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PROSPECTS FOR THE USE OF POLYMER MATERIALS IN CAR REPAIR

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Annotation. It is difficult to imagine the designs of modern vehicles without polymer materials. The use of these materials not only simplifies the design of technical equipment, reduces its mass, and increases operational reliability, but also paves the way for reducing production costs and labor costs. The widespread use of polymer materials is due to their ability to directly replace precious metals and wood materials, often surpassing them.

Keywords: polymer material, material loss, electric insulator (dielectrics)

Introduction. The importance of polymer materials in improving automotive technology is immeasurable, and their prospects are growing day by day. This is explained by the unique properties of polymer materials and the high technical and economic indicators of products made from them. The question arises, How do polymer materials differ from other materials in their properties?

First of all, polymer materials are considered materials that combine unique chemical, physicochemical and physical-mechanical properties, and at the same time differ from them in the possibility of manufacturing products with the necessary properties. It should be especially noted that products made from polymer materials have the ability to maintain their operational quality for a long time without changes [1].

Another feature is that it can be used to make products of any shape and size (parts, units, etc.), as well as the technology for producing products from polymer materials is convenient, labor and energy costs are several times cheaper compared to metal production.

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

These factors indicate that the technical and economic efficiency of the production and use of polymer materials is extremely high [2-5].

It is necessary to emphasize the peculiarity associated with the use of polymer 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 are more expensive than traditional ones. Therefore, replacing used materials with new ones leads to an increase in the cost of the product. However, manufacturing products from new

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materials positively affects their reliability and durability [6-8].

When using polymer materials, it also allows solving previously unsolved problems, that is, finding solutions by combining several necessary complex properties.

Taking the above into account, the topic of the qualified thesis consists of urgent tasks and can be considered a very promising direction for future automotive manufacturers.

In the current era of advanced technology, unprecedented achievements are being made in the automotive industry. At the beginning of the last century, the earliest concepts of the automobile appeared, which were created later, and now the increasing complexity of automobiles is a modern technical means and unique experience for car owners. The lack of qualifications, the constant need for maintenance and repair of cars, led to the emergence of a system called car maintenance or auto service.

Car service has entered our daily life as a new term and includes daily service, 1,2 maintenance, seasonal maintenance, provision of fuels and lubricants and spare parts, work performed at model campsites on highways, car maintenance points, and other types of maintenance points. Expenses during the period of vehicle operation (depreciation) for carrying out all types of work covered by the car service account for 87% of the total costs. The remaining 13% corresponds to the costs of producing a new car. If we consider labor costs, then 1.5-3.5% of labor is spent on the production of a new car, and 96.5-98.5% of labor is spent on service maintenance during the vehicle's service life.

In turn, the daily and annual mileage of the vehicle depends on the cost of fuel and lubricants for maintenance and repair services, natural climatic conditions, and operating conditions. It depends on car storage and many other factors.

The quality of fuels and lubricants used during vehicle operation significantly affects the wear and breakdown of parts, assemblies, and units present in the vehicle, and generally, its operational quality. If we can bring the quality of fuels and lubricants to the level of standard indicators, we will be able to reduce the demand for maintenance and repair of vehicles to a certain extent.

Improvement of vehicle operation conditions will depend on improving vehicle storage conditions and existing road networks in the region, improving driver qualifications, and seasonal changes in natural and climatic conditions.

Pollution of the environment by toxic gases produced by cars, dust particles rising from roads, the increase in road traffic accidents, and the expansion of road networks are leading to the emergence of such problems. In order to prevent problems, the owner of a personal car should keep his car in good working order for a long time, as well as keep the car in good working order for his own use, carry out material supply for the car when using it in various forms, maintain the working condition of the car, and perform service maintenance in the prescribed manner.

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Most of the car is currently made of polymer material. Therefore, the study of the technology for obtaining automotive parts under pressure is a pressing issue.

The properties of polymer materials depend on the composition and quantity of substances added to them. By changing the quantity of these substances, it is possible to obtain various compounds with predetermined properties. The water resistance of many polymer materials and their ability to withstand the effects of many aggressive substances and petroleum products are their most important positive properties. Achievements in chemistry allow obtaining plastics that can work at both low and high temperatures. Many polymer materials, being good electrical insulators (dielectrics), can be used in the manufacture of electrical equipment for tractors and automobiles. A disadvantage of polymer materials is their low heat resistance, as well as their tendency to change their properties over time, i.e., their tendency to wear out.

Currently, there are a number of joint ventures and firms producing automotive parts from polymer materials. At these enterprises, most parts are obtained by pouring polymer materials into molds under pressure.

