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Need proved wastewater from biodiesel schelochnoho katalyzatora. Conducted analysis of "dry" and "мокрый" sposobov biodiesel purification. Advantages and disadvantages Otseneny pyзырkovoho, aerosol and oбъemноho промыvanyya biodiesel.

Biodiesel engine, промывка, drop, bubbles, mixer, Neutralyzatsyya, metylovy ether, katalyzator.

The necessity of purifying biodiesel from alkali catalyst. The analysis of "dry" and "wet" cleaning methods biodiesel. Evaluated the advantages and disadvantages of bubble and aerosol surround washing biodiesel.

Biodiesel, flushing, drop, bubble, mixer, neutralization, methyl ester, catalyst.

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RELIABILITY ASSESSMENT OF AND FOR COOKING DEPENDING distribution FEED OF TERMS AND MODES OF OPERATION

AV Nowicki, Ph.D.

Presents the analysis of reliability of machines for the preparation and distribution of feed in the agricultural sector of Ukraine. The evaluation of specific failures depending on the particular conditions and modes of operation.

Machine reliability, denial, reduction, damages, wear.

Formulation of the problem. As a result of the early 90's reforms in the agricultural sector of Ukraine was

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decline and economic efficiency of livestock production. Significantly reduced number of animals, deteriorated genetic and production potential of the industry intensified competition from increased imports.

Analysis of the presence of the main types of technology in the agricultural enterprises of Ukraine shows that as of January 1, 2014 there were 3793 cars and mechanisms of feeding and feed distributor 3960 cattle units. During the period from 2010 to 2014, the number of machines and mechanisms for feeding only increased by 19%, and distributor of feed for cattle even has decreased by 14%. At the present stage of development of animal husbandry in the world and in Ukraine becoming more common tools for the preparation and distribution of food (ZPRK) combining operations of loading, chopping and mixing, as well as provide transportation and distribution of dosage.

Analysis of recent research. Not the best of times is now experiencing domestic agricultural machinery, but at the same time, Ukraine established modern production ZPRK cattle on farms. Production of these vehicles started at machine-building enterprises of our country: JSC "Bratslav agricultural machinery plant", JSC "Umanfermmash" and JSC "Mashzavod Galeshina" [2, p 96-99]. The level of reliability of domestic ZPRK largely achieved through the use of basic units and units from leading manufacturers from Italy, Russia and Ukraine [2, p 99-100; 6, S. 108-109]. However, analysis shows that attempts to create domestic ZPRK to the best foreign samples ended small-scale production. In this situation, farmers are forced to buy imported grinders - mixers, which are too expensive and are not always adapted to local conditions.

In recent years, scientific articles conducted a comparative analysis of multi-mixer distributor of various working bodies and structural patterns of transactions treated areas for further improvement of design solutions [7, S. 287-289].

But at the same time as the analysis of theoretical and practical work, they declined basic research that would have been associated with the problem of assessing and ensuring the reliability ZPRK, and especially with the provision of capacity aging machinery and equipment for the preparation of feed and feed distributor [4, p 156-158].

In addition, there are problems in training of service personnel, both for operation of these machines, and for their service, maintenance and repair [5, p 357-359; 7, S. 198-200].

Practice operation ZPRK cattle on farms shows that such important issues as evaluation methods and ensuring operational reliability of complex systems, which are mobile and trailer fermski processors, grinders - mixers have not paid enough attention. So, today is important not only to analyze the characteristics of conditions presented complex machines, but also identify the causes of the formation and display of various types of failures that limit the reliability necessary structures ZPRK.

The purpose of research is reliability rating and setting specific failures facilities for preparation and distribution of feed depending on the conditions and modes of operation.

Results. ZPRK operated under difficult conditions the external environment, internal environment of premises which operate loads while performing processes. The most intense period of stress and work ZPRK during the year is the period farmyard cattle. It is characterized by different weather conditions, changes in a wide range of temperature and humidity.

Operating ZPRK complicated high in the air of dust. In addition to the mechanisms of influence, power and vibration loads which are caused by work directly ZPRK and other vehicles and equipment used for sites to load and feed directly into the premises farms.

Implementation of the load, grinding and mixing feed and feed mixtures preparation predict the likelihood of accidental interaction of working bodies ZPRK solid inclusions. To prevent possible damage mechanisms in their designs provided various safety devices that must operate at accelerations that occur as a result of uneven supply or more than the allowable number of components of the feed during loading, chopping and blending modes or abuse of funds.

Significant influence on loading mechanisms grinding and mixing ZPRK making boot sequence components in the feed hopper. To prevent clogging must first load components from a small structure that will prevent clogging of these mechanisms.

The cause of the overload ZPRK also be filling the hopper with square or round bales with increased frequency mixing auger shaft. Possible tightening stem mass, which also causes congestion, and sometimes even stops working mechanism of grinding and mixing. Therefore, the processing of square or round bales recommended to deploy counter knives in a bunker on passive interactions with foods and begin work at a slow speed of rotation of the input shaft mixing screw.

Terms of mechanisms ZPRK a high degree of dust in the atmosphere. Much of dust due to the presence of dust on stalks of hay or straw, and separation of small components and organic abrasive nature contained in the composition of animal feed and grain. Working mechanisms and especially the work of ZPRK in such conditions is complicated by their intense wear.

But in addition to the above, the terms of ZPRK also characterized by a high corrosive environment that causes corrosion. The impact of corrosion due not only details the interaction with grass and corn silage, but also fodder additives with high water content, such as brewer's grain, potato pulp, beet chips. Operating ZPRK indoors livestock farms complicated high content of moisture in the air, ammonia and carbon dioxide.

