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Energy Saving using Hydrogen Fuel

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ABSTRACT: Using hydrogen energy is one way to save energy. This article presents the theoretical aspects of the use of hydrogen energy and describes the scope, types of energy.

KEYWORDS: hydrogen, pipe, electricity, space, methane gas, nitrogen fertilizer, fossil fuel

Methods: In addition to the renewable energy sources in nature, which we consider, there are other types of energy. Below we will look at how to extract energy from the hydrogen fuel and urban waste, which is currently being used by mankind.

With the onset of a little crisis in the market of anaemic-organic fuels, it is attempted to use other energy sources that replace oil and gas products. According to many scientists, in the development of modern energy, it is desirable to use hydrogen-a chemical element that is very common in nature, instead of hydrocarbon fuels. Hydrogen reserves are inexhaustible on our planet. In addition, hydrogen at the same weight allocates 3 times more heat than gasoline, and as a fuel it can be used in all branches of the national economy (in transport, industry, household services, etc).

The application of hydrogen fuel creates conditions for keeping the environment clean, since as a result of the combustion of hydrogen, the vapors of distilled water as a waste from it decompose into gas.It is very convenient to transport and store hydrogen. Over long distances it can be transferred through pipes. The transmission of hydrogen through pipes is several times cheaper than the transmission of electricity in giant power transmission networks [1, 153].

Scientists have found many ways to develop hydrogen fuel on an industrial basis, mainly from ordinary water. Its very large amount can be obtained from coal, whose reserves in the land Kurra are very large. The fact that hydrogen fuel can be obtained in the water, in the air, and even from space latitudes, where the air is sparse,has greatly increased the enthusiasm of this fuel in the business world, since there are practically no costs for its production, the benefit is obtained directly from the air. At the beginning of the 21st century, large business figures from around the world began to speak openly about the fact that interest in hydrogen energy is very large. USA. China, the countries of the European Union have invested billions of dolls funds for the production of hydrogen fuel. For only one hydrogen electrostance-sine project" Future Gen", the US government has raised 1.2 billion dollars. the dollar spent the amount, the Chinese state spent more than that for the same amount of electricity. Currently, for the development of hydrogen energy, Sharp, Sanyo, Hitachi, Toyota, Panasonic companies invest a lot of money.[4]

One of the possible methods of using hydrogen energy is the conversion of this chemical element into hydrogen fuel, that is, the appearance of a mixture of hydrogen and oxygen in a compressed or gaseous state. The combustion heat of the mixture in this form is higher than the heat of the mixture of gasoline (natural gas) and air. The development and mass use of hydrogen fuel is now delayed due to the fact that its cost is expensive, as well as the lack of its distribution infrastructure. The production of hydrogen fuel depends on the method of obtaining it. For example, the price of 1 kg of hydrogen fuel produced from the following substances:

- production of methane gas-2,5 doll./ weight loss;
- by electrolysis from water - 2÷10 doll./ weight loss;
- through high temperature treatment of coal in an airless place 1,5÷2,0 doll./ weight loss.[4]

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It is known that the development of hydrogen fuel production technology in this mode means that it can not be conjured with conventional organic fuels. But the current technologies, as a result of the replacement with modern technologies, lead to a decrease in the cost of producing hydrogen fuel, while the types of conventional fuels are becoming more expensive day by day.[4]

Currently, many light car manufacturing companies in the world are launching production of cars that will move on hydrogen fuel as well as hybrid (gasoline+hydrogen) fuel. According to German scientists, in the middle of the 21st century, cars with hydrogen fuel make up 75% of the Earth, while the remaining 25% use igina organic fuels [4].

The US Daimler and Honda, China Shanghai and the German VW are the leading companies in this area. Let's take, for example, the Hondaxx car, which works with hydrogen fuel. The Hondaxx car, which runs on full hydrogen fuel, is able to increase the speed up to 160 km/h and can exceed a distance of 500 km with a filled fuel tank. 5 kg of compressed hydrogen fuel is placed in its fuel tank. Currently, there are individuals who have 200 units of such cars, and more than 50 thousand motorists have expressed a desire to have similar cars. Even when the air temperature cools down to 300, it can be suddenly ignited

1-picture. Hondaxx light car running on hydrogen fueland the foundry Station (a)and the bus to Citaro (b)

Hondaxx brings the car 3 pieces of electrodvigatel in motion. If one of them turns the front wheels, the remaining 2 pieces are connected to the electrodvi - gatel keying wheels. If the power of the previous elektrodvigatel has a capacity of 80 kW/h, then the power of the elektrodvigatellarnng, which drives the next wheels, is equal to 25 KW/h (1a-figure). [5]

The Medesedes Citaro project of the Mercedes-Benz consortium is an indicator from the production of public vehicles working on hydrogen fuel for large cities. Currently, in the world, 40 units of such buses are being developed. The capacity of the bus electrodvigators is 250 kW/h, which consists of 40 people with passengers and their cargo at a speed of 80 km/h. Every 100 km will spend 25 kg of hydrogen fuel. 42 kg of hydrogen fuel is placed on the collar of the bus, and with this collar the bus passes at a distance of 167 km (photo 1b).[5]

CONCLUSIONS: Currently, the world produces 55÷60 million tons of hydrogen. Hydrogen is used mainly in the production of nitrogen fertilizers, converting low-frequency crude oil into motor oil. It is used in obtaining extremely low (minus) temperatures from compressed hydrogen and as a fuel for cryogenic rocket engines. Constant research work is carried out on the use of more hydrogen fuel and its use in place of gasoline.

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