

УДК 621.311:629.3

Harnak I., Falovskij A., Slesarenok E.

Why Electric Car Is not Environmentally Friendly

Belarusian National Technical University
Minsk, Belarus

Cars are an essential part of many people's lives nowadays. Since their appearance many things have changed. Recently, electric vehicles are gaining popularity due to the increase in prices for petroleum products. An electric car is a vehicle, which is propelled by one or more electric motors, using energy stored in rechargeable batteries. The production and population of electric vehicles is growing. In the course of campaigning and advertising, many people think that electric cars are more environmentally friendly than cars with an internal combustion engine. But while these new vehicles don't directly produce any carbon emissions, are they really as good for the environment as we think? Much depends on whether the electricity used by the cars is produced by renewable sources or a coal-fired energy plant. There are also ecological question marks over the components used in electric cars, including the battery and the use of rare-earth metals.

It should be noted that EVs release a lot of CO₂ during the manufacturing process. This is due largely to the production of lithium-ion batteries. It has been calculated an electric vehicle with a 100kWh battery emits 15-20 tons of carbon dioxide even before the vehicle ignition is turned on. It is approximately of 150 to 200 kilograms of carbon dioxide for each kilowatt-hour storage capacity in a car battery. A typical vehicle with an ICE only produces that much carbon dioxide after it has driven 100,000 km. What's more, the country in which batteries are manufactured as well as the materials used

has a great impact on the level of emissions produced. Also, its power reserve, charging time, battery life, battery replacement and, most importantly, disposal is considered. In fact, manufacturer's warranty the replacement of lithium-ion batteries for eight years or 100,000 miles, whichever comes first. However, there are still some problems with disposing of the electric vehicle batteries since the battery itself cannot just be thrown out. It's illegal to throw away any batteries with regular trash because their breaking down of landfills could pollute groundwater. Lithium-ion batteries are less toxic than lead acid ones, but they can still threaten people's health. And since there is no ideal way to recycle them today, they are simply sent to a landfill, where batteries begin to decompose, poisoning nature. Now, we must also take into account the production of electricity. Let's look at where the electricity comes from. Most of the primary electricity is generated by burning coal (47%), natural gas (21%), while a whole complex of combustion products is formed. The main one is carbon dioxide (CO₂). It turns out that all the same, there are emissions and not small only not from an electric vehicle, but from power plants that are the direct power supply of the vehicle themselves. And if we take into account electricity losses, the cost of coal, oil or gas, then we can conclude that electricity is not an environmentally friendly product, respectively, and the vehicle that run on it. There's no denying that more study is needed to understand the impact of EV battery production worldwide and more work is needed to develop methods that make it more sustainable for the environment. However, it is not entirely clear why some countries are trying to ban sales of vehicle with internal combustion engines as soon as possible. To achieve the maximum effect, it is necessary not only to transfer everyone to electric vehicles, but also to make the processes of their production and the production itself as environmentally friendly as possible.