Volume 2, Issue 11, November - 2024 **ISSN(E):** 2938-3773

METHODS OF APPLYING THE EFFECT OF WORKING TIME ON THE CHANGE IN THE QUALITY OF CARS

Khaydarali Fayzullaev
Assistant, Department of Land Transport Systems and
Their Exploitation, Fergana Polytechnic Institute, Fergana, Uzbekistan

Abstract
In this article, cars were theoretically examined and the numerical values of the parameters of the mathematical models of the processes of changes in the quality of cars were determined. Software has been developed for modeling the laws of changes in the quality of cars

Keywords: Car, road, transport, model, quality, process.

Introduction

Operational time - the duration or amount of operational time of the object means the duration of the product measured in hours or kilometers, in some cases in units of completed work [1-7]. Reliability is determined by the degree of change in the quality of the car with an increase in operating time or operating time. Reliability is the ability of a vehicle to keep on time within specified limits, which includes the values of all parameters describing the ability to perform the required functions in certain modes and conditions of use, maintenance and repair, storage and transportation takes Reliability is a complex property consisting of 4 properties: failure-free operation, durability, stability and persistence [8-14].

The research conducted on the issue under consideration is mainly related to the problem of changing the technical condition of cars. In this case, gradual changes in quality indicators, random indicators that lead to gradual failures and sudden failures are taken into account.

Gradual changes of technical condition parameters are characterized by graphs of type 1 (see section 1.2), and random ones are considered in relation to groups of vehicles and are characterized by graphs of type 3 [15-19].

Laws of change of parameters of the technical condition during working time have been studied by many authors on the example of various types of machines and equipment. Problems of technical condition change have attracted the attention of researchers since the beginning of automobile production. Many articles have been published on this topic. For example, in 1936, graphs of changes in the wear of pistons, cylinders, piston rings, and camshafts according to the working time of automobile engines correspond to the classic wear curve (Fig. 1).

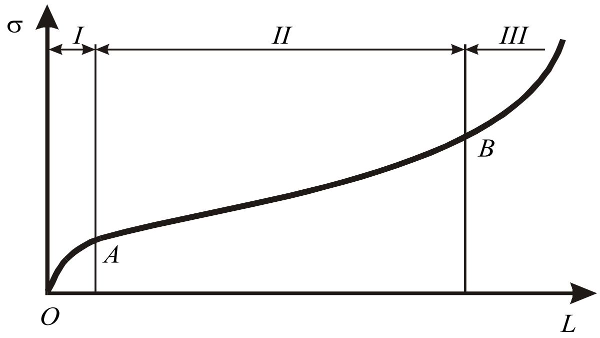

Figure 1. The wear of car parts depends on its operation for stable working conditions.[2]

Web of Discoveries: Journal of Analysis and Inventions
webofjournals.com/index.php/3

The analysis of the results of experiments obtained by various researchers shows that in all cases there are no changes according to the classical curve. Avdonkin F.N. experimental data obtained by also indicate the variety of forms of the dependence of the parameters of the technical condition of cars on the working time: an increase and a decrease in the working time. A parameter can be either linearly variable or curvilinearly progressive or regressive. Note that this case cannot be shown as a general case, as the wear intensity here varies only with mode and the effect of operating time on the process variation is not taken into account [20-23].

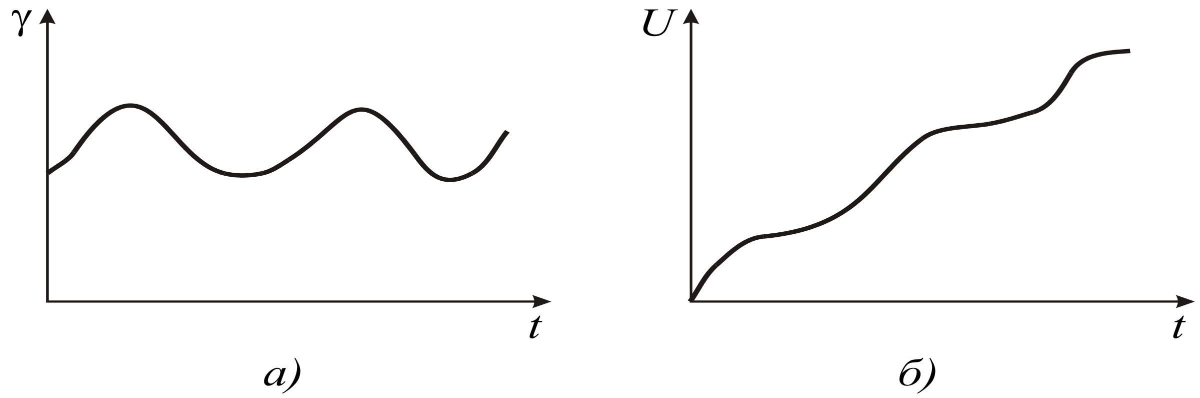

Figure 2. Laws of the flow of stationary wear processes over time[2]

