WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 6, June, 2022

FORMATION OF MAINTENANCE AND REPAIR SYSTEM STRUCTURE

Abdukarim Muxtorov
Jizzakh Politechnical Institute
mukhtorovkarim95@gmail.com

Abstract
In this article, in order to maintain a high level of technical readiness of vehicles, to carry out quality maintenance and repair work on them, and to provide them with storage space, to form the structure of production technical bases of enterprises of the road network.

Keywords: Operation, prevention, feasibility, coefficient, equipment, automobile, enterprise, system, scheme.

Introduction

The basis of the system is its structure and norms. the structure is determined by the types (stages) of exposure and their number. Criteria include specific values such as periodicity of exposure, scope of work, name of action, and so on. The name of the operations to be performed, their frequency and scope of work constitute the order (mode) of maintenance. The structure of the maintenance and repair system is affected by: vehicle quality and reliability, ATE requirements, operating conditions, available resources, organizational and technical constraints. An enlarged block diagram of the structure of the maintenance and repair system is shown in Figure 1.

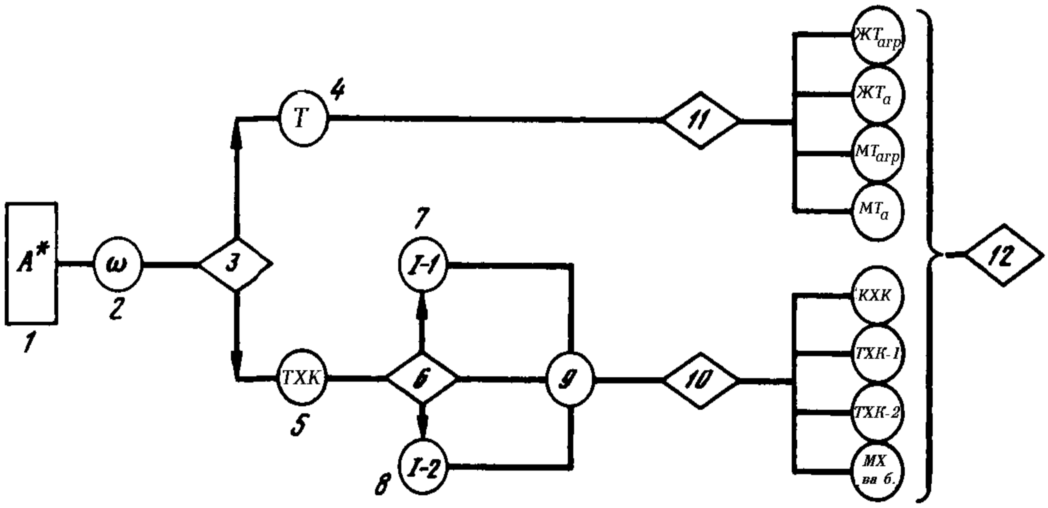

Figure 1. Schematic diagram of the structure of the maintenance and repair system for cars

1 - operating car fleet; 2 - the flow of disturbances that occur during the operation of cars (500-700 names); 3 - flow distribution according to the efficiency strategy; 4 - Strategy II - repair - restoration of working capacity (kg300400); 5 - I-maintenance - maintenance of working capacity (Sq200/300); 6 - Division of TCC by maintenance tactics; 7 - Duration prevention - I-I tactics; 8 - 1-2 on technical condition; 9 - preventive measures with their optimal duration ls (by type of service) 11 - grouping of actions by type of repair; 12 - Maintenance and repair system: Types of maintenance and repair (current and overhaul of vehicles and units), standards, technology and organization.

Certain elements in the structure of the maintenance and repair system of the existing road transport affect the cost of maintenance (without organizational and planning costs) as follows:

- The name of preventive measures and the validity of their duration is 80-87%; Number of stages (types) of maintenance and frequency of their duration - 13-20%;

Thus, the main factors determining the effectiveness of maintenance and repair system are the name of the correctly identified preventive measures (what to do) and frequency (when to do), followed by the number of types of maintenance and their frequency (how to organize a set of preventive measures) to do).

The complexity of defining the structure of the maintenance system is that the maintenance system includes 8-10 types of work (lubrication, fastening, adjustment, diagnostics, etc.) and more than 200-300 specific service facilities that require the prevention of malfunctions, or includes aggregates, mechanisms, joints, details.

As mentioned earlier, each connection, mechanism, node can have its own optimal TXK periodicity. If these intervals were followed, in practice, the car would have to be sent every day for maintenance of various components, mechanisms and units.

