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PROSPECTS FOR THE USE OF POLYMERIC MATERIALS IN MACHINE PARTS

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ABSTRACT

The article studies polymer materials used in the production of automotive parts. The authors have drawn their own conclusions based on the research presented in the article. The use of these materials is a great way to reduce the cost of production and labor costs, as well as compact the design of equipment, reduce its mass, increase operational reliability. The widespread use of polymeric materials is due to the fact that they can directly replace precious metals and wood materials, often surpassing them.

KEYWORDS: *Non-Ferrous Metals, A Polymeric Material, Road Transport, A Polymeric Composition, Physic-Mechanical Properties.*

INTRODUCTION

It is difficult to imagine the design of modern vehicles without polymer materials. The use of these materials is a great way to reduce the cost of production and labor costs, as well as compact the design of equipment, reduce its mass, increase operational reliability. The widespread use of polymeric materials is due to the fact that they can directly replace precious metals and wood materials, often surpassing them.

Even economically and financially strong countries are not able to achieve this, as it is very difficult to enter the automotive market and compete. Uzbekistan was the first among the former Soviet republics to enter the car market, which has strong competitors.

First, the establishment of the automotive industry in Uzbekistan required large investments, high technology and training of qualified personnel.

Second, for automakers, under the influence of economists, there had to be a situation of constantly producing interchangeable goods. This requires the resolute development of strong engineering and design work, the necessary measures to continuously improve the creative and technological process.

Third, raw materials. spare parts suppliers, i.e. suppliers had to gain their trust as they had a big impact on the car business.

MATERIALS

At present, GM-Uzbekistan produces cars that meet world standards.

From the above, it is clear that measures have been taken to launch marketing services of GM-Uzbekistan CJSC at full capacity, production of spare parts for manufactured cars, sales and after-sales service. Modern materials (polymer material or composite material) and new technology for obtaining car parts from them are used in the operation and maintenance of cars belonging to the population.

The role of polymer materials in the development of automotive technology is immense and its prospects are growing day by day. This is explained by the unique properties of polymeric materials and the high technical and economic performance of products made from them. The question arises, how do polymer materials differ from other materials?

First of all, polymeric materials are materials that combine unique chemical, physicochemical and physico-mechanical properties, but also differ from them in the ability to produce products with the required properties. It should be noted that the product made of polymeric material has the ability to maintain its operational quality for a long time.

Another feature is that it can be used to make products of any shape and size (details, assemblies, etc.), as well as the technology of production of products from polymeric materials is convenient, labor and energy consumption is several times cheaper than metal.

The raw material of the polymer material is petrochemical products and the main organic synthesis. So the raw material reserves are unlimited!

These factors indicate that the technical and economic efficiency of the production and use of polymeric materials is extremely high.

It is worth noting the specificity associated with the use of polymeric materials in the automotive industry, which in some cases requires the transfer of economic efficiency from the production of the product to the conditions of its use. The materials used in production are new and they are more expensive than traditional materials. Therefore, the replacement of used materials with new ones leads to an increase in the cost of the product. However, the production of products from new materials has a positive impact on its reliability and durability.[17]

In the use of polymeric materials, however, it allows to solve previously unresolved problems, ie to find a solution by combining several complex properties that are necessary.

In view of the above, the topic of qualified graduate work consists of topical tasks and can be considered as a very promising direction for future automakers.

In today's era of advanced technology and technology, unprecedented achievements are being made in the automotive industry. At the beginning of the last century, the earliest notions about the car appeared and were later created, and now the complexity of cars is the modern technical means and unique experience of car owners. Lack of skills, the need for constant maintenance and repair of cars led to the emergence of a system called car maintenance or car service.

Car service has entered our daily life as a new term. Daily maintenance, 1,2-maintenance, seasonal maintenance, supply of fuel and spare parts, model campsites on highways, car service stations and other types of maintenance includes work to be performed at the provider's outlets. Expenses for the period of operation (depreciation) of the car for all types of work covered by the car service, accounting for 87% of the total costs. The remaining 13% is spent on the production of a new car. In terms of labor costs, 1.5-3.5% of labor is spent on the production of a new car, while 96.5-98.5% of labor is spent on maintenance of the car during its service life.

In turn, the daily and annual mileage of the car depends on the natural climate and conditions of use at the cost of fuel and lubricants TXK and T service. It depends on the storage of the cars and many other factors.

