will be the first practical decisions shown functional working capacity.

The offered decisions on ways and systems of the organization of working processes, systems of fuel supply and formation of a mix at application cracking gas are protected by the patent for the useful Russian Federation model and the international examination of PCT is carried out.