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PROSPECTS FOR THE DEVELOPMENT OF THE CAR SERVICE IN UKRAINE

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The continuous growth of the car fleet of the population leads to the improvement of car service development and, of course, the need to update the production and technical base with the aim of increasing the quality of maintenance and repair. However, according to statistics, as of today, 70% of the territory of Ukraine does not have a car service, and independent car services in different regions serve from 80 to 97% of cars. 70% of car service enterprises employ 3-5 people and have a capacity of 1-2 stations. Most of the car service personnel are non-core, and their qualifications are not formally confirmed (90% of non-core personnel [1]).

When determining the ways to develop and improve a car service, it is necessary to take into account the improvement of cars themselves, especially automotive electronics. Therefore, one of the most important areas of development is repairing electronic systems, while expanding the tasks of diagnosing components and assemblies is justified. The main options for the development of the enterprise's production processes are: - determination of directions for prospective expansion of the nomenclature of automobile services; - provision of a combination of car maintenance and repair services and the trade sector of the service enterprise; - development and

implementation of new technological processes, technologies; - development of methods of rationing resources reserves necessary for technical maintenance and car repair; - development and implementation of methods of motivating employees of car service enterprises. Here are some promising directions for the development of the services of car service enterprises:

1. One of the promising directions in restoration and repair technologies is additive technologies, i.e. "three-dimensional printing" technology, which can be used to manufacture unique parts during car repair and tuning. To use these technologies, a car mechanic must have knowledge and understanding of such areas as creating prototype models based on a project using a 3D printer, 3D-CAD software. He must know how to correctly set the printing parameters, how to change the product part, that is, understand the process of creating parts, assembling them and making drawings using 3D-CAD software, including determining the dimensions. At the same time, the specialist must know the characteristics, risks and processing methods of such modeling materials as sealing resin, laminating resin, wood cellulose, polylactide.

2. One of the most promising types of technical influences on a car is the tuning of a passenger car aimed at improving its consumer properties and appearance. Car tuning is understood as modification of a vehicle aimed at changing its quality in accordance with the wishes of the owner, without significant changes in the operational characteristics of the car. The power unit tuning service is becoming especially popular as a means of improving the dynamics and efficiency of the car, and tuning of the running gear itself is important for improving controllability and smoothness of the riding. All these technologies also contribute to increasing the car's energy efficiency [2]. Therefore, the following types of works and services can be carried out at the tuning station in order to improve the appearance, comfort and driving qualities of the car at the request of the client or as part of pre-sale preparation: - improvement of engine characteristics (chip-tuning, increase in power due to turbocharging, changes in gas distribution phases, etc.); - improvement of the characteristics of the transmission and running gear (installation of gearboxes with a reduced number of gears, replacement of the main gear, installation of gas shock absorbers and larger diameter

wheels); - improving the characteristics of the braking system and steering (installation of disc brakes on both axles of the car, steering amplifiers, etc.); - decorative finishing of the interior of the car, which increases its comfort (installation of anatomical seats, installation of pedal pads, neon illumination of the instrument panel, installation of security systems and car alarms, audio systems and other accessories (electric windows, sunroofs, etc.) - installation of additional equipment that increases traffic safety (airbags, "Hands-Free" car loudspeaker systems, satellite navigation systems, engine crankcase protection, etc.); - improving the appearance of the car and giving it individuality by tinting the car glass, sticking thin film, installing attachments (tuning kits, installing various wheels, etc.) It is necessary to highlight the specifics of the organization of car tuning works, namely, the planning of tuning works, accounting for the interrelationship of car modernization measures, mandatory technical control and assessment of the residual resource of nodes and the car itself. The equipment and tools used for tuning are mostly the same as for repairs. For example, for the modernization of the engine, it is mainly equipment for disassembly and assembly and mechanical processing. In addition, it can be noted: a drive with a flexible shaft (for grinding and polishing air channels), a machine for balancing crankshafts, as well as a programmer for electronic control systems. For the modernization of the suspension, the technological equipment is the same as for the repair of the chassis. We will highlight the following equipment: 2-post lifter, hydraulic stand, hydraulic table press, compressor and 4-post lifter with a wheel angle adjustment stand. The engine and transmission tuning department can be organized on the basis of three departments and divisions: aggregate, locksmith and mechanical, and special assembly (tuning) department. To organize the suspension modernization section, you can use the current repair section as a basis. At the same time, at least two posts should be provided for the performance of work: - a post for installing tuning kits equipped with a 2-post lift and assembly and disassembly equipment; - wheel angle adjustment post, including a 4-post lift and a wheel angle check stand. In turn, while applying original drawings and compositions on car bodies, it is necessary to fence off the corresponding posts with a screen, as well as equip the site with powerful local ventilation. It is recommended that

tuning works related to partial or full painting of the car, including airbrushing, be performed in the painting department of the technical service station.

3. The number of hybrid electric cars is growing rapidly, so you should pay attention to the direction of maintenance and repair of cars with a hybrid power plant and electric cars.

4. Services for full detailing (outside and inside) of the car are gaining popularity. It should be noted that the preparation of cars for various sports competitions does not belong to the field of service of motor vehicles, therefore, as a rule, these works are carried out in specialized workshops. Based on the analysis of the listed services of car service enterprises, three ways of development of car service enterprises are possible: expansion of the range of services, reconstruction of premises and construction of new buildings and branches. The modern specifics of the development of a car service requires the owners and designers to solve the direct (when, based on the analysis of the services and technologies used, the subdivisions and the enterprise itself are designed) and reverse (when based on the existing premises, technologies and the specialization of the car service enterprise are chosen) task in technological design and development of car service enterprises. It is clear that the reverse task is more difficult and more common in practice [3]. The need for purposeful development of the car service network in order to increase the efficiency and safety of the transport system of Ukraine. In the development of car service enterprises, one of the most promising types of technical influence is car tuning, which is aimed at improving its consumer properties and appearance. When determining ways of development and improvement of a car service, it is worth taking into account the improvement of cars themselves, and especially car electronics.

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HISTORY AND PERSPECTIVES OF BODY DEVELOPMENT IN CARS

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The first motor car bodies and chassis frames, made between 1896 and 1910, were similar in design to horse-drawn carriages and, like the carriages, were made almost entirely of wood.

The frames were generally made from heavy ash, and the joints were reinforced by wrought iron brackets which were individually fitted. The panels were either cedar or Honduras mahogany about 9.5 mm thick, glued, pinned or screwed to the framework.

The tops, on cars which had them, were of rubberized canvas or other fabrics. Some bodies were built with closed cabs, and the tops were held in place by strips of wood bent to form a solid frame. About 1921 the Weymann construction was introduced, in which the floor structure carried all the weight of the seating, and the body shell, which was of very light construction, was attached to the floor unit. Each joint in the shell and between the shell and the floor was made by a pair of steel plates, one on each side of the joint and bolted through both pieces of timber, leaving a slight gap between the two pieces. The panelling was of fabric, first canvas, then a layer of wadding calico and finally a covering of leather cloth. This form of construction allowed flexibility in the framing and made a very light and quiet body frame, but the outer covering had a very short life.

Let's take a look at the historical dates for the development of car bodies: “Until 1930, the body on the chassis was the most popular type of configuration. Transport security, how to avenge the upper passenger body, mounted on the chassis, up to