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FORMATION OF PROFESSIONAL TRAINING OF AUTOMOBILE PROFILE SPECIALISTS

The automotive industry is one of the most dynamically developing industries and has a significant impact on solving problems of a scientific and technical nature. But modern automotive production requires specialists who are able to develop fundamentally new technical and technological approaches, ready to carry out research and development work. All this dictates the need to improve the system of professional training of automotive specialists.

For the effective implementation of design activities, university students must:

- be able to set goals and objectives of research;
- collect and process the necessary information;
- find ways to solve the problem;
- conduct appropriate experiments;
- analyze the results.

The general trend in the development of modern engineering and scientific activities is design automation, which literally permeates all of its areas. The use of computer technologies in design is an important factor in accelerating scientific and technological progress: they are designed to become an integral part of a holistic educational process, significantly increasing its effectiveness.

Among such technologies, it is necessary to note automated design, which is the most important condition for the successful professional activity of an engineering and technical worker: automated design systems use computer graphics tools with the installation of special software [1].

SolidWorks is the most popular software product designed for 3D graphic modeling of motor transport. The principle of the program is three-dimensional modeling of parts and assemblies and work with them. And one of the advantages is the creation of parametric models (models that can change their shape and size by changing the parameters with the subsequent rearrangement of objects).

SolidWorks Simulation [1] is an application to SolidWorks designed for solving problems of the mechanics of a deformed solid body by the finite element method.

As an example, it was used in [1] to investigate the performance of one of the parts of the bearing puller – the screw: the maximum force that can be applied to it was determined with a given allowable margin of safety.

In [2] a static analysis of the gear shaft of the rear axle reducer of the GAZ-53 car was carried out using SolidWorks Simulation. After building the 3D-model of the gear shaft in SolidWorks, steel 12H14G14N is selected from its library. When analyzing the simulation results, it was established that the minimum safety factor of the gear shaft is $n_{\min} = 3.05887$, which is more than the permissible $[n] = 1.5$. Therefore, the goal of the work was

to investigate the possibility of replacing this material with a cheaper and more accessible one in repair shops – steel 45.

In [3] the primary shaft of the gearbox of the GAZ-24 car, the material of which is steel 12H18N10T, was studied using SolidWorks Simulation. Therefore, steel DIN 1.4541 (an analogue of steel 12H18N10T) was selected from the SolidWorks library. When analyzing the simulation results, it was established that the minimum margin of safety of the primary shaft is $n_{min} = 2.1957$, which is greater than the permissible $[n] = 1.5$. Therefore, the goal of the work was to investigate the possibility of replacing this material with a cheaper and more accessible one in repair shops – steel 25.

The purpose of the scientific study [4] is a static study of the handbrake drive lever of the MAZ 200 car. Strength calculations were performed and an assessment of the deformations of each element of the lever was obtained, which allows us to proceed to the directional design of its structure.

Thus, the formation of professional training of automotive profile specialists is expedient to be carried out with the help of the SolidWorks system: use it at the stage of building a 3D model, and then, moving to the real design, apply SolidWorks Simulation. This organization of work during the learning process allows you to build a construction model at a qualitatively new level.

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