The quality of fuel and lubricants used during the operation of the car has a sharp impact on the quality of performance of the parts, components, units, wear and tear, failure in general. If we can bring the quality of fuel and lubricants to the level of normative indicators, we will be able to reduce the demand for TX and T in cars to a certain extent.

Improving the conditions of use of cars will depend on the improvement of car storage conditions and the existing network of roads in the region, the training of drivers, seasonal changes in natural climatic conditions.

Toxic gas produced by automobiles pollutes the environment with dust particles rising from the roads, leading to an increase in road traffic accidents and the improvement and expansion of road networks. In order to prevent problems, the owner of a personal car must keep his car in good condition for a long time and keep it in good condition for his own use. have to go.

Most of the car is now made of polymer material. Therefore, the study of the technology of obtaining car parts under pressure is a topical issue.

The properties of polymeric materials depend on the composition and amount of substances added to them. By varying the amount of these substances, it is possible to obtain compounds of various, even predetermined properties. Their most important positive properties are the water resistance of many polymeric materials, their ability to withstand the effects of many aggressive substances and petroleum products. Advances in chemistry make it possible to obtain plastics that can operate at both low and high temperatures. Since many polymeric materials are good electrical insulators (dielectrics), they can be used in the manufacture of electrical equipment for tractors. The disadvantage of the polymer material is that it is less resistant to heat, as well as changes its properties over time, that is, prone to wear.[19]

Currently, there are a number of joint ventures and firms that produce parts for cars from polymeric materials. In these enterprises, most of the details are obtained by injection molding of polymeric materials into molds.

Closed Joint Stock Company "UzKORAM KO". At present, the joint venture has the capacity to produce complete bumpers, instrument panels and door covers for cars. In the paint shop, car bumpers can be painted in body color.

Uz-Tong Hong Co Joint Venture. The company manufactures polyurethane foam seats for all automobiles manufactured by GM-Uzbekistan CJSC.

Andijan Cable and Uz-Kodj joint ventures produce insulated wires for automotive electrical parts.

In modern cars, several hundred small and large parts are made of polymer material. Due to the wide range of possibilities of modern polymeric materials, any detail, whole part and assembly can be made from them as a construction material. A company that makes engines in the United States has reported that the car's engine is made of a polymer material reinforced with heat-resistant glass and carbon fiber. In this engine, only the crankshaft and piston ring are made of metal. This situation testifies to the wide range of possibilities of polymeric materials.[18]

At present, technologies for obtaining materials from polymeric materials with various necessary chemical, physical, physic-mechanical properties have been developed. Thus, there is an opportunity to produce a product of a certain quality. One of these possibilities is to change the chemical composition and structure of the polymer base.

The second is a method of changing the properties of polymeric materials by adding various additives. This method is the most progressive and effective. This creates a new quality that is not even present in the added compositions. As an example, the polymerization products of vinyl chloride, which are widely used in automotive construction, include plastics and vinyl plastics.

Polymeric materials have a very wide range of physical and mechanical properties. These include strength limit, relative elongation, modulus of elasticity, and so on. enters.

Today, it is difficult to imagine the construction of modern cars and other vehicles without polymer materials. The use of these materials not only reduces the cost of production and labor, but also reduces the cost of production, reduces the mass, reduces the cost of labor.

Areas of polymers used in road transport and their advantages include:

- friction parts (couplings of clutch discs, brake belts, bearings) - provides a large and stable coefficient of friction, increases resistance to spreading;

- antifriction parts (sliding bearings) - the coefficient of friction is reduced, wear resistance is reduced, maintenance costs are increased, noise is reduced;

- system of low and medium pressure pipes (fuel, oil pipes, cooling systems) - does not corrode, non-ferrous metals are not used;

- gaskets (instead of non-ferrous metals and plugs) - the service life of seals is extended and work efficiency is increased;

- large-sized structural details (cab roof, tank, wing, hood and crankcase elements) - machines use less metal and their mass is reduced, corrosion is reduced, service life is extended, working conditions are improved.

CONCLUSION

Polymers are high molecular weight compounds obtained on the basis of natural or artificial resins. Polymers contain compounds that give them certain properties, making them easier to make. Polymers can deform to plastic under the influence of heat and pressure to take a certain shape and maintain that shape.

