

Main Operational Indicators that Affect Vehicle Performance

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Abstract: The article provides information on improving the efficiency of motor vehicles, the effect of the road utilization coefficient on the performance of the car, the effect of the loaded travel distance (l_{yuq}) on the performance of the car, and the effect of the technical speed of the car on its performance.

Key words: road utilization coefficient, technical cleanliness, technical and operational factors, load and travel, work efficiency.



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Introduction: It is of great importance to know the guidelines and methods for increasing the efficiency of motor vehicles, the correct organization of the transportation process, the degree and nature of the impact of certain technical and operational factors on the cost of transportation, and the efficiency of vehicles.

Using the above formulas, it is much easier to understand the conditional fact that all the factors on the right-hand side are independent, that is, each of them is a quantity that is not functionally related to each other. Then, by changing each indicator in turn and taking the rest as constant, it is possible to determine the effect of all operational factors on the hourly productivity of the car (W_Q and W_R).

In practice, in all of the above formulas, some operational factors are relatively unrelated to each other. These include: q_n , q , hatch, and q .

$$W_P = a_q \cdot q_H$$

The effect of changes in the vehicle's load capacity and its utilization coefficient on hourly productivity can be determined as follows. Assuming that the load capacity is a variable quantity and the remaining factors are constant, the formula can be expressed as follows:

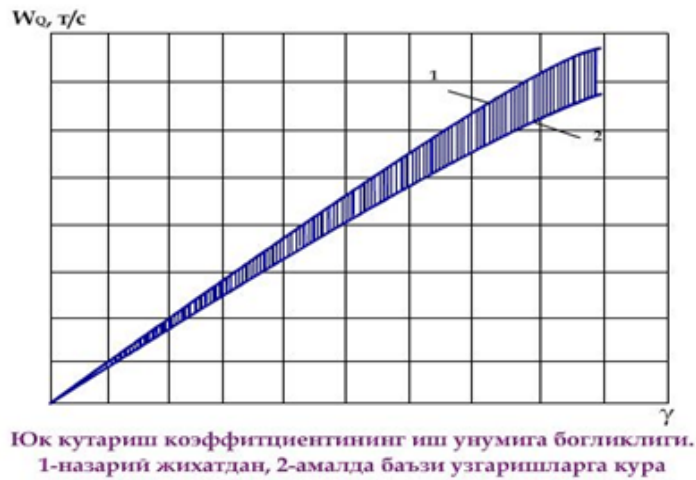
[59]

where the constant coefficient is

$$a_q = \frac{\gamma_{CT}}{\frac{1}{\beta \cdot V_T} + \frac{t_{O-T}}{l_{ЮК}}} \text{ will be equal to.}$$

The impact of the load capacity utilization coefficient on productivity is also analyzed as above, i.e.

$$W_P = a_\gamma \cdot \gamma_{CT} \qquad a_\gamma = \frac{q_H}{\frac{1}{\beta \cdot V_T} + \frac{t_{O-T}}{l_{ЮК}}}$$



The effect of the road utilization coefficient on vehicle performance is determined as follows.

Taking γ in formula 56 as variable and the remaining factors as fixed, we can reduce the formula to the following form:

$$\frac{1}{\beta \cdot V_T} \cdot W_P + \frac{t_{O-T}}{l_{ЮК}} \cdot W_P = q_H \cdot \gamma_{CT}$$

We multiply the right and left sides of the formula by $\frac{\beta \cdot l_{ЮК}}{t_{O-T}}$

$$\frac{\beta \cdot l_{ЮК}}{t_{O-T}} \cdot \frac{1}{\beta \cdot V_T} \cdot W_P + \frac{\beta \cdot l_{ЮК}}{t_{O-T}} \cdot \frac{t_{O-T}}{l_{ЮК}} \cdot W_P = \frac{\beta \cdot l_{ЮК}}{t_{O-T}} \cdot q_H \cdot \gamma_{CT}$$

After some simplifications, we can reduce the equation to the following form:

$$\beta \cdot W_P - \frac{l_{ЮК} \cdot q_H \cdot \gamma_{CT}}{t_{O-T}} \cdot \beta + \frac{l_{ЮК}}{V_T \cdot t_{O-T}} W_P = 0$$