When functioning of possible sudden accidental injury of workers, especially in contact with third-party components feed solid objects. In addition, accidental damage can occur as a result of fatigue action of cyclic loads, or overloads due to irregular supply of feed components. Sudden (emergency) damage characterized by varying the intensity of their manifestation and unfortunately occupy no small place among the causes of failure of the working bodies ZPRK. In practical operation ZPRK failure are associated with different kinds of failures concerning mechanisms for loading feed grinding, mixing and unloading the feed mixture. During the operation were reported failure due to leakage of hydraulic equipment and gear, bearings failure mechanisms occasion, been caused by overloading, oil leaks in the joints of hydraulic and hydraulic cylinder.

It should be noted that parts and components ZPRK wear of varying intensity. The reason is that parts and components made of different materials with different wear resistance and load during operation. For example, the active components and working bodies (blades, screws, shafts, mixers etc.) Are more burden than passive (supporting plates, frames, cases, etc.). In addition, tolerances on dimensions and landing details which are provided by companies producing varies within wide limits. As a result, the same combination with different allowable gaps or tensions, and the process of wear in each case occur with varying intensity.

Failures that are caused by wear parts take a significant share of other failures specific to ZPRK. As they increasingly apparent over time operating vehicles. In dusty and the presence of abrasive particles, the dominant form of wear is abrasive. This type of wear caused by direct interaction working surfaces of the working bodies and body parts from solid abrasive particles which are in dusty air or on the surface of the feed components that fall into the zone of friction.

It should be noted that other causes display of individual damages and failures is the lack of quality of manufacturing parts and components. Inconsistency material detail deviations from manufacturing technology, including surface roughness and finishing, low production standards, lack of technical control leads to failures ZPRK in their production. These reasons lead to the emergence of failures in mechanisms drive transmissions, bunkers and appear as distortions, destroying walls and brackets on material fatigue cracks in welds.

Some of the failures are the result of imperfections in engineering design, choice of materials or design parameters justification parts and assemblies. This is primarily manifested in the destruction of material fatigue when details do not maintain the required number of loading cycles.

To a large extent, with the design features associated with failure ZPRK about mixing different types of workers. Designs can be divided into ZPRK machines with horizontal and vertical mixing working bodies. Mixer-type horizontal distributor than those relating to vertical type, the best components are ground and mixed feed and provide greater uniformity of distribution mix. But at the same time, horizontal mixers have very little ground clearance, making it difficult to use them for disordered farms, farms in areas that are not built on typical projects, and the operation of soil on the roads. It should be noted that the horizontal type mixer is very sensitive to impurities through small gaps between the cutting and protyrizhuchymy elements. Stones, pieces of building materials and other foreign objects that fall from a feed hopper cars, leading to serious damage, the elimination of which required a lot of time and money. Vertical mixers typically have a higher ground clearance, they are less sensitive to impurities that may fall from the feed to the grinding, but distributed less evenly feed mixture. For the same vertical mixing hopper capacity higher than the horizontal, which complicates their use in areas with low arrival in the room inside ceilings. However, in recent years, horizontal, vertical displace fodder.

For the preparation and distribution of feed mixtures animals widely used in households are mobile feeding mixers with a weighing device. These products are produced both foreign and domestic manufacturers. Often there are failure of these devices that are associated with malfunction of electronic systems ZPRK. The experience of using drugs, they can occur suddenly or gradually emerge leading to functional failures weighing devices dispensing mechanisms.

The significant load on the wheel ZPRK, especially for uniaxial means leads to that wheel mixer-distributor easily damaged. Therefore, to reduce bounce undercarriages, irrational use these machines for the

transport of feed mixtures from the central farm to other farms farms. The cause of low reliability ZPRK is also a lack of domestic refineries testing laboratories needed for operational testing of new design solutions and construction units of machines; Another important reason is the failure of recommendations for test vehicles before their production

Thus ZPRK specific operating conditions are:

- The possibility of accidental damage when hit extraneous solid objects;
- Reloading mechanisms, assemblies, transmission as a result of uneven loading feed components and modes of infringement;
- High load machines and short periods of technological interruptions;
- Availability environment with a high content of abrasive dust particles and impurities of organic origin;
- Presence of aggressive corrosive environment, including components of the feed.

Constant monitoring and taking steps to address these causes will significantly raise the level of safety of domestic and imported ZPRK.

Conclusions

The evaluation of the reliability characteristics of domestic ZPRK conditions and modes of operation indicates the need to learn from the experience of foreign manufacturers to provide high reliability that can be achieved by addressing the following tasks:

- Perfecting new designs of machines and modern technology production machinery, the use of new materials and technologies to strengthen;
- Development of new approaches and create models of reliability of "man-machine" with the discovery of the role of the human factor in the overall problem of providing the required level of technology;
- Providing training for maintenance personnel operating vehicles, maintenance and repair;
- The tests of cars on the stands and in actual operation to identify weak links and optimization of the main indicators of reliability.

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Analysis is set out the problems of reliability of machines and pryhotovlenyya razdachy fodder in the agricultural sector of Ukraine. Conducted evaluation of harakternyh otkazov dependence in such regimes and Features uslovyy s operation.

Machine reliability of, refusal, Restoration, INJURIOUS, yznashyvanye.

The paper analyzes the problems of machines for making and distribution of feed in agricultural sector of Ukraine. The conducted estimation of reliability of machines for making and distribution of feed is from the features of terms and modes of their exploitation.

Machine, reliability, failure, restoration, damage, wear.

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Theoretical models PROCESS grinding grain VALTSEDEKOVOYU Crusher

SE Potapova, Ph.D.

A model of crushing in crusher valtsedekovyh to clarify the physical mechanism of destruction of feed grains.

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Grinders of a grain, valtsedekova crusher, grinding process model.