This leads to great difficulty in organizing the work, and a great loss of working time, especially in the preparation and completion.

In this case, the object of influence is not the car, but its constituent elements. Therefore, after separating the whole set of effects to be performed in the TCC and determining the optimal periodicity of each action, the actions are grouped by TCC types. This will reduce the number of vehicles entering the service area and the time spent on maintenance and repair. However, it should be borne in mind that the grouping of actions is associated with the obligatory deviation of the periodicity of this type of TCC from the optimal periodicity of some actions TCC.

The following methods are used to determine the periodicity of a group of actions ("group" periodicity).

The method of grouping the main operations of the TC is based on the fact that the execution of the TC is periodic, the optimal periodicity of the so-called basic operations is equal to lo. The basic steps have the following features:
a) Affect the environmental and road safety of the vehicle;
b) Affects the efficiency of the car, its smooth operation, economy;
v) Requires special equipment and construction of posts, large workload;
g) Returned
Examples of such basic actions or groups of actions are:
brake system inspection and adjustment (all signs); exhaust gas toxicity testing and adjustment of engine systems accordingly (all signs); change the oil in the crankcase (v, g -signs). Thus, in this method, the TCK periodicity of the main action is taken for lo ’, the TCK type periodicity, or the group of actions. For example, lTXK-1 = lor (Figure 2). As can be seen from the figure, this method can be divided into three groups of preventive measures:

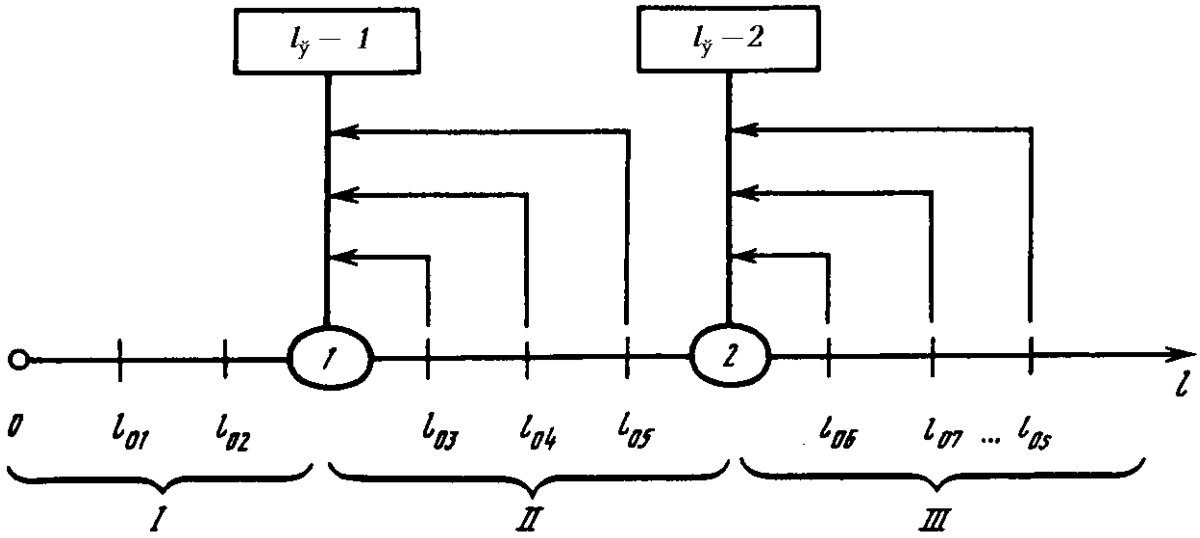

Figure 2. Group by main activity

1st periodicity; the arrow indicates that the main action is performed in conjunction with certain actions.
I. $l_{0i} < (l_y - 1)$: performed daily (CPC) or as needed (in JT), i.e. excluded from the prophylactic.
II. $(l_y - 1) \le l_{0i} < (l_y - 2)$: 3,4, the operations $l_y - 1$ are performed periodically at the same time as the first main operation.
III. $l_{0i} \ge (l_y - 2)$: performed at the same time as the second main operation or excluded from the preventive maintenance (transferred to the current or warning repair).

Operations with an optimal periodicity greater than the main periodicity are performed with a return factor.

$K_i = l_y / l_{01} = (l_{TXK})_1 / l_{01}$, bu yerda 0<K≤1

It was noted that such operations consist of two parts - control (diagnostics) and execution.

In this case, the control part is performed each time the car is sent to this type of service, and the execution is carried out, if necessary, depending on its current technical condition.

