Western European Journal of Modern Experiments and Scientific Methods
Volume 2, Issue 7, July, 2024
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

POSSIBILITIES OF DESIGNING VEHICLE DETAILS ON COMPUTER IN 3D FORMAT

Nizomiddinova Maftuna Shoirjonovna
TVM E24-21 group student
Fergana Polytechnic Institute
Faculty of Mechanical Engineering
nmaftuna0228@gmail.com
Tursunova Muazzam Zokirjonovna
Fergana Polytechnic Institute
Faculty of Mechanical Engineering
TMJ 19-21 group student
muazzamxon1800@gmail.com

Abstract: This article explores the possibilities of using computer 3D software tools in the process of car tuning and design. The article shows the processes of creation, analysis and optimization of car details with the help of computer-aided design, 3D model games and programs. With the help of 3D software tools, it is possible to analyze the design, material selection, aerodynamics and aeroloading of car details, conduct tests and present visions for consumers.
Keywords: car design, computer graphics, car tuning, design processes, detailing, analysis, optimization, 3D software tools, material selection, aerodynamics, concept images, changes in technology, automotive industry.

Introduction.

At the current stage of development, the creation of an industrial product and the organization of its production processes directly depend on modern computer programs. Creating virtual models of something has become an integral part of modern production. Creating new products and changing them according to consumer demand is done quickly and efficiently using advanced computer technologies. Especially in this process, 3D dimensional modeling becomes more important [1].

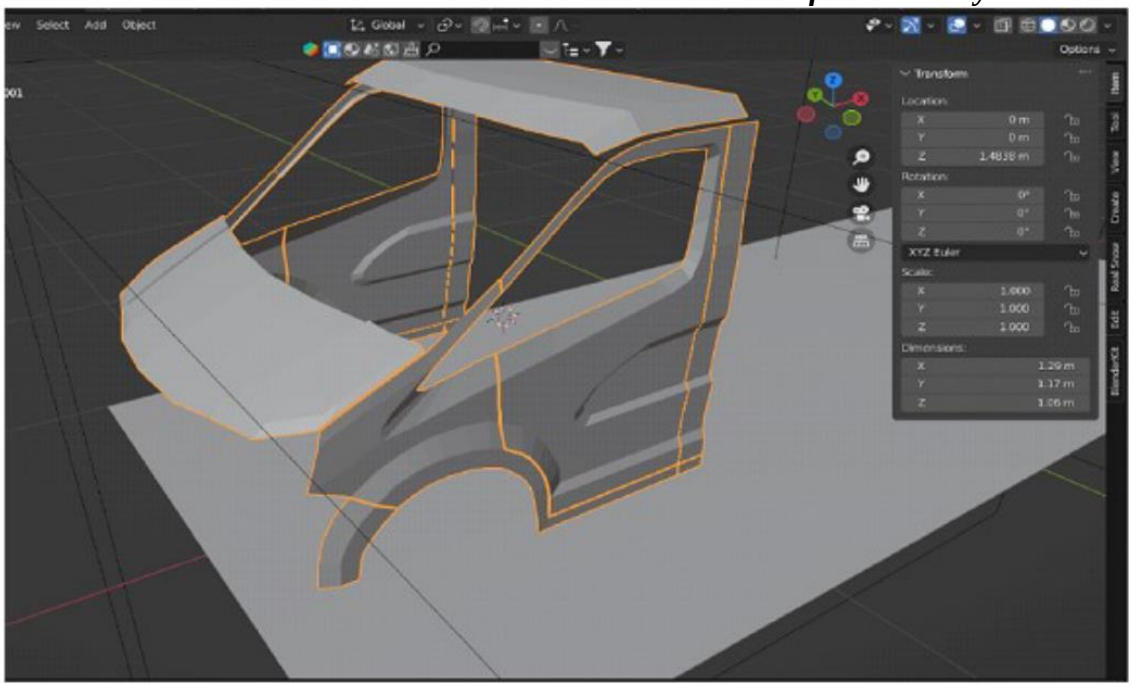
3D modeling is a multi-tasking trend in the field of automotive engineering and car tuning, as in all fields. It has become impossible to carry out the stages of cars and their parts, and car tuning processes from design to production without the use of computer graphics and animations [2]. In 3D modeling, first of all, it is necessary to determine the scope of tasks. Currently, there are several software products for 3D modeling, each of which allows you to perform specific tasks. Task implementation in 3D modeling should be as creative, fast, and convenient as possible [3].