Closed Joint-Stock Company "UzKORAM KO." Currently, the joint venture has the capacity to produce over 200,000 sets of bumpers, instrument panels, and door linings annually. In the paint shop, the bumpers of cars can be painted to the color of the body.

Joint venture "Uz-Tong Hong Ko." At this enterprise, seats made of polyurethane foam are manufactured for all cars produced at JSC "UzAvtoMotors."

The joint ventures "Andijan Kabel" and "Uz-Kodj" produce electrical insulation wires for automobiles.

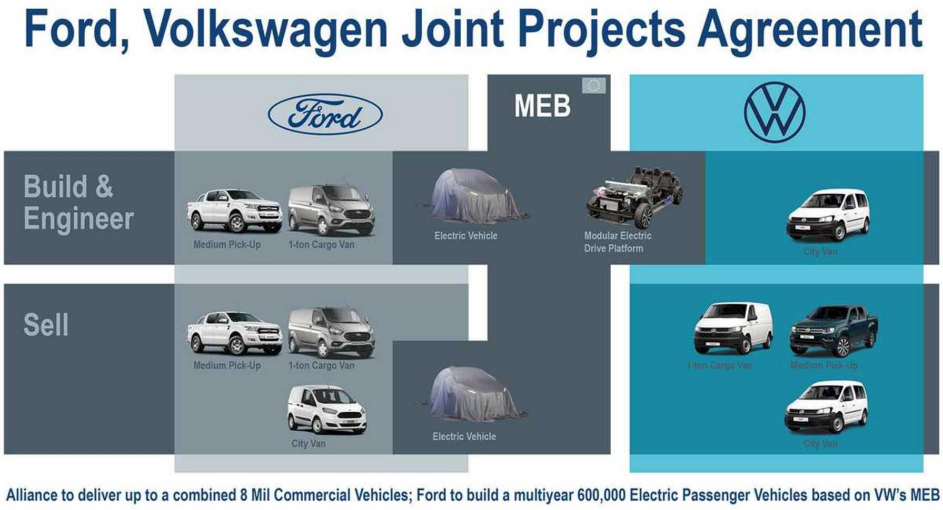

Fig 1. Ford-VW Joint Venture Details Finalized, Here's What's Coming

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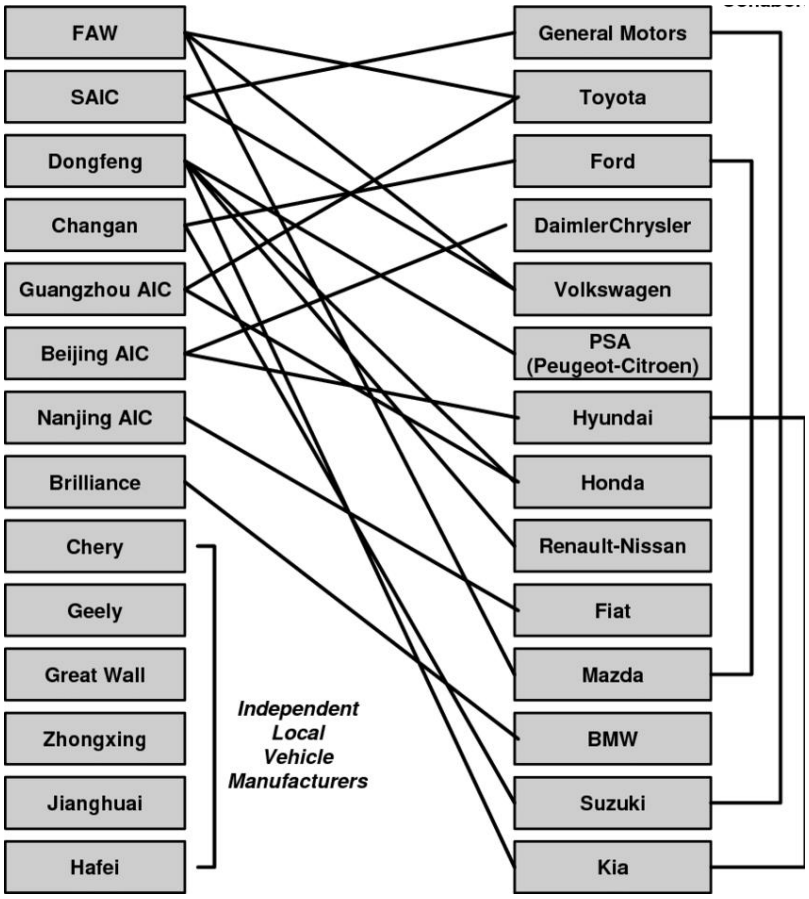

Fig 2. Structure of Joint Ventures in the Chinese Auto Industry | Download Scientific Diagram

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