In the current system of maintenance, 65-70% of all operations are performed within the specified periodicity with a return coefficient depending on the results of control.

In the feasibility study, the group periodicity is determined in such a way that the sum of the minimum maintenance costs for all the objects under consideration (Figure 3) corresponds to $S_{\sum\sum}$:

$$C_{\sum\sum} = \sum_S C_{1S} + \sum_S C_{11S}$$

that is, the optimal periodicity did. $C_{\sum\sum} = C_{\min}$ da $l = l_{or}$

In this, S_{1S}, S_{11S} - i specific costs of the object; S – Number of operations in the group (TXK type)

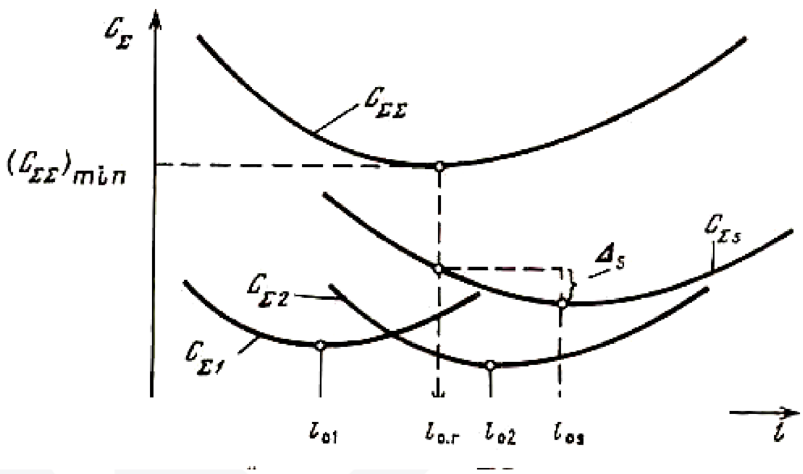

Figure 3. Determining the periodicity of group maintenance by technical and economic method

$l_{01} \neq l_{02} \neq l_{03} \neq ... \neq l_{0s}$ - Optimal periodicity of some TCC operations

In Figure 1.5, ΔS the increase in the specific costs of operation C is performed as a result of grouping, rather than with a specific optimal l_{0i} periodicity.

If the group includes activities that are limited by environmental, safety conditions or technical criteria within the specified $l_{or} \leq l_{01}$ periodicity, the selected group must meet the periodicity condition; where i is the number of periods of operation limited by the

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 6, June, 2022

requirements of traffic safety or other technical criteria (for example, $l_{or} \leq l_{01}$ the cessation of movement of the mechanism).

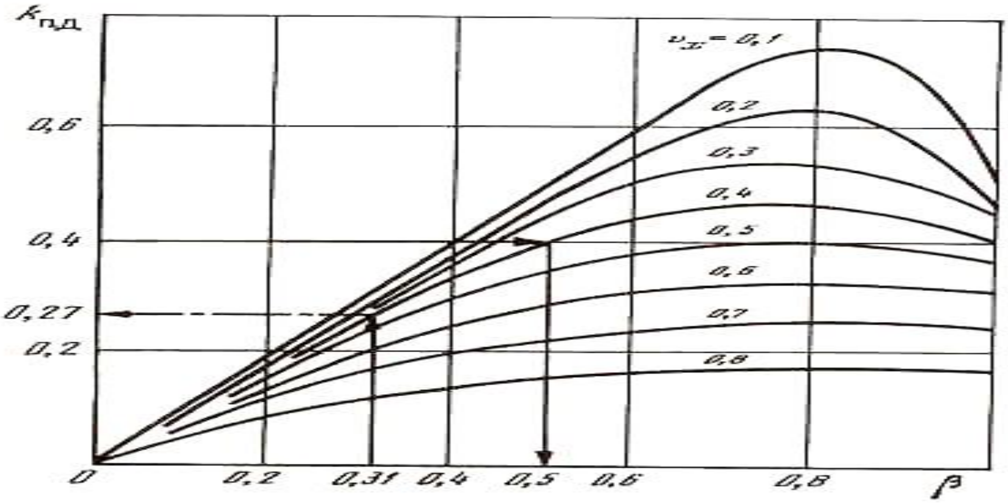

Figure 4. Evaluate the validity of the prophylactic effect at a given periodicity

It is possible to determine whether it is expedient to perform the economic probability method with the given periodicity of the main operation, and not with the optimal periodicity. Using the prophylactic action card, the specific costs of the warning strategy are determined by the zone of duration of operation in such a way as to minimize the costs from the elimination of the breach. If the duration of the main operation is in this zone, the periodicity change for the given operation is allowed. Figure 4 shows graphs that allow Kyqch to determine the allowable limit value of the relative cost of maintenance and repairs. An increase in periodicity is not economically feasible.