Computer programs that can be used in the design of cars and their parts can be classified according to the possibilities of performing tasks as follows: - programs for performing easy tasks AutoCAD, TurboCAD, Compass; - programs for performing medium-level tasks SolidWorks, SolidEdge, Inventor, KOMPAS-3D, T-Flex, APM WinMachine, 3DS MAX, Blender; - programs for complex tasks Ansys, Abaqus, ProEngineer, CATIA. To perform complex tasks, it is possible to perform calculations and model simulation processes with the help of software products [4]. Car design is one of the main elements that make the appearance and aesthetics of the car invisible. Several software products are used by design engineers to create a vehicle design. These include Adobe Illustrator with a multi-functional suite, Alias for

Western European Journal of Modern Experiments and Scientific Methods
Volume 2, Issue 7, July, 2024
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

working on industrial samples, and automotive projects, 3DS MAX for creating car bodies, and Blender, a very powerful and multifunctional program for working with 3D graphics [5]. Blender is an open-source 3D software product that supports a wide range of features for designing automotive designs. It is not less than the relatively expensive 3DS MAX and Cinema 4D in terms of the number of program functions. It can perform several actions such as texturing, raster graphics editing, fluid and smoke simulation, particle simulation, soft body simulation, animation, match action, motion graphics, and video editing. Gazel NN design work was carried out taking into account these capabilities of the program. The process of developing a new car body begins with the preparation of a composition sketch for it. This task is usually done on a scale of 1:10 or 1:5. In it, using the location of the 5 and 95 percentile mannequins, the main initial dimensions of the car are determined (height of the roof line, proportions, overall dimensions, main dimensions, mutual arrangement of the main volumes, their initial proportions), as well as the approximate location of seats, doors, windows, trunk, engine and transmission units, optimal seating angles for passengers and the main dimensions and contours of the body are given [6].

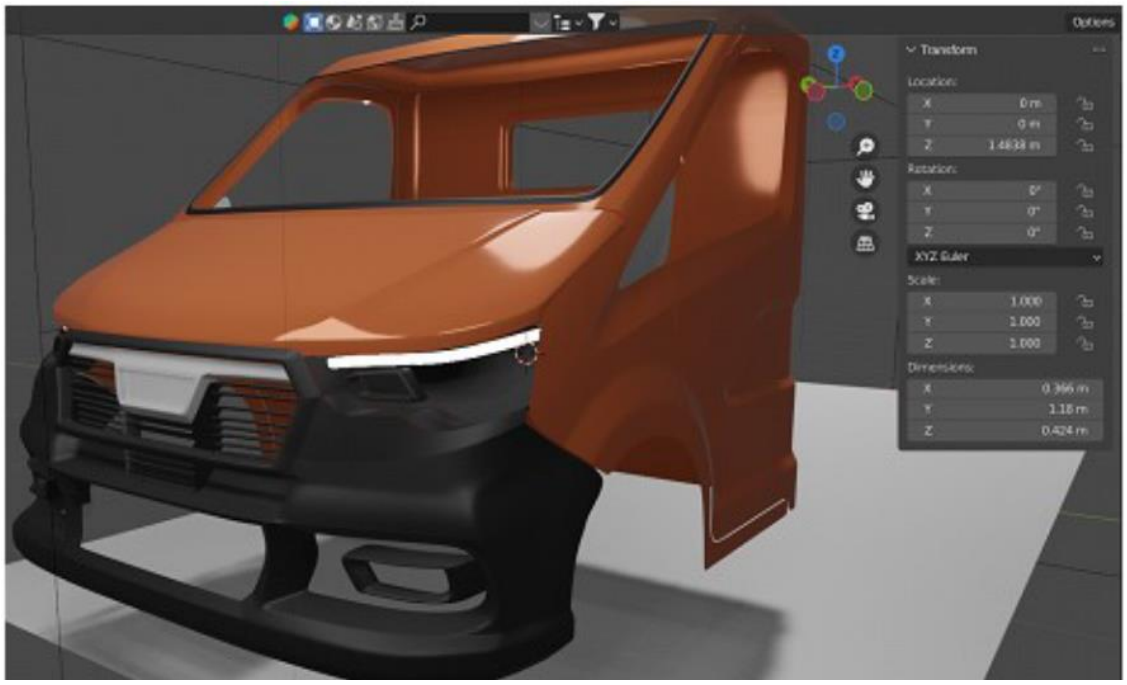
Press the EXTRUDE E button to create the exterior of the car body.