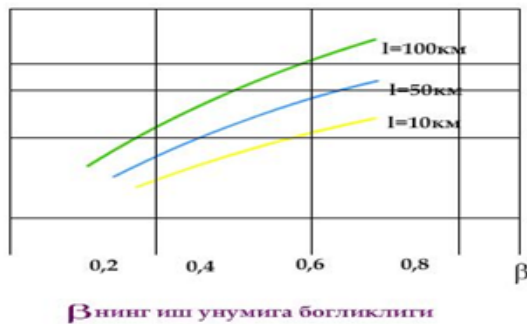
$$\beta \cdot W_P - a_\beta \cdot \beta + b_\beta \cdot W_P = 0$$

According to the previously accepted condition, assuming that the factor γ is independent and W_p is a variable dependent on γ , and the remaining factors are conditionally invariant, formula 56 can be written as follows:

In this case, the constant coefficients a_γ and β_γ are equal to the following quantities :

$$a_{\beta} = \frac{l_{IOK} \cdot q \cdot \gamma}{t_{O-T}}$$

$$b_{\beta} = \frac{l_{IOK}}{V_T \cdot t_{O-T}}$$



To determine the effect of the load distance (haul) on the performance of the vehicle, we can use the above formula 56. In it, we assume the haul factor to be dependent and W_p to be a variable dependent on haul, and the remaining factors are conditionally constant. If we multiply both sides of formula 56 by $\beta \cdot W_t$ and move the right side of the formula to the left side, we get the following form:

$$\frac{\beta \cdot V_T \cdot l_{IOK} \cdot W_p - \beta \cdot V_T \cdot q_H \cdot \gamma_{CT} \cdot l_{IOK}}{\beta \cdot V_T} + \frac{t_{O-T} \cdot \beta \cdot V_T \cdot l_{IOK} \cdot W_p}{l_{IOK}} = 0$$

After some abbreviations in the formula, it becomes:

$$l_{IOK} \cdot W_p - \beta \cdot V_T \cdot q_H \cdot \gamma_{CT} \cdot l_{IOK} + t_{O-T} \cdot \beta \cdot V_T \cdot W_p = 0$$

or its appearance can also be reduced to the form of a second-degree curve, that is, an equilateral hyperbola:

$$l_{IOK} \cdot W_p - a_l \cdot l_{IOK} + b_l \cdot W_p = 0$$

The constant coefficients in this:

$$a_l = \beta \cdot V_T \cdot q_H \cdot \gamma_{CT}$$

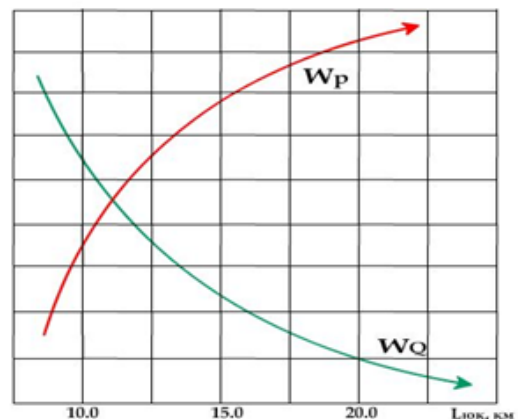
$$b_l = t_{O-T} \cdot \beta \cdot V_T \text{ equal to}$$

Comparing the formula with , we conclude that both equations are mathematically the same.

Therefore, the conclusion drawn from the equation is also fully consistent with the equation, that is, the change in the vehicle's performance under the influence of the wind also follows the law of an equilateral hyperbola and is a curve passing through the origin of the W_p -wind coordinate system.

The effect of a vehicle's technical speed on its performance is determined as follows:.

$$\frac{l_{IOK} V_T}{t_{O-T}}$$



l_IOK винг иш унумига боғликлги

In equation 56, the technical speed (W) is an independent variable and the change in work output depends on it. Assuming that the remaining factors are fixed, we multiply both sides of the equation by , and we can rewrite it as:

$$V_T \cdot W_p - \frac{l_{IOK} \cdot q_H \cdot \gamma_{CT} \cdot V_T}{t_{O-T}} + \frac{l_{IOK}}{\beta \cdot t_{O-T}} W_p = 0$$

Tenglamani o'zgaras qiyimatli a_v va b_v koeffitsiyentlari

$$a_v = \frac{q_H \gamma_{CT} l_{IOK}}{t_{O-T}} \quad b_v = \frac{l_{IOK}}{\beta t_{O-T}};$$

If we replace with , it becomes as follows:

$$V_T \cdot W_P - a_t \cdot V_T + b_t W_P = 0$$

The equation differs from the previous ones only in the values of the constant coefficients a_v and b_v . Therefore, the dependence of the technical speed on the efficiency of the car also obeys the law of the equilateral hyperbola curve.