For example, the object is an acceptable periodicity - $l_0 = 12$ thousand km has the following characteristics: $K_H = d/c = 0.4$, $\bar{x} = 15.5$

Thousand km, $\delta_x = 0,4$ this was an acceptable periodicity of action $l_0 = 12$ don't with thousand km, $l_{TXK} = 5.5$ we determine the expediency of its performance at intervals of one thousand km . Periodicity coefficient in the performance of an operation with a given periodicity $\beta = \frac{l_{TXK}}{\bar{x}} = \frac{5.5}{15.5} = 0.31$. This value of the coefficient and the coefficient of variation v_xq0.4 the threshold value of the coefficient for $K_{йкч} = 0.27$,in practice – 0,4. K_{ch}>K_{yqch} therefore, according to economic criteria, it is not an alternative to carry out this operation on a prophylactic strategy with a periodicity of 5.5 thousand km.

The lower limit of the $l_{TXK} = \beta\bar{x} = 0.5 \cdot 15.5 \approx 7.8$ frequency of maintenance of this operation is one thousand km.

Thus, a periodicity interval is defined in which it is advisable to carry out a specific action on a warning strategy with a group periodicity. For example, the distance is 7.8-12 thousand km. If a number of objects have an acceptable periodicity very close to each other, the natural grouping method is used. For example, when servicing non-self-aligning joints in modern trucks, 2 peaks are identified, indicating the need to reattach at 4-7 and 15-20 thousand km. The adjustment frequency is close enough to each other in the brakes, valve mechanisms, and wheel mounting angles. There may be other grouping methods, such as linear programming and the use of statistical tests.

Thus, actions are grouped by type of SSC, using the appropriate SSC methods.

As mentioned above, the increase in the number of stages (types of maintenance) has a theoretical positive impact on the overall cost and reliability of the operation of some facilities, but at the same time, the organization of maintenance and repair processes on the car increases the costs associated with the preparation (preparation-completion times, planning to put in the TCC, etc.).

References

1. Resolution of the President of the Republic of Uzbekistan "On the organization of the Ministry of Transport of the Republic of Uzbekistan" dated February 1, 2019 No PQ №4143 [Electronic resource]. URL: https://lex.uz/docs/-4194161.
2. Resolution of the President of the Republic of Uzbekistan dated January 10, 2017 No PQN№2724 "On measures to further improve the system of public transport services and bus transportation in cities and villages" [Electronic resource]. URL: https://lex.uz/docs/-3095350.
3. Resolution of the President of the Republic of Uzbekistan "On measures to radically improve the system of freight and passenger transport" dated March 6, 2019 No PQN№4230 [Electronic resource]. URL: https://lex.uz/docs/-4229763.
4. Vehicle service. Textbook. MA Ikramov, QM Sidiqnazarov, AA Abdurahmonov and others. Publishing House of the National Library of Uzbekistan named after T. Alisher Navoi, 2010.266 p.
5. Napolskiy G.M., Pugin A.V. Reconstruction and technical re-equipment of transport enterprises. Study guide. (Translated by M.Z.Musajonov, N.M.Muminjanov). Tashkent: TAYI, 2004 - 88 p.
6. Azimov A., Muxtarov A.Avtotransport korxonalarida texnik xizmat ko’rsatish va ta’mirlash ishchilarini kompetensiyaviy yondoshuv asosida tayyorlash va

malakasini oshirish metodikasi.Academic Research in Educational Sciences, (2021) 2(1), 258-265 p.

7. Akmal Azimov, & Abdukarim Muxtarov (2021). Yo'lovchi tashuvchi avtotransport korxonalarining samaradorligini belgilovchi omillar tahlili. Academic research in educational sciences, 2 (4), 1395-1340. doi: 10.24411/2181-1385-2021-00749.
8. Odilov, N., & Muxtorov, A. (2022). Avtomobillar harakatini xavfsiz tashkil etishda GPS tizimlaridan foydalanish samaradorligi. Academic research in educational sciences, 3(2), 298-303
9. Muxtorov, A. ., & Ergasheva , K. . (2022). Transport vositalarining yuklanganlik masalalari tashishda yukning nomenklaturasi.. Academic Research in Educational Sciences, 3(2), 534–540.