

this case, the true strain can be equated with the average of the absolute values of Laplacian, and under residual - understand the changing structure (describing it, such as neutrality).

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Razrobotanna matematycheskaya model deformatsyonnih nahruzok at vybroobrabotke workers organs selskohozyaystvennoy technics kotoraja uchytivaet switching parts of energy in plastychnuyu and uprughoplastycheskye deformation, pozvolyla proanalyzovat Effect parameters handling and establish, something frequency load Virtually no vlyyaet on Changes in workers sloe, zato amplitudes & Time ymeyut suschestvennoe Effect on uprochnenyya processes.

Disk digger, vybroobrabotka workers organs, matematycheskaya model deformatsyonnye nahruzhenyya.

The worked out mathematical model of the deformation loading at vibrotreatment of working organs of agricultural technique that takes into account passing of part of energy to plastic and pruzhnoplastychnu deformations allowed to analyse influence of parameters of treatment and set that frequency of loading practically does not influence on changes in a working layer, but amplitude and time have substantial influence on the processes of strengthening.

Disk, vibrotreatment of working organs, mathematical model, deformation loading.

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Failure analysis tools for distribution PRYHOTUVANNYAI FEED

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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.

Analysis of refusal, tool feed.

Formulation of the problem. As a result of the early 90's reforms in agriculture Ukraine was a decrease in volumes and efficiency of livestock production. Significantly reduced the number of animals has worsened genetic and production potential of the industry intensified competition from increased imports.

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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. Production of these vehicles started at machine-building enterprises of our country: JSC "Bratslav agricultural machinery plant", JSC "Umanfermmash" and OJSC "Galeshina Machine works" [1, 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 [1, p. 99-100; 5, p. 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 [6, p. 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 [3, 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 [4, p. 357-359; 6, p. 198-200].

Experience has 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 Mixer has not paid enough attention.

The purpose of research. Based on the analysis, the purpose of the article is the assessment of safety and establishment of 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. It should be noted that operating conditions 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.

Experience has shown that the parts and components ZPRK wear of varying intensity. This is because the parts and components made of different materials with different wear resistance and load in their use. 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. Depending on the type of contact and the mechanism of the process, there may be abrasive wear mikrorizannyam when under the influence of solid particles from the surface of the metal working body separated mikrostruzhka. Strain and possible fracture surface of a particle that moves along the surface of the work. As a result, many cyclic loads on

the friction surfaces wear parts evident fatigue of the separation of metal particles.

Important role in increasing the intensity of wear plays a damp availability of plant mass and feed additives. They help to reduce the strength of the surface layers of the metal due to the penetration of molecules surface-active agents metal structure. In addition, chemically active ingredients directly affect the mechanical action of activated surface friction, enter them in the reaction and film forming compounds, which are then separated as product wear and function as abrasive particles. The mechanism of damage display of showing that the dominant influence on the details and working bodies are corrosion-mechanical wear. This type of wear characteristic knives and cutters, cutting and protyryzalnyh knives, augers and other working elements ZPRK mechanisms.

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 on dirt roads. It should be noted that the horizontal type mixer is very sensitive to impurities through small gaps between the cutting and protyryzhuchymy 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 mobile feeding farms are - mixers with a weighing device. These products are produced both foreign and domestic manufacturers. The analysis shows that there are failure of these devices that are associated with malfunction of electronic systems ZPRK. These failures can occur suddenly or gradually emerge leading to changes in functional parameters of weighing devices and mechanisms dosage.

Another share of failures falls on the chassis. The significant load on tires, especially for uniaxial ZPRK leads to the fact that the wheels are 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.

Conclusion. The analysis of the causes of failures of domestic and foreign facilities for preparation and distribution of feed shows that the predominant effect on a mechanical failure and corrosion mechanical wear. Study features and modes of operation conditions ZPRK points out that ensuring high reliability can be achieved by addressing the following problems: perfecting new designs of machines and modern production technology vehicles; the use of new materials and technologies to strengthen parts; development of new approaches and create models of reliability of "man-machine" with the discovery of the role of human factors in the overall problem of providing the required level of technology; the tests 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.

Analysis, refusal, funds, food.

The paper analyzes the problems of machines for making and distribution of feed in the 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.

Analysis, refusal, mean, feed.