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Electric Car Charging Problem

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ABSTRACT

Electric car charging methods are one of the latest technologies used today. While not a groundbreaking contribution to the genre, it is certainly a work in progress. Wireless support is more convenient than wired support devices. With such devices, the driver who arrives at the charging station does not have to get out of the car. This is because when the wireless charging point is reached and the car is parked in the right place, it will automatically start charging and has similar advantages. The following is a summary of most of the wired charging stations

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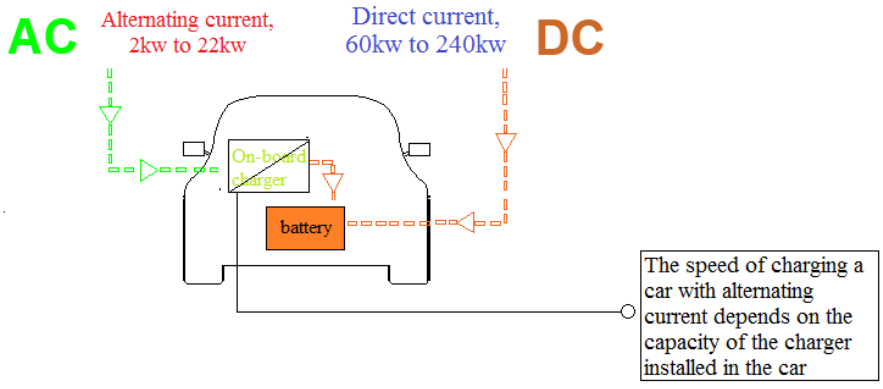
Introduction

For each mechanism to work, it must be given primary energy. A simple example is that a person is also nourished so that he can walk and work. The same process takes place in cars. That is, in cars with internal combustion engines, the primary source of energy is oil and gas products, and in electric vehicles, the primary source of energy is the amount of accumulated charge in the battery. After a period of operation, the electric car has a problem recharging to replace the used charge. There are two classes of chargers used to fully recharge electric vehicles. These are slow and fast charging stations. In the first case (slow) it takes 2 to 4 hours to charge the electric car from 20% to 80%, in the second (fast) - from 15 to 50 minutes. In some places, such as small hotels and shops, slow charging stations will suffice, but if we really want to attract as many electric vehicles as possible in our city and make money from them, we can install fast charging stations. Our installation is the right choice.



The company TOKBOR, which is responsible for the localization of charging stations for electric vehicles in our country, has already installed its own charging stations in several regions of the country. The charging stations installed by this company are of different types and implement two types of chargers: alternating and alternating current. Some of the charging stations installed by the company are as follows:

TOK BOR PRO 164 DC
DC 60 + 30 + 20 KW can power 5 electric cars at the same time

TOK BOR TRIPLE AC
AC 22 + 22 + 9 kW can power 3 electric cars at the same time

The following table shows the pairs of charging ports used in power supplies around the world:

	CHAdeMO	GB/T	US-COMBO CCS1	EURO-COMBO CCS2	TESLA
Connector					
Inlet					

Let me tell you about the results of tests on the battery capacity of Tesla's Model S electric car, which is currently a leader in the electric car market. The display of the remaining battery charge of electric vehicles varies. For example, Tesla's Model S electric car has an 85 kW battery charge in terms of how much distance it can cover with that charge [km]. That is, for example, 50 kW of power can cover a distance of 300 km. Tesla's Model S electric car has a full capacity of 85 kW, of which 76.4 kW has been tested in

practice. For safety reasons, in order to prevent the battery from running out of power, it is possible to cover another 8 km through the backup power even when the battery capacity is zero. When checked by Factory mode, it was found in practice that there is an 8.1% battery capacity remaining, even if the charge balance is 0. If the working capacity of the battery is 76.4 kW, then, if 8% of the battery is taken as a backup, the battery capacity of about 70 kW will remain at 0%, and if it continues to operate, it will have the capacity to cover another 8 km. ladi. If Tesla's Model C electric car is charged with up to 70 kW * hours of electricity, now the body price of 1 kW * hour of electricity is 295 soums, 70 kW · hours × 295 soums = 20 650 hours for a fully charged electric car 'm gets a full charge once with an amount of money. With this battery, it can travel 470 km. If additional functions of the car (heating and cooling system, etc.) are used, the distance covered will be less due to the additional power consumption of these functions. These electric cars are very economical, environmentally friendly and noise-free in all respects. Charging stations are different: American, European, Japanese, etc. The battery of the Tesla Model S electric car is guaranteed for up to 4000 cycles. This means that the process takes 1 cycle to charge the battery once and discharge it completely. This means that if it travels an average distance of 400 km on a single full charge, it is guaranteed to cover a distance of 400x4000 = 1,600,000 km in 4000 cycles. He walks after that, but the battery is "tired". In 2012, when the Model S came out, Tesla offered 85kWh batteries. Today, customers can order a battery that is 15% larger, with a capacity of 98 kWh. Model 75 and Model Y with 75 kWh battery are the leaders among cheaper electric vehicles. Competitors are approaching a distance of 412 km that the Tesla Model S can cover. The Porsche Taycan has a range of 309 to 327 km. Audi e-tron - from 328 to 351 km. The Jaguar I-Pace will cover a distance of 377 km. The Chevy Bolt EV has a range of 417 km.

Conclusion

The problem of charging electric cars still remains a topical issue today. This is due to the fact that the introduction of power stations that can provide more power in a short period of time will cause some difficulties, given the demands of the times. Despite similar challenges, with the problem of charging electric cars, engineers are researching the selection of the most optimal of the dozens of options and their implementation in practice. Research is paying off. Charging stations belonging to different companies have different designs and capacities. In our country, the external sources of power supply, as well as the amount of power, and the ability to simultaneously charge several electric cars are produced differently. TOKBOR, in cooperation with the Government of Ukraine, is developing electric car charging stations through a joint program and installing them throughout the country.

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