It is very difficult to model a car with random changes in technical condition. In the case of a single object, the probability of failure R or the probability of failure F operating time L can be estimated:

$$R(L) = \int_L^\infty f(L)\cdot dL; \text{ or R } R(L) = \frac{n-m(L)}{n} = 1 - \frac{m(L)}{n}. \quad (1) \quad [4]$$

m(L) - the number of failed products during operation L;n- number of products;

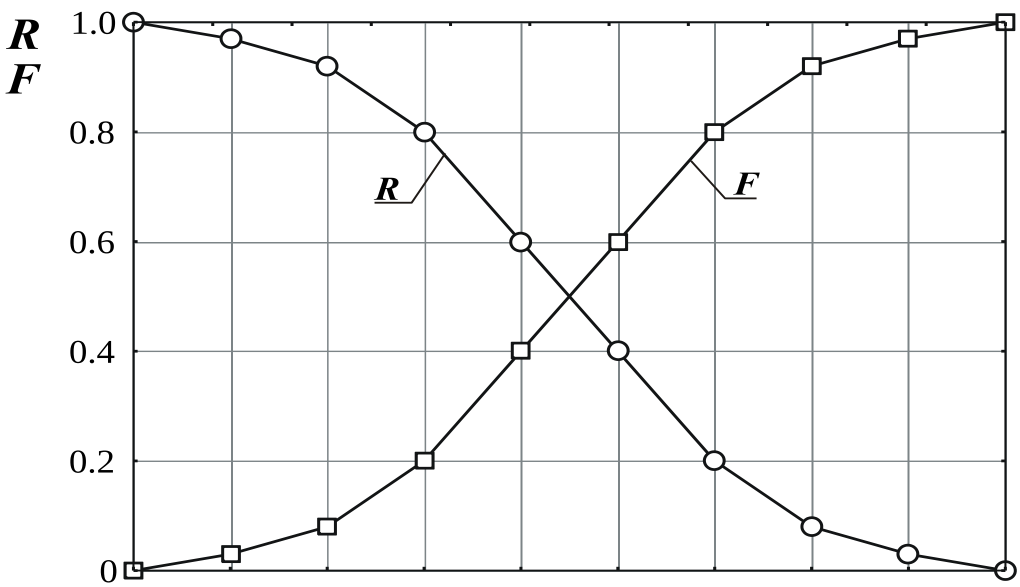

Figure 3. The failure rate is R and the probability of failure is F [4]

The change in the technical condition of the working time for a group of vehicles is characterized by the laws of the recovery process. Consideration of these regularities follows from the following axioms.

First, each car is characterized by a random and corresponding function f(L).

In troubleshooting a repair industry, it doesn't matter which machine failed or which invoice failed.

The following notations are used to describe the third type of graphs.

K-mean time to failure:

$$\bar{L}_k = \bar{L}_1 + \bar{L}_{12} + \ldots + \bar{L}_{k-1,k}, \qquad (2)\ [4]$$

$\bar{L}_1$ -mean time to first failure;

$\bar{L}_{12}$ -average time between first and second failures, etc.

Average time between (k-1)- and k- failures for N cars:

$$\bar{L}_{k-1,k} = \frac{1}{n}\sum_{i=1}^{n} L_{k-1,k}. \quad (3)\ [4]$$

The completeness coefficient of resource recovery describes the possibility of resource reduction after repair:

$$\eta = \frac{\bar{L}_{k-1,k}}{\bar{L}_1}. \quad (4)\ [4]$$

The failure flow leading function (recovery function) determines the cumulative number of first and subsequent failures of the product up to the operating time L The existence of the main types of regularities in the processes of changing the quality of cars has been experimentally confirmed.

Summary

The standards necessary to describe the processes of changing the quality of cars have been determined. A type of mathematical models describing the laws of the processes of changes in the quality of cars has been established. The existence of the main types of regularities in the processes of changing the quality of cars has been experimentally confirmed. Cars were theoretically checked and the numerical values of the parameters of the mathematical models of the processes of changes in the quality of cars were determined.

References

1. Abdubannopov, A., & Muydinov, S. (2024). The role of industrial robots in mechanical engineering and ways to create software for robots. Western European Journal of Modern Experiments and Scientific Methods, 2(1), 60-68.
2. Abdubannopov, A., & Abdumutalov, Y. (2024). Vehicle tyre pressure control and monitoring systems. Spectrum Journal of Innovation, Reforms and Development, 27, 14-19.

