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New Era in the Automotive Industry

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Today a new era in the automobile industry begins. Combustion engines become obsolete. This is caused by a large number of disadvantages, such as: low efficiency, high wear parts, high cost of fuel, the need for frequent oil changes, high emissions [1].

But now carmakers around the world are investing huge sums of money in the development and creation of motor vehicles with electric motors, because they cover most disadvantages of internal combustion engines.

History of electrical engines

The history of electrical engines begins much earlier than the history of internal combustion engines. It starts in 1821, when British scientist Michael Faraday demonstrated the principle of converting electrical energy into mechanical energy [2].

History of electrical cars

The first electric car prototype was invented in 1828 by Hungarian inventor Anjos Dzhedlik. It was looked like a cart more like a skateboard than a car with electrical engine. The first electric car was created in 1841. The main disadvantage in early electric cars was hard system of charging. The first electric car used the lead battery of the Bari system, which had 36 cans (volt columns). It demanded recharge every 60 versts (~ 64 kilometers). The total power of the car was 4 horsepower. There were no advanced AC-to-DC converters, charging was

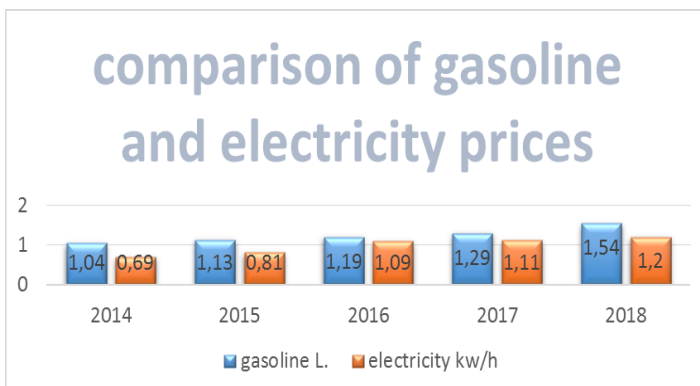
done in an extremely complicated way. An electric motor that operated from AC was used for recharging. In 1906 a relatively easy-to-use rectifier was invented. The revival of interest in electric vehicles occurred in the 1960s due to environmental problems of vehicles, and in the 1970s due to a sharp increase in the cost of fuel as a result of energy crisis. However, after 1982, interest in electric vehicles was asleep again. This was caused by a sharp change in the situation on the oil market [3].

Advantages of electric cars

In recent years, due to the continuous increase in the price of oil, electric vehicles have begun to gain popularity again. The main advantages are: cost reduction, pollution abatement, noise reduction, higher level of safety, cost price.

Cost reduction

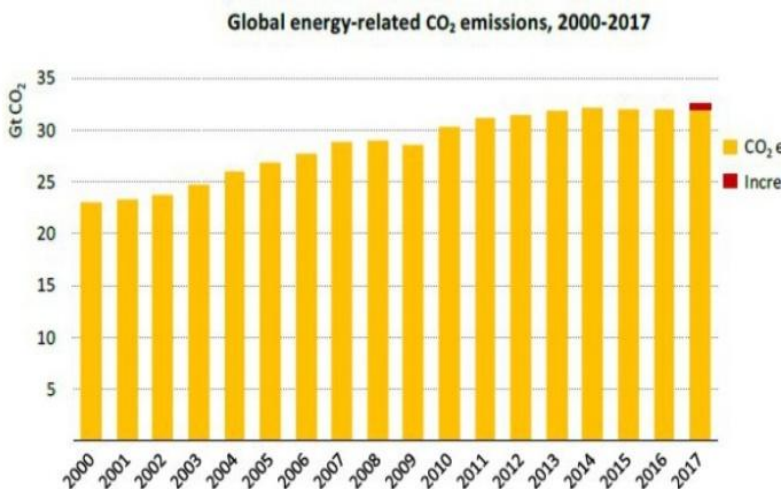
An electric car is a great way to save on fuel. The cost of gasoline is gradually increasing.



Pollution reduction

A running engine does not emit any harmful gases or other substances, so that it itself does not pollute the

environment. Of course, here we must also take into account the way in which electricity is produced. Ideally, to minimize



the environmental impact, it should be produced from clean, renewable energy sources. These include: sunlight, wave energy, wind, water flows, and geothermal heat [4].

Noise reduction

Electric motors are capable of providing quiet and smooth acceleration. Higher level of safety

Road safety is a top priority for any sensible driver. Electric cars are quite safe on the road. Thus, in the event of a collision, the airbags will work; the collision sensors will disconnect the batteries, so the car will stop. This reduces the likelihood of serious injury in the event of a car accident, not only for the driver and passengers of the electric vehicle, but for the passengers of the vehicle with which the collision occurred.

Cost price

Gone are the days when buying an electric car meant spending a fortune. A modern electric car has a lower maintenance cost. The electric motor does not require lubrication, and with it there is no need to visit maintenance stations as often as with an internal combustion engine.

Disadvantages of electric cars

Despite the high development of electric cars, disadvantages still remain.

Recharging stations

Electric recharging stations appeared in Europe in 2015 but so far the infrastructure is in its infancy. This is really what creates a serious problem in the operation of an electric car. Electricity is not free.

It is necessary to carefully select the electric vehicle, since different models require different charges for normal functioning. So choosing the wrong model can lead to significant electricity bills.

Short run and limited speed

Due to the lack of technical progress in the field of batteries, most electric vehicles can travel from about 160 to 240 km without recharging. Therefore, it is difficult to consider them as suitable for long trips, especially given the lack of charging stations, although some models promise to go up to 480 km without recharging.

Recharge time

It takes usually about 8-10 hours to charge an electric car fully. Consequently, a special recharging station may be required, at which the electric vehicle can stay during this time. What to do all this time? [5].

We have been looking for the best way to transport things and other people for centuries. Maybe somebody will come up with a new form of transport. But today electrical

transport is the most efficient type of transportation. A few years ago, people did not even think about using electric motors as the most effective means of transportation. But even today we can say that the future is now.

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