gradually developing and implementing new technologies to overcome them. The lack of government support, high production costs, and shortage of skilled workers are the major challenges that need to be addressed. However, the introduction of new technologies such as electric cars, 3D printing, and safety technologies is a positive trend that will contribute to the development of the industry.

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## THE EVOLUTION OF THE FIRST ELECTRIC CARS

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The history of electric vehicles goes back over a hundred years. Many do not know, but the first creators of self-propelled vehicles relied on an electric drive. After all, the electric motor was invented much earlier than the internal combustion engine. The first attempts to create a car (then it was called a little differently) began in the mid-30s of the XIX century, and everything was conceived as a fairly large project

with great prospects.

Today it is generally accepted that Elon Musk and Tesla gave a serious impetus to the development of electric vehicles, but it is not entirely fair to think so in relation to other participants in the industrial revolution. In addition to industry innovators close to our time, one cannot fail to mention the achievements of the inventors of the century before last and the last century, who made a significant contribution to the seemingly uncontested dominant position of cars with internal combustion engines.

The article presents the chronological line of development of electric vehicles and the most significant inventions in this industry 1832 The first attempts to create a car began in the mid-30s of the XIX century, and everything was conceived as a fairly large project with great prospects. In Aberdeen, Scottish inventor Robert Anderson builds a prototype electric car, which has been brought to life in the form of a small electric-powered cart. Even despite the not quite ordinary body, this invention may well be considered a full-fledged electric car [1]. 1881 The three-wheeled electric car of the inventor Gustav Trove was presented at the "Paris Electricity Exhibition".

A full presentation was held, which demonstrated the capabilities of a car that could accelerate to 12 km / h and drive a distance of 26 kilometers. 1884 English inventor Thomas Parker creates an electric car with rechargeable batteries of his own production. Interestingly, this is the same Parker who saved the passengers of the London Underground from smoke and burning, electrifying it a few years after the invention of the “electric car” [2]. 1890 The idea of creating electric vehicles migrates across the ocean and settles in the minds of American inventors. The first of these is an expatriate Scot from Iowa, William Morrison, who creates a 6-seater electric car that can travel 23 kilometers and is adapted for use on ordinary roads. The model was shown at the Chicago World's Fair in 1893. Interesting fact: In 1895, the first automobile race was held in America, the winner of which was an electric car.

In 1899 Belgian pilot and designer Camille Jenatzi set a speed record of 100 km/h in the Jamais Contente electric car. The record-breaking electric car is interesting for its technology, which included two electric motors providing 68 horse power, as well as a braking system that stopped the car by changing the poles of the connection

to the energy source.

1900 The famous Ferdinand Porsche, at the age of 23, builds his first car, the electric Lohner, which, by the way, became the first front-wheel drive car in the world, and besides, with an installed power steering. 1902 Walter Baker's "railroad torpedo" electric car set the first officially recorded speed record of 167 km/h, which lasted 64 years. Sometime later, he builds an even more powerful electric car, but during a record race he crashes into a crowd of people, killing two of them and after that he never drives again. Interesting fact: The first car dealer who sold exclusively electric cars appeared in America in 1896.

1899 Creation of the "Electric Vehicle Company" - an industrial association of the seven largest American manufacturers of electric vehicles with the aim of monopolizing (then it was still allowed) the US market. The emergence of this company is a clear demonstration that at the end of the 20th century, electric vehicles were one of the highest priority personal vehicles. 1905 The release of the first Fritchle electric car by The Fritchle Automobile & Battery Co, interesting in that the declared range of the electric car was 160 km - a solid range even for some modern models.

Intrigued and advertising cars, which said that the company's electric car is not only a city car, but also an excellent means of transportation over long distances. 1907 Founding of the legendary Detroit Electric Company, which was the first in the world to mass-produce electric vehicles that were incredibly popular with women. Even the main auto manufacturer of the era, Henry Ford, bought the company’s cars for his wife, and this despite the release of his main brainchild Ford T, which, figuratively speaking, “buried” or at least delayed the development of the electric car industry for many years. Detroit Electric cars were produced and serviced from 1907 to 1939. 1913 This year can be considered a historical, but not the most positive milestone in the history of the development of electric vehicles. This year, Henry Ford is launching his new assembly line (conveyor) for the mass production of his Ford T. This leads to the fact that gasoline cars become two or even three times more affordable than electric cars, the manufacturers of which, in turn, have nothing to offer in return for the success of Ford. Petrol cars offered virtually unlimited mileage, while the longest range of an electric

car was 65 kilometers and a top speed of 32 km/h.

The great popularity of electric vehicles among women also led to a certain bias towards them from the men who used to dominate in that distant masculine era. Thus, the industry is in decline for the next 50 years. [2]. At the end of the 20th century, electric vehicles were one of the highest priority personal vehicles, which is also clearly demonstrated by statistics indicating that as of 1900: 38% of cars in the United States use electricity, 40% drive a steam engine and 22% use gasoline.

An interesting fact: In the 70s of the XX century, a fuel crisis broke out in the world, which was caused by political conflicts of the leading countries of the world. Fuel prices began to rise, which negatively affected the US economy. To solve this problem, the US Congress in 1976 passes, as it turned out, a revolutionary law "to expand research in the field of electric motors, batteries and other components suitable for the creation of electric or hybrid vehicles.

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## HOW TO CHARGE AN ELECTRIC CAR

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Modern electric cars typically come with a charging system that allows them to be charged quickly and efficiently. There are different levels of charging speeds that depend on thetype of charger being used, as well as the capacity of the car's battery.

Level 1 charging is the slowest, using a standard 120-volt household outlet to provide a charge of up to 5 miles of range per hour.Level 2 charging is faster and requires a dedicated charging unit that uses a 240-volt power source. This can provide up to 25 miles of range per hour of charging. These charging stations are commonly