gauge in the car (at a constant value h_c) Than at lower center of gravity height h_c the same amount (at a constant gauge in the car).

Therefore, to improve the dynamic stability must first maximize gauges that in many cases, self-propelled machines perform structurally simpler than the lower center of mass.

Conclusions

1. Among the machines that are aggregated with wheel tractors, the greatest negative effect on its stability commit trailers. This type of aggregation have 50-65%. all perekydan tractors.

2. The empirical relationship between the statistical indicators of injury Rollover wheeled tractors and combines and some technical characteristics of cars and roads. The dependence is not linear, and graphical form - parabola.

3. It is shown that the increase in dynamic stability tractors better start to increase track width, and then move to lower the center of mass.

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In this article Results rassmotrenы yspытanyya selskohozyaystvennыe transportnыh funds on Protection of labor.

Funds, Work, test.

In paper the results of testing the agricultural vehicle safety.

Tool, Work, testing.

UDC 631.3: 620.172.21

Імовірнісні характеристикRESULTS InAndDOCTRINE OF OPPORTUNITIES METHODS NDT показників вибору методів неруйнівноного контролю Their choice

SS, Професор Бойко А.І., доценти Karabynosh, Ph.D.Новицький А.В.

In the article the results youdoctrine значенняopportunities implecuu different in nature and methods of nondestructive testing methods their choice effectively detection major defects and damage for adequate performance in flaw detection and diagnosis імовірнісних характеристик вибору методів неруйнівного контролю деталей agricultural machinery. при виявленні основних дефектів та пошкоджень, які мають ці деталі.

Flaw detection, diagnosis, defects, damage, parts, machines, methods, techniques, implementation, identify.

ПроблемаProblem. Objectives and methods withSectionperson for non-destructive testingПроблема reliability, quality of agricultural machines is of great economic importance і є складною та багатогранноюfor efficient operation maDNAs tractor fleet ATP Ukraine.

Resolution these tasksії characterized by the extensive use of the already defined areas in science and technology, the introduction of innovative processes in production and continuous replacement of existing technologies more efficient. Практика вітчизняного та закордонного сільськогосподарського машинобудування підтверджує, що для успішного вирішення завдань з випуску, ефективної експлуатації та ремонту сучасних сільськогосподарських машин, обладнання і знарядь необхідно застосовувати комплексно-системний підхід з врахуванням конструктивно-технологічного формування. Основою такого формування є постійний контроль за технічним рівнем виробів, які проектують, виготовляють, експлуатують і ремонтують. Визначений науковий підхід до вирішення складних практичних завдань неруйнівного контролю ґрунтується, передусім за все, на математичному моделюванні та осмисленні фізичних процесів при взаємодії зондуючого поля з дефектами матеріалу.

On the other hand the absence of deliberate government policy for the revival of the national instrument in general and non-destructive testing and technical diagnostics in particular has meant that the state register of measuring instruments NDT almost not replenished. This is not conducive policy and State Standard of Ukraine that question metrology, standardization and certification of NDT methods and almost

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lost sight of. An important question informed choice of a rational method of non-destructive testing, especially for machine parts.

To successfully meet the challenges of the production, efficient operation and maintenance of modern agricultural machinery, equipment and tools, as the practice of domestic and foreign agricultural machinery, necessary to use complex-systems approach, taking into account structural and technological formation. The basis of this formation is non-destructive continuous monitoring of the technical level of the products in design, manufacture, operate and repair.

The fundamental principles in implementing the concept of widespread use of non-destructive testing and technical diagnostics is a deep understanding of the interaction of the probe field inhomogeneities material defects, damage, its exact mathematical modeling, extensive use of new information technologies. Quality assurance (reliability) of agricultural machines and their elements based on the use of penetrating fields, radiation and substances to obtain the necessary information on their technical condition and readiness for operation.

Analysis of recent research. ~~Потреби сучасного с~~Cilskohospodarsk~~того~~ productionabout~~а~~ vymaha~~ють~~is an effective control~~вати комплексно всю~~ floorAugne~~ню~~ item~~і~~hey. ~~або декілька поверхонь, або декілька деталей сумісно у вузлі чи агрегаті.~~ Results received experimental studies, practical experience and analysis of the literature [1] showed that the physical and mechanical properties of materials, details of which are made with stochastic nature and are subject to the laws of random phenomena. Available in detail imperfections and defects makes it possible to assume that even some volumes of work items is heterogeneous and can be evaluated only by the laws of mathematical statistics, probability theory and the appearance of random variables [2]. The initial setting for this, along with a thorough analysis of operational data should be information about their current technical condition. This information enables the implementation methods of nondestructive testing and technical diagnostics. Application of control makes it possible to select suitable of products for further processing and use, install and remove the causes of defects. To determine a reasonable resource farm machinery necessary to create a system of continuous monitoring of their efficiency.

This allows you to say that for research and practical purposes it is necessary to use non-destructive testing methods that make it possible to evaluate the technical condition of the complex details combined their different basis.

Problems of non-destructive testing, technical diagnostics considerable attention in their work paid scientists [5] AN Guz, LM

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Lobanov, VA Trinity, VA Pyvtorak, JK Bondarenko, A. Stories, SP Tymoshenko, MN Belyaev, DA Drayhor, IP Bilokur, VV Klyuev, VT Bobrov, AV Brain, TL Lessor, P. Bune and others.

За сучасного стану економіки України, як відмітив акад. Троїцький В.А. на останньому конгресі з неруйнівного контролю, підвищеної уваги потребує проблема оцінки залишкового ресурсу об'єктів народногосподарського значення, які мають значний термін тривалої експлуатації.

Despite these successes and achievements of practical досягненняskillsAt present there are no data of studies on the technical state of parts, components, assemblies or machines in general, the various types of load (for single or aggregate current) to the study of three-dimensional fields mikrodeformuvannya surface layers [4]. The positive results improve the reliability of agricultural machines are partial in nature mainly by identifying specific surface imperfections or even fragments.

Як показує практичний досвід, нНesvoyechasna replacement несправної non-food iandtsezdatnoyiparts, components із дефектною деталлю or aggregate leads to the appearance of user not умовно a working machine. Reliability, імовірність fails machinery якої depends on the time when the conditions on time undetected defect or damage is denial and destroys машинуits.Небезпечною є ситуація, коли при стаціонарному процесі навантаження, виникаючі при цьому напруження набувають нестаціонарного стохастичного характеру і оперативно і прогнозовано керувати ними практично неможливо. The main reasons for this phenomenon, as set large number of experimental studies have Microstructural heterogeneity of the material, which is caused by distortion of the crystal lattice defects of internal macrostructure caused by random changes in processing technology, conditions or performing repairs - service activities.Dangerous situation when at a steady process of loading, emerging at the same voltage gain non-stationary stochastic character and efficiently and predictably manage virtually impossible.

Контроль якості (надійності) сільськогосподарських машин, їх