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The Development of Electric Transport in the Republic of Belarus

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Today, there are discussions all over the world about whether the use of electric transport is effective. The problem of ecology is coming to the forefront of the world agenda.

Electric transport is the most environmentally-friendly mode of transport as no exhaust gases are emitted during its use. Since Belarus positions itself as a green country and is looking for ways to achieve a feasible minimum impact on the environment, this type of transport is ideal for implementation both in many industries and everyday life.

The field of electric transport is relatively new and researchers from different countries are constantly developing new technologies, thanks to which batteries and electric motors are being improved. Nevertheless, Belarus does not lag behind in this direction and adopts the best practices. The industry is quite new and though the work in this direction is extremely slow it is definitely successful. Electric cars, trolleybuses with the possibility of autonomous running, electric scooters and other types of vehicles are becoming widespread throughout the country.

Speaking about the use of electric transport, it is necessary to mention its production. Initially, the Asian market was the main growing market for electric vehicle manufacturers. According to the International Energy Agency, the share of China's electric car owners has doubled every year since 2013, although the US and Europe are not inferior and

also show a growth trend [1]. In general, global electric vehicle production is increasing every year (See Figure 1).

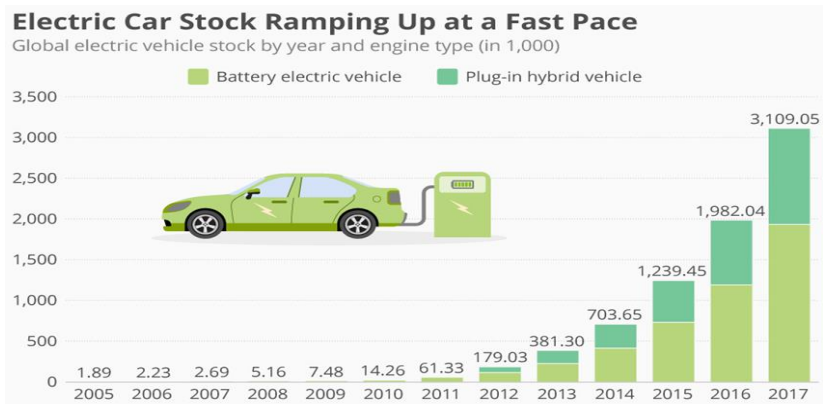


Fig. 1 – Global Stock of Electric Cars

Before buying an electric car, a potential owner should get to know a number of features, such as battery capacity, drive range, and the main types of charging stations and charger connectors. There are different types of charging stations depending on their capacity. In general, around the world there are charging stations with a capacity from 3.7 – 350 kW [2]. So, they charge electric vehicles for different periods of time. For example, after 10 minutes of charging with a 7.7 kW charger, the car will travel 7 kilometers while a more powerful 50 kW device will allow an electric car to travel 49 kilometers. In Belarus, slow chargers (22 kW) and fast chargers (120 kW) were put into operation. There are more than half of the fastest in the country. It must be taken into consideration that not only the power of the charger is important, but also the capabilities of the battery and the on-board charger of the electric vehicle.

The time required to the battery complete charge of an electric car is very easy to calculate. It is enough to find out the

battery capacity and divide it by the power of the charging station.

It may seem that charging electric vehicles is not so convenient for car owners who are used to ordinary gas stations. But if we talk about savings, electricity will cost users much cheaper. So, a full charge of the Nissan Leaf electric car, whose battery capacity is 24 kWh, is enough to drive 150 kilometers. Fuel consumption for the same distance for a similar car with a gasoline engine is about 10 liters, which, by the way, is twice as expensive.

The electric motor uses only electricity, so we can conclude that it does not pollute the environment. But it should be taken into account that for the production of electricity at a thermal power plant, a certain amount of fuel was consumed and released into the atmosphere: carbon dioxide and water, a large number of dust particles of various compound, sulphur oxides, nitrogen oxides, fluoride compounds, gaseous products of incomplete fuel combustion. Then the question arises: are electric cars so pollution-free? Curiously enough, electricity generated at nuclear power plants will help make them more environmentally-friendly.

According to a study by the medical journal Lancet, nuclear energy is the safest among all other energy sources [3]. This study confirms the harmful effect of the emissions described above on the atmosphere and human health. That's why, it is absolutely necessary to reduce fuel energy in favor of nuclear one.

Belarus keeps pace with the times and already has its own nuclear power station – the Belarusian Nuclear Power Plant (BelNPP). Hence, the daily volume of electricity production by the first power unit of the BelNPP is about 27-27.5 million kWh with a total make in the power system of about 95 million kWh. Since its inclusion in the unified energy system, the first power unit of the BelNPP has generated

almost 3.2 billion kWh of electricity, which is almost half of the annual electricity consumption by the population of the country. Consequently, a nuclear power plant will just be able to close the electric transport demand for electricity.

Due to the advantages of electric transport in terms of its environmental impact and financial benefits for drivers, as well as the presence of the BelNPP, which can meet its high energy needs, Belarus is well positioned to introduce a new means of transport and is heading towards phasing out fossil fuel vehicles and shifting from dirty technologies to a new environmentally friendly system.

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