After creating the car body, the interaction of its surfaces with the environment, i.e. painting, is done. To do this, click the Add button from the Materials section and choose the color you like.

Western European Journal of Modern Experiments and Scientific Methods
Volume 2, Issue 7, July, 2024
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

Prepared car body



When designing a car design, every detail is prepared separately. Other details are done like preparing the body.

After the design of the car is designed, it is evaluated according to various indicators. Including: - it is tested for impact resistance, in which ways to reduce the total weight of the car and to make the metal more durable are chosen. -aerodynamics will be re-examined. - the effect of various climatic conditions is evaluated. - a test object is created and a destructive test is conducted. - the 3D model of the car is tested for gasoline or alternative fuel economy.

Conclusion. Discusses the design of automotive details through 3D software tools, material selection, aerodynamics rendering, concept visualization for consumers, and their impact on changes in design and technology. It also discusses the development of the automotive industry, the variables of 3D design, exterior and interior changes, and the role computer graphics technology has played in automotive design. The article presents one of the current topics related to the news in the automotive industry.

List of used literature.

1. Ahmadjonovich, T. (2022). „rayev Shoyadbek Avtomobillarda ishlatiladigan yuqori bosimli gaz ballonlarida ishlatiladigan kompozitsion polimer materiallar taxlili. Ilmiy impuls.
2. Тўраев, Ш. А. (2021). Автомобиль втулкаларининг ҳар хил полимер материалларини ейилишини аниқлаш.
3. Тўраев, Ш. А. (2022). Автомобилларда ишлатиладиган пластик деталларига қўйиладиган талаблар ва уларнинг механик хоссаларини тадқиқ қилиш.
4. Ergashev.M.I, Nizomiddinova.M.Sh, Mirzatillayev.A.A. Анализ метод ических подходов к технической оценке уровня и качества гаражного оборудования при обеспечении технического обслуживания автотранспортных средств.

Western European Journal of Modern Experiments and Scientific Methods
Volume 2, Issue 7, July, 2024
https://westerneuropeanstudies.com/index.php/1
ISSN (E): 2942-1896 Open Access| Peer Reviewed

International scientific – practical conference on “Modern Education: Problems and Solutions”. Vol. 1 No. 6 (2022) France (31-35).

5. Nizomiddinova.M.Sh, Mirzatillayev.A.A, Xonkeldiev.M.A. (2023). Texnologik uskunalarni takomillashtirishning nazariy asoslarida “Operator - Avtotransport vositalari texnologik uskunalar - o‘lchash vositalari muhit” tizimini tahlil qilish. “Zamonaviy dunyoda innovatsion tadqiqotlar: Nazariya va amaliyot” nomli ilmiy, masofaviy, onlayn konferensiya. https://doi.org/10.5281/zenodo.7628875. (36-43).
6. Shoyadbek, T. (2023). LACETTI GENTRA AVTOMOBILINING NAZORATOLCHOV ASBOBLARI PANELIGA GAZ BALLONLI MOSLAMA UCHUN DATCHIK ORNATISH LOYIHASI. IJODKOR O’QITUVCHI, 3(32), 79-81.
7. Axmadjonovich, T. R. S. (2023). YENGIL AVTOMOBILLARDA ISHLATILADIGAN DETALLARINING YEYILISHINI O‘RGANISH VA TAHLIL QILISH. Mexatronika va robototexnika: muammolar va rivojlantirish istiqbollari, 1(1), 332-336.
8. Qosimov, I., & To’raev, S. (2023). ZAMONAVIY AVTOMOBILLARINING RUL TORTQILARIDA QO’LLANILADIGAN KOMPOZITSION POLIMER MATERIALLARI. Scientific Impulse, 1(10), 1854-1856.
9. http://multidiciplinaryjournal.com/index.php/mm/article/view/276