



Electric Cars as the Cars of the Future

F.A.Omonov

Assistant, Department of Land Transport Systems and their Exploitation, Fergana Polytechnic Institute, Fergana, Uzbekistan
Email: fayzullo9596@gmail.com

O'U.Sotvoldiyev

Assistant, Department of Land Transport Systems and their Exploitation, Fergana Polytechnic Institute, Fergana, Uzbekistan
Email: u.u.sotvoldiyev@ferpi.uz

Q.M.Dehqonov

Assistant, Department of Land Transport Systems and their Exploitation, Fergana Polytechnic Institute, Fergana, Uzbekistan
Email: qdexqonov40@gmail.com

ABSTRACT

In this article, we provide information about the stages of development of the electric car industry through the data we know and do not know about the world electric car industry today, as well as statistics. We hope that in the future the results of this data and research will be used for the electric car industry of Uzbekistan.

Keywords:

Lithium-ion batteries, electric motor, Canalis analytical company, voltage regulator, Hyundai Kona, additional battery, alternative energy.

Introduction

Today, as the automotive industry enters a new phase of development, the amount of toxic gases emitted by cars into the environment is also declining. As a result, the planet is experiencing severe climate change and an increasing number of diseases. That's why a lot of work is being done today to produce electric cars [1-4]. Because the harmful effects of electric cars on the environment are significantly less. That is why electric cars are recognized today as the cars of the future. So what is being done today to create electric cars? To date, the world's leading car brands have begun work to produce their electric cars. For Example, Tesla, Chevrolet,

Audi, Porsche, Aston Martin, Volkswagen, Hyundai, Mercedes Benz, Ford, Volvo, Nissan, and so on. The proliferation of such brands indicates that shortly we are approaching a turning point in the electric car industry [5-9].

Materials and methods

If we look at the electric car industry and its origins, we can see that the world's first invented vehicle was also an electric car. Its inventor was Robert Anderson, who developed the first electric motor vehicle in 1832-1839. It was powered by a non-rechargeable battery and had a charge of only 6km. Probably a factor as to why they're doing so poorly. Today, the most

advanced technology in electric vehicles is Lithium-Ion batteries, which are capable of providing a lot of autonomy. Because of this, cars can reach high speeds. Rechargeable batteries are being used in a series of electric vehicles that are becoming more economical and useful. The main feature of this vehicle is its ability to run on electricity. This means that fossil fuels such as petrol and diesel can be built without fuel and, in addition, without polluting the atmosphere. Environmental pollution is a serious global problem that contributes to climate change [10-16]. It is also responsible for millions of premature deaths each year from respiratory and cardiovascular diseases. Let's take a brief look at how electric cars, which are recognized today as the cars of the future, are created. Electric cars have a much simpler structure than internal combustion engines. Its parts include an electric motor, voltage regulator, batteries, cooling system, auxiliary battery (for driving), board charger and other parts. The simplicity of these parts and their small size compared to internal combustion engines can also be a major reason for their mass reduction. If we take a set of batteries that drive it alone, their total weight is about 29 kg. Electric cars have the following advantages:

- reduction of environmental pollution due to the fact that the engines of electric vehicles do not emit harmful gases into the environment;
- Reduces conventional fuel consumption due to the fact that the electric car engine is powered by electricity (due to alternative energy);
- in the event of a collision with an electric vehicle, the electric vehicle will automatically stop as a result of the collision sensor disconnecting the batteries;
- The small number of spare parts increases the reliability of the electric car and, as a result, reduces the cost of repair and maintenance;
- Availability of batteries from the standard mains will significantly reduce costs;
- less noise when the car is on fire and moving;
- Electromagnetic braking of the electric motor allows for emergency braking.

In addition to the above advantages, electric cars are not without their drawbacks. The price of electric cars sold in the car market today is very expensive. On average, \$ 12,000 to \$ 70,000. After a certain period of time after the operation of the purchased electric car, its market price will fall significantly (we can see that the price of electric cars operated for about 5 years has decreased by 4,500). Charging time increases when travelling long distances. For example, the Reno Z electric car, which costs about \$ 14,000, can travel 200 km at full power. It takes 6 hours to fully charge the car at 220 volts and about 2 hours at 390 volts. As a result, a driver going to Khorezm can spend at least 10 hours supporting the vehicle. Decreased battery capacity from year to year due to improper operation (current life is estimated to be around 8-10 years) [17-23]. The average cost of replacing an electric car's batteries today is about \$ 4,500. However, despite these shortcomings, electric cars continue to dominate world markets due to low depreciation and simple and inexpensive maintenance. This is due to the fact that the shortcomings listed above will continue to be addressed one by one due to the development of the electric car industry [24-31]. To date, we are trying to answer the question of whether the world community is ready to use electric cars with some statistics. The number of charging points for electric vehicles is shown by the maximum and minimum charging points per 100 km across countries.

Table 1. The countries with the most charging points are every 100 kilometres

Nº	Country name	Number of charging points per 100 km, pcs
1	Holland	47.5
2	Luxembourg	34.5
3	Germany	19.4
4	Portugal	14.9
5	Austria	6.1

Table 2. The countries with the lowest charging points are every 100 kilometres

No	Country name	Number of charging points per 100 km, pcs
1	Lithuania	0.2
2	Greece	0.2
3	Poland	0.4
4	Latvia	0.5
5	Rumania	0.5

If we look at the tables above, we can see that the Netherlands is the world leader in the operation of electric vehicles. Of course, these are today's statistics. These figures change from day to day. Now let's calculate the use of electric cars in Uzbekistan. In these calculations, we are assisted by the number of imported electric vehicles, given that the electric car industry in Uzbekistan is still underdeveloped. According to the State Statistics Committee, the country imported 13 electric cars in 2018, 39 in 2019, 131 in 2020 and 809 in 2021. Imports of electric vehicles increased by 679 or 6.2 times compared to 2020. According to analyst firm Canalys, global electric vehicle sales in 2020 will increase by 39% compared to 2019, with 3.1 million electric vehicles sold during the year. Why electric cars are not popular in Uzbekistan? Many point to the technical reasons why electric cars are not popular in the country. Such consumers say they are worried that if the car breaks down, they will have trouble finding spare parts [32-38]. Also, due to the fact that not all regions of the country have a stable electricity supply, there are likely to be problems with the maintenance of electric vehicles. The lack of support stations throughout the country or the long time it takes to support relatively affordable electric vehicles is said to be one of the factors limiting the purchase of electric vehicles.

Conclusion

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