We determine the effect of vehicle (train) downtime during loading and unloading operations on their performance in the following manner. In equation 56, the idle time of a vehicle (train) during loading and unloading operations is a variable that does not depend on other factors, and the change in performance depends on it, assuming

that the remaining factors are conditionally constant, and multiplying both sides of the equation by the amount of the gap, the resulting equation will be as follows:

$$t_{O-T} \cdot W_P - q_H \cdot \gamma_{CT} \cdot l_{IOK} + \frac{l_{IOK}}{\beta \cdot V_T} \cdot W_P = 0$$

Fixed values

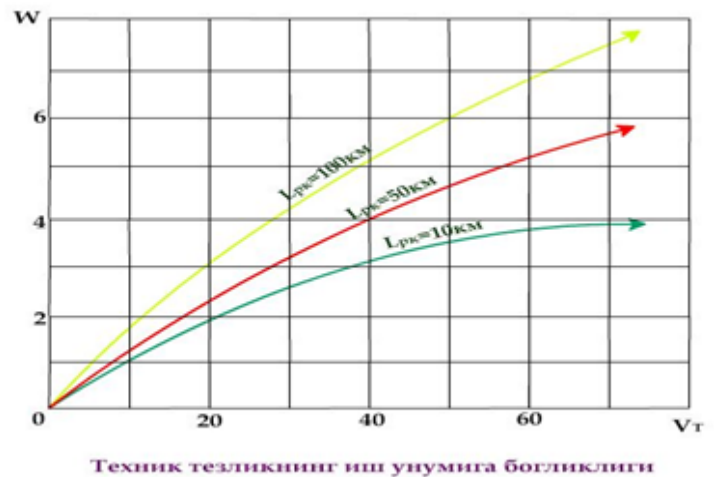
$$a_t = q_H \cdot \gamma_{CT} \cdot l_{IOK};$$

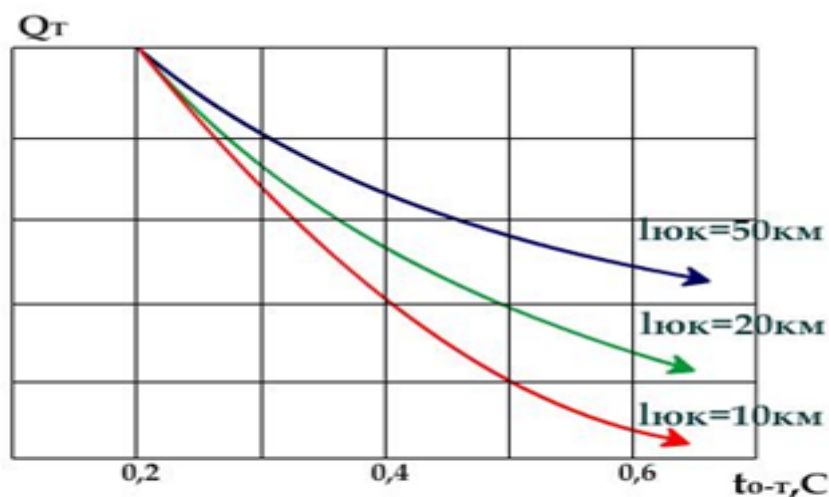
If we replace the equation with: $b_t = \frac{l_{IOK}}{\beta \cdot V_T}$

$$t_{O-T} \cdot W_P - a_t + b_t \cdot W_P = 0$$

This equation is also a quadratic curve formula. This equation differs from the previous ones only in that there is no conditional variable next to the coefficient.

Therefore, the effect of the idle time () of a car during loading and unloading operations on its performance also obeys the law of an equilateral hyperbolic curve and is in its W_p - coordinate system.





Ортиш-туширишда бекор туриш вақтининг
иш унимига боғлиқлиги

CONCLUSION

The following conclusions and suggestions can be made based on the research work carried out in the article: Despite the low cost and organizational efficiency of private transport services, the technical condition of vehicles and their control at the disposal of enterprises in the city are still not up to the required level. In order to prevail in the market competition, they are faced with solving such problems as improving the service culture, updating vehicles, improving their daily control and drivers, and creating technical service bases. Proposals were made for each small and medium-sized business entity providing transport services to have a production technical base that meets modern requirements, a gate point that carries out daily control of vehicles, and a medical point that carries out daily control of the physiological condition of drivers. In order to demonstrate the prestige of the private transport system, improve the quality of services provided to the population, and reduce shortcomings, a proposal was made to increase the legal protection of private transport owners, renew the transport structure and raise the culture of transport services, and organize dispatch points for receiving orders for transport services in places to coordinate and centralize transport services.

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