Web of Discoveries: Journal of Analysis and Inventions
webofjournals.com/index.php/3

3. Abdubannopov, A., & Abdupattayev, S. (2024). Measures to protect the environment from the harmful effects of motor transport. European Journal of Emerging Technology and Discoveries, 2(2), 14-22.
4. Ismoilov, A., & Abdubannopov, A. (2023). Development of modern directions of driving training and recommendations for increasing traffic safety. European Journal of Emerging Technology and Discoveries, 1(9), 1-7.
5. Xaydaraliyev, O. Y., and A. A. Abdubannopov. "Divigatelarni termal yukini kamaytirish: divigatelarni termal yukini kamaytirish." (2023): 92-96.
6. Abdupattayev, S. A., and A. A. Abdubannopov. "Bog ‘ko ‘chatlari ekishni uzluksiz amalga oshiradigan mashina: bog ‘ko ‘chatlari ekishni uzluksiz amalga oshiradigan mashina." (2023): 96-100.
7. Abdubannopov, A. A., and A. A. Ismoilov. "Haydovchining yo ‘l harakati tizimidagi o ‘rni va harakat xavfsizligi darajasiga ta’sirini tahlili: haydovchining yo ‘l harakati tizimidagi o ‘rni va harakat xavfsizligi darajasiga ta’sirini tahlili." (2023): 100-103.
8. Abdubannopov, A. A. "Avtomobillarni yonilg‘i sarfi me’yorini va ekologik ko‘rsatkichlarini ekspluatatsiya sharoitida aniqlash metodikasi: avtomobillarni yonilg‘i sarfi me’yorini va ekologik ko‘rsatkichlarini ekspluatatsiya sharoitida aniqlash metodikasi." (2023): 1027-1030.
9. Davronzoda, X. D., & Abdubannopov, A. (2023). Analysis of the existing aspects of the problem of processing and use of vehicle tyres. American Journal of Technology and Applied Sciences, 19, 149-155.
10. Adxamjon o‘g, X. M. M., & Abdulxaq o‘g‘li, A. A. (2022). Trasport vositalarida yuklanishlar va ularni hisoblash rejimlari. Pedagog, 5(5), 258-260.
11. Adxamjon o‘g, X. M. M., & Abdulxaq o‘g‘li, A. A. (2022). Avtomobillarda tashishni tashkil etish, ekspluatatsiya qilish sharoitlari. Pedagog, 5(5), 281-284.
12. Adxamjon o‘g, X. M. M., & Abdulxaq o‘g‘li, A. A. (2022). Avtomobillarning texnik ekspluatatsiyasining rivojlanish bosqichlari. Pedagog, 5(5), 265-272.
13. Adxamjon o‘g, X. M. M., & Abdulxaq o‘g‘li, A. A. (2022). Avtomobil transporti vositalarining ekspluatatsion xususiyatlari. Pedagog, 5(5), 252-257.
14. Adxamjon o‘g, X. M. M., & Abdulxaq o‘g‘li, A. A. (2022). Nometall materillar ishlab chiqarish texnologiyasi. Pedagog, 5(5), 261-264.
15. Adxamjon o‘g, X. M. M., & Abdulxaq o‘g‘li, A. A. (2022). Gaz divigatelining termal yukini kamaytirish. Pedagog, 5(5), 273-280.
16. Abdubannopov, A., Qambarov, U. B., Maxmudov, I., & Xametov, Z. (2022). Haydovchilarni zamonaviy usullarda tayyorlashning harakat xavfsizligini ta’minlashga ta’sirini tadqiq etish. Евразийский журнал академических исследований, 2(6), 847-851.
17. Abdulhak, A. A. (2022). Transportation loads and their calculation modes. Galaxy International Interdisciplinary Research Journal, 10(3), 365-367.
18. Abdulxaq o‘g‘li, A. A. (2022). Yuk avtomobillari ishlatish, ulardan foydalanishni baholash. Лучший инноватор в области науки, 1(1), 596-601.
19. Shuxrat o‘g‘li, A. X., Bahodirjon o‘g‘li, L. A., & Abdulxaq o‘g‘li, A. A. (2022). yuk tashishni tashkil etish va yo ‘llarning ahamiyati. Pedagogs Jurnali, 10(4), 213-219.

Web of Discoveries: Journal of Analysis and Inventions
webofjournals.com/index.php/3

20. Xametov, Z., Abdubannopov, A., & Botirov, B. (2021). Yuk avtomobillarini ishlatishda ulardan foydalanish samaradorligini baholash. Scientific progress, 2(2), 262-270.
21. Abdulxaq o’g‘li, A. A. Tashkil etish va mexanizatsiyalash». Редакционная коллегия, 253.
22. Abdulxaq o’g‘li, A. A. Asosiy elementlar». Редакционная коллегия, 266.
23. Abdulxaq o’g‘li, A. A. Foydalanishni baholash». Редакционная коллегия, 287.

Web of Discoveries: Journal of Analysis and Inventions
webofjournals.com/index.php/3