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ANALYSIS OF MODERN MATERIALS AND TECHNOLOGIES ON AGRICULTURAL MACHINERY

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Abstract: *The development of new materials and technologies has a significant impact on the quality of agricultural machinery, making machines more efficient, durable, and cost-effective. This study analyzes the impact of modern processing technologies on agricultural machinery manufacturing*.

Keywords: *new materials, cutting-edge technologies, agricultural machinery*

Due to the growing need for high-productivity and efficient agricultural production, new materials and technologies are becoming increasingly important in agricultural machinery manufacturing [1]. The purpose of this paper is to analyze some of the materials and technologies used in agricultural machinery manufacturing.

Agricultural machinery is an integral part of modern farming. It plays a vital role in the mechanization of agricultural operations, improving productivity, and increasing crop yields. The development of new materials and technologies has significantly impacted the quality of agricultural machinery, resulting in machines that are more efficient, durable, and cost-effective.

The development of new materials has played a significant role in agricultural machinery manufacturing. Let’s look at some examples of new materials that have been used in agricultural machinery manufacturing. High-strength steel is a lightweight and durable material that has replaced traditional steel in the construction of agricultural machinery. This material is stronger than traditional steel, which has made it possible to produce lighter and more efficient machines [2].

Aluminum is another lightweight material that has been used in the manufacture of agricultural machinery. This material is corrosion-resistant and has

excellent thermal conductivity, making it an ideal material for use in machines that generate heat [3].

The development of new technologies has also had a significant impact on agricultural machinery manufacturing. Let's look at some examples of new technologies that have been implemented in agricultural machinery manufacturing.

Autonomous farming is a technology that uses artificial intelligence to automate farm operations. This technology has been integrated into the design of agricultural machinery, enabling machines to operate without human intervention, thereby reducing labor costs and increasing efficiency.

Telematics is a technology that uses GPS and other wireless communication technologies to monitor and track the performance of agricultural machinery. This technology has been incorporated into the design of agricultural machinery, enabling machines to be remotely monitored and maintained, which saves time and increases productivity.

The introduction of new materials and technologies in the design of agricultural machinery has revolutionized the agricultural industry. The use of high-strength steel and aluminum has made it possible to create machines that are more cost-effective and durable. The adoption of autonomous farming and telematics has led to the creation of machines that can plant and harvest crops with precision, reduce labor costs, and improve operational efficiency. However, there are also certain limitations associated with these new materials and technologies, such as high costs and maintenance requirements.

Modern manufacturing technologies, including digital control, laser processing, virtual manufacturing, and the use of CNC machines, among others, are becoming increasingly popular. These cutting-edge technologies not only effectively stimulate the development of the manufacturing sector but also improve the efficiency and quality of agricultural machinery production, help solve problems inherent in traditional processing and manufacturing methods, and contribute to the creation of high-tech machinery and the development of agriculture as a whole. The implementation of these technologies also makes it possible, to a certain extent, to

improve control models and increase their efficiency, thereby contributing to the development of agricultural machinery manufacturing.

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Анотація: *Розвиток нових матеріалів та технологій має значний вплив на якість сільськогосподарської техніки, роблячи її більш ефективною, довговічною та економічно вигідною. У цьому дослідженні аналізується вплив сучасних технологій обробки на виробництво сільськогосподарської техніки.*

Ключові слова: *нові матеріали, передові технології, сільськогосподарська техніка*.

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