REFERENCES

1. Fayziyev MM, Miryunusov MM, Orifjonov MM, Bozorov BI - Internal combustion engines. T.Turon-Iqbol 2007-y
2. Kadyrov SM - Internal combustion engines. Textbook. Tashkent, 2006
3. ZU Alijanovna, BL Yuldoshaliyevich, MG Bakpulatovna. Some Scientific and technological principles of development of composite polymer materials and coatings of them forcotton machine - European science review, 2018
4. Ziyamukhamedova U A, Bakirov LY, Rakhmatov E A and Bektemirov B Sh 2019 Structure and properties of heterocomposite polymeric materials and coatings from them obtained by heliotechnological method International Journal of Recent Technology and Engineering 8(3) 2277-8
5. Bunyodbek Mamasoliyev, Abdurahimjon Alijonov, Ergashoy Yusupova. (2020). Development Of A Logistic Method In The Placement Of Urban Passenger Transport Routes. The American Journal of Social Science and Education Innovations, https://www.usajournalshub.com/index.php/tajssei 2(11), 378-383.
6. Мамасолиев Б.М., Косимов М.М., Абдусаттаров Н.Х. Технология производства стальных колес автомобилей и недостатки в их производстве // Universum: технические науки : электрон. научн. журн. 2021. 3(84). URL: https://7universum.com/ru/tech/archive/item/11401 (дата обращения: 25.03.2021)
7. Г Рузиматов М.А., Рахматалиев Н.Н., Худойбердиев В.М. Обеспечение надежной работы компрессионного кольца // Universum: технические науки электрон. научн. журн. 2021. 3(84).
8. Шукуров М.М. Актуальные Проблемы В Обеспечении Безопасности Дорожного Движения.Universum: Технические Науки : Электрон. Научн. Журн. 2021. 12(93). Url: Https://7universum.Com/Ru/Tech/Archive/Item/12684
9. Mamasoliyev B., Abdusattarov N. Efficient Movement For Cargo Transportation Determination Of Content // Universum: Технические Науки : Электрон. Научн. Журн. 2022.2(95). Url: *Https://7universum.Com/Ru/Tech/Archive/Item/13149*
10. Икромов Н.А., Гиясидинов А.Ш., Рузиматов Б.Р. Меры По Снижению Экологического Воздействия Автопарка // Universum: Технические Науки: Электрон. Научн. Журн. 2021. 4(85). Url:
11. Imomkulov, K B. And Mukimova, D K. (2018) "The Motivation Parameters Of Wedge-Shaped Disk Of The Machine For Preparing Plow By Flap To Sowing," Scientific-Technical Journal: Vol. 1 : Iss. 3 , Article 9. Available At: Https://Uzjournals.Edu.Uz/Ferpi/Vol1/Iss3/9
12. Шm Махкамович, Ма Нурдинов, Бау Солиев… Дорожно-Транспортный Комплекс, И Их Воздействие На Окружающую Среду Innovative, Educational, Natural And Social Sciences, 2021

13. S Turayev, X Tuychiyev, T Sardor, X Yuldashev The Importance Of Modern Composite Materials In The Development Of The Automotive Industr - Asian Journal Of Multidimensional Research (Ajmr), 2021

14. S.Ulkanov An International Multidisciplinary Research Journal Flin Inter - An International Multidisciplinary Research Journal, 2017

15. A Nozimbek, T Khasanboy, T Elbek, U Sardor Improvement Of Physical And Mechanical Properties Of Plastic Parts Used In Machine Building - Universum: Технические Науки, 2021

16. Ю.Г. Шипулин, У.С. Холматов, О.С. Раимжанова. Оптоэлектронный Преобразователь Для Автоматических Измерений Перемещений И Размеров. - Мир Измерений, 2013 Cited By 1 Related Articles

17. To'rayev Sh, Irgasyeva N International Journal Of Research Ttps://Journals. Pen2print. Org / Index. Php / Ijr / 2019.362-366pp.

18. Shukurov M, Turayev Sh International Journal Of Research Ttps: / / Journals. Pen2print.Org/Index. Php/Ijr/ 2019.367-372p.

19. Sh Turayev, X Tuychiyev, T Sardor, X Yuldashev The Importance Of Modern Composite Materials In The Development Of The Automotive Industr - Asian Journal Of Multidimensional Research (Ajmr), 2021