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| Research Article

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Determination of the Opimal Nimber of Equipment in the Oil Depot

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Annotation
This article introduces a new system for the uninterrupted supply of oil products to modern machine and tractor units in the context of the development of the agricultural system of independent Uzbekistan in recent ears. The main reason for this is the cultivation of agricultural products in a short time, achieving high yields, and reducing their cost. Dedicated to determining the optimal number of fuels and lubricants filling devices in the oil depot.

Keywords: Oil depot, fuel and lubricants, cost, device, optimal number, number of vehicles, distribution, delivery, storage, number of mobile vehicles.

An agreement was signed between the Andijan Institute of Agriculture and Agrotechnologies and the cluster organization ANDGOLD TEX group of the Izboskan district of the Andijan region in 2024.

The main goal of the agreement is to determine changes in the transportation, storage, and consumption of petroleum products in the Andijan region, Izboskan district, and the Andijan regional cluster organization ANDGOLD TEX group, identifying reserves, determining the number and composition of vehicles transporting petroleum products at its main oil storage facilities and distribution points, as well as studying the proper distribution of the machine and tractor fleet with petroleum products.

Experimental work was carried out to determine the optimal number of fuels and lubricants filling devices at the oil depot of the ANDGOLD TEX group cluster organization in the Izboskan district of Andijan region.

Half of the consumption of petroleum products in the country's total balance is accounted for by agriculture. Increasing the volume of agricultural production and increasing the volume of mechanization work in agriculture increases their demand for petroleum products.

The growth of demand for petroleum products, which are considered the main directions of economic and social development in our country, is 75-80 percent covered by their savings.

Analysis of the transportation, storage, and consumption of petroleum products in the country's agriculture shows that changes in the indicators of the use of the tank fleet and reserves of petroleum products in clusters, farms, and agricultural enterprises, with the preservation of

average reserves of 2-14 percent per ear, the maximum filling of tanks with petroleum products is 30-55 percent.

Improvement of the conceptualization and cooperation of agricultural machinery and material and technical means within the machine and tractor fleet in real conditions, organization of the oil industry and provision of the machine and tractor fleet with petroleum products, regulation of oil storage facilities, transportation, storage, system of motor vehicles and mobile vehicles requires studying.

The main purpose of the article is to identify changes in the transportation, storage and consumption of petroleum products by specialists of the Andgold TEX group cluster organization of the Izboskan district, determine the number of equipment and inventory at its main oil storage facilities, determine the number and composition of vehicles transporting petroleum products at distribution points, and help organize the proper distribution of the machine and tractor fleet with petroleum products.

The consideration of methods for distributing petroleum products, the general scheme (model), the determination of the required number of oil equipment and machinery for calculation, with the selection of mobile refueling units, other fuel and oil distribution equipment and distribution basins, concludes with the determination of the optimal number of methods for calculating the required number of oil equipment and machinery depending on the specific conditions of production and distribution of oil supply of currently non-existent standards as a result of development, we determine the required number of them.

For the first time, calculating the number of oil equipment and machinery based on the distribution of petroleum products in a general system, the author proposes a complete solution to the problem, checks the proposed three schemes for the supply and distribution of petroleum products, and provides a method for calculating the number of trucks, mobile transport vehicles, and refueling equipment at gas stations and oil depots, achieving a reduction in the costs of delivery, storage, refueling, and operation machines at the lowest minimum cost for each scheme.

The number of mobile devices, calculated by the author according to the following formula:

$$m_a = \frac{W - Wm3}{Wц} = \frac{(W - Wm3)(2Чn/Vmm + tнн}{V_{ацц}T_{ацц}} \quad \text{;piece (1)}$$

W-total volume of petroleum products supplied to farms, t/day;

Wm3 - quantity of petroleum products delivered by mobile means gas stations, t/day;

ωs - productivity of the mobile truck, t/day;

rp - delivery distance, km;

Vts - speed of the mobile vehicle, km/h;

tns- time of filling and unloading of the mobile device;hour

Vas-power of the portable means, t;

Tas - working time of a mobile device during the day, hours.

The disadvantage of formula (1) is the lack of waiting time, the distribution of the mobile means corresponds to oil reserves.

The general disadvantage of the proposed method of distributing a mobile medium is that the author does not take into account the losses of petroleum products from evaporation, the costs of storing liquid in the distributed oil reserve. In addition, this method is aimed at a separate

economy and requires improvement in its application for calculating the supply of petroleum products of agricultural enterprises.

It is recommended to determine the required number of mobile vehicles for each ear based on the state of regular deliveries of petroleum products throughout the ear using the following formula:

A=; pieces (2)

G-total freight turnover, tkm;

ωs - truck productivity, t/day;

αb - machine production coefficient in each direction.

Researchers[4] define the number of necessary tools as follows:

A=;piece (3)

G-trade turnover, tkm;

L-length of cargo transportation, km;

τpr - distance utilization factor;

tpr-free time of a mobile vehicle during loading and unloading during transportation, hours;

Vas - technical speed of a tanker truck, km/h

τi - fleet utilization coefficient;

τg - factor taking into account road use;

Dr-number of working days during the planning period;

Vas-capacity of the tanker truck, t;

tn- duration of line work, hours.

formulas (2) and (3) are the same as the shortage of petroleum products, formulas 1), due to which the queue with tank trucks is waiting without wasting time. In addition, formula (2) and (3) also takes into account the volume of imported petroleum products per unit of mobile refueling, taking into account the economy.

It is recommended for a centralized delivery of petroleum products for tank trucks, including such factors as classical and imported petroleum products using inequalities. The number of tank trucks was determined by calculating the monthly volume of petroleum products during transportation in the most relevant months of the MTP. It is proposed to replenish the component of the collection with vehicles with high technical and economic indicators.

The need for mobile fuel transport vehicles (2) is determined based on the number of tractors per day and the distance for oil storage facilities.

[3] the number of mobile refueling vehicles at the station is determined by the formula:

NM3=; pieces. (4)

G - daily fuel consumption, t;

ωc.z-filling station capacity, t/day;

NC.3 - number of stationary points on the farm;

rg-distance from the oil reserve to the gas station, km

VT3 - technical speed of the mobile refueling unit, km/h;

VM3 - portable fuel tank, t;

d3 - average fuel dose per machine, t;

t3- average fuel filling time, h

tH3 - refueling time at the gas station, hours;

TM3 - time spent without a reason (1.4) during the filling of movable vehicles.

Determining the required quantity of oil equipment and machinery.

[4] Proposed to determine the amount of fuel consumption by one fuel dispensing column over 1 hour, based on the number of service vehicles (15 cars per 1 hour).

This [2] gives the following formula for calculating the consumption of fuel dispensing equipment at the branch:

Nk= pieces. (5)

M- daily amount of fuel; t

Ks-coefficient of uneven equipment use;

Tk- daily fuel dispensing column time; hours

ωk-performance 1 / hour

Conclusions and proposals.

1. By optimizing the supply system in the cluster organization ANDGOLD TEX group of the Izboskan district, a system optimization criterion for the supply, storage, and refueling of petroleum products has been adopted, according to which for the minimum total discounted costs, the use of service tanks of fuel assets from ordinary tanks of farmers, evaporation machines of petroleum products, and losses are reduced by 2 times.

2. Analytical dependencies are obtained for selecting the optimal number of containers in the petroleum product reserve during the distribution of petroleum products.

3. During their analytical study, the activity of three types of containers (cylinder, ball, cube) for storing petroleum products is studied.

4. A zero model has been developed, and the management of oil product reserves at enterprises in accordance with the conditions of clusters and farms has provided a very large economic effect.

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