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ANALYSIS OF THE MARKET OF INNOVATIVE TECHNOLOGIES FOR THE PRODUCTION OF ELECTRIC CARS BY TESLA¹

Investigate the current state of development of electric cars, especially Tesla company and outline the prospects for its further development. Analyzed the task of the scientific work consider the role and place of electric cars in the transport system; to analyze the technical and economic features of electric cars; analysis of global and Ukrainian production of electric cars and to analyze the potential and competitiveness of electric cars in comparison with cars with internal combustion engines; program development prospects of electric cars based on methods of stimulating electric car markets in different countries of the world.

Key words: electric cars, Tesla, brand.

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АНАЛІЗ РИНКУ ІННОВАЦІЙНИХ ТЕХНОЛОГІЙ ДЛЯ ВИРОБНИЦТВА ЕЛЕКТРОМОБІЛІВ КОМПАНІЄЮ TESLA

Зараз у розвитку ринку електромобілів відбувається новий стрибок. Електромобілі є актуальною темою для стратегічного розвитку як автомобільних компаній, так і урядів. Перехід на електромобілі загалом є перспективним, але його реалізація у світі поки що є досить складним процесом, специфіку якого розберемо в цій роботі.

Досліджено сучасний стан розвитку електромобілів, особливо компанії Tesla та окреслено перспективи його подальшого розвитку. Проаналізовано завдання наукової роботи розглянути роль і місце електромобілів у транспортній системі; проаналізовано техніко-економічні особливості електромобілів; аналіз світового та українського виробництва електромобілів та аналіз потенціалу та конкурентоспроможності електромобілів у порівнянні з автомобілями з двигунами внутрішнього згоряння; перспективи розвитку програми електромобілів на основі методів стимулювання ринків електромобілів у різних країнах світу.

Ключові слова: електромобілі, Tesla, бренд.

Formulation of the problem in general

Currently, a new leap is taking place in the development of the electric vehicle market. Electric cars are a relevant topic for strategic development of both automobile companies and governments. The transition to electric cars is generally promising, but its implementation in the world is still a rather complex process, the specifics of which will be analyzed in this work.

Analysis of recent research and publications

In the scientific literature, insufficient attention is paid to the use of electric vehicles in Ukraine, considering the fact that this type of transport is not yet widespread. Lieven T. researched policy measures to promote electric mobility from a global perspective [3]. Langbroek J. H. M., Franklin J. P., Susilo Y. O. analyzed the effect of policy incentives on electric vehicle adoption [4]. M. M. Dmitriev, V. V. Kukhtyk, I. O. Kukhtyk emphasize the relevance of the introduction of electric cars in Ukraine to widespread use, although this may bring the owner additional problems related to maintenance and repair. A problem for potential buyers electric cars becomes the price of their purchase. But other ways of switching to the most ecological mode of transport are also possible. Yu. M. Overchenko, L. V. Horpinyuk investigate the issue of converting a small passenger car into an

¹ The research project sponsored by International Visegrad Fund named «Tesla strategic brand management in Ukraine, Slovakia and Poland».

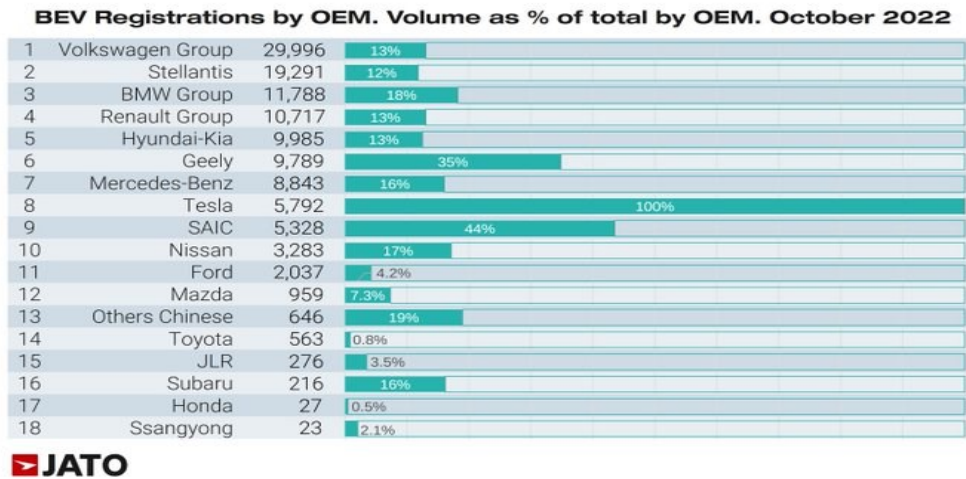
electric car. Iosifov V. V. considered modeling of the effectiveness of measures of state support for the development of electric vehicle transport [5].

Formulation of the goals of the article

To investigate the current state of market development electric cars and outline the prospects for its further development.

Results

Volkswagen Group led the electric cars market in Europe in October. These cars represented 13% of the German maker’s total registrations during the month (pic. 1).



Pic. 1. The most popular electric cars in the world. British analytical firm JATO

One of the best and most common in Europe was released in Japan today electric cars "Nissan Leaf". Mass production of this of electric vehicles began in 2010 at the Oppama plant. Fully charged batteries, this electric car can travel up to 160 km and develops speed 140 km per hour. A big step in the design and construction of cars electric cars were made by the American company "Tesla Motors". Known professional

the publication in the automotive industry "Consumer Reports" called electric car "Tesla Model S" the best car that its experts have ever tested. During the tests, this model scored 99 points out of 100 possible. The speed of this electric car reaches from 210 to 240 km per hour (depending on the cost), and the range is up to 426 km [1].

New passenger car registrations in the EU

12 month trend



Pic. 2. New passenger car registrations in the EU

In November 2022, the EU new passenger car market showed another significant increase (+16.3%), the fourth in a row this year, to 829,527 units. This is reported by Ukravtoprom with reference to data from the European Association of Automobile Manufacturers. Most of the region's markets contributed positively to this overall growth, including the top four: Germany (+31.4%), Italy (+14.7%), Spain (+10.3%) and France (+9.8%).

However, as emphasized by EAAM, last month's volumes remained significantly lower than the pre-pandemic level of November 2019, when 1 million cars were registered. Despite recent strong results, the decline from January to July was enough to lower the year-to-date cumulative figure. In the first eleven months of 2022, the number of new passenger car registrations in the EU was 6.1% lower compared to the same period last year and

amounted to 8,359,317 units. According to the results of this period, all the main markets of the European Union suffered losses.

At the same time, today electric cars are gradually capturing the automotive market of Ukraine. Undoubtedly, the advantages of electric cars will make them the transport of the future and, perhaps, very soon, but in addition to the advantages, electric cars have disadvantages, which are summarized in the table 1.

Table 1

Disadvantages and advantages of electric cars

Advantages	Disadvantages
Maintenance and fuel costs are significantly lower expenses for a classic car.	Short mileage and limited speed.
Electric cars are able to provide quiet and smooth acceleration, with a faster one acceleration	Long "charging" time. Although new electric cars and you can charge up to 80% in most cases in 40 minutes.
Local reduction of air pollution in cities	Underdeveloped infrastructure of charging stations in Ukraine.
Simplicity of design and management is high reliability and durability of the crew part (up to 20-25 years old).	The problem is production and disposal batteries, which often contain toxic substances components (eg lead or lithium)
Due to the smaller number of parts and nodes, the reliability of the electric car increases and, as a result, repair costs are reduced and service.	Reduction of power reserve in winter. Through inclusion interior heating, steering wheel and seats, power reserve at negative temperatures decreases in on average by 25-30%

Source: author

We can conclude that the company Tesla can be called innovative, because every 3 years, it produces a new, improved product - a model of an electric car (table 2).

Table 2

Signs of innovation in today's market by Tesla

Electric cars	Tesla electric cars are perhaps their most famous product. Although electric cars have been around for quite some time, Tesla was the first company to truly master this technology.
SuperCharger stations	To make long-distance trips by electric car more feasible, Tesla developed a network of SuperCharger stations. These stations allow Tesla owners to charge their cars in a fraction of the time it takes to charge a conventional electric car, making long-distance trips more convenient.
Autopilot	Tesla's autopilot function is another revolutionary innovation. This feature allows your car to drive itself and could revolutionize the way we think about transportation. Although Tesla is not the only company working on self-driving cars, it is certainly the most famous. Tesla's Autopilot feature is currently the most advanced of its kind, and it's only getting better.
Solar roofs	In 2016, Tesla introduced its solar roof. Solar tiles look like ordinary tiles, but actually consist of solar panels. These roofs are designed to collect solar energy and convert it into electricity, which can then be used to power various electrical appliances in your home or at work. This innovation makes homes more energy-efficient and aesthetic. A solar roof is a great way to reduce carbon emissions and save money on your energy bills, and Tesla tops the list when it comes to this technology.
PowerWall	In addition to its solar roofs, Tesla also offers a product called the Powerwall. Powerwall is a battery that can be used to store energy obtained from the sun or the grid. This stored energy can then be used to power your home or workplace in the event of a power outage.

Source: author

The term "the most innovative company in the world" is somewhat incorrect. There is no such thing as a more innovative company than any other. Innovation is relative, and what one company may consider innovative may not be considered innovative by another. This explains why companies with the most patents are not considered the most innovative. Therefore, there is no such thing as "the most innovative company in the world".

Conclusions from this research and prospects for further research in this direction

Having studied the current state of development of the electric car market, it was the prospects for its further development are clarified and outlined. An ecological mode of transport is not a prospect, but our future society. Despite a number of avoidable disadvantages of electric cars or reduce their impact thanks to government incentives (reduction of taxes and exemption from them, provision of benefits, etc.), "green" mode of transport has many advantages over cars with an internal combustion engine. To stimulate further sales of electric cars, it is necessary reduce the significant gap between the cost of an electric car and conventional cars. For example, the implementation of a certain range of actions and measures to reduce prices batteries, because they are the most expensive element of an electric car. Expansion of the latest infrastructure and innovative charging stations roads, introduction of free parking or charging stations that will significantly increase the demand for an ecological mode of transport. State incentive support for tax exemption and customs duties on the import of electric vehicles would correspond to global trends development of the electric car market, but in our opinion, it is more promising implementation of measures to support the domestic producer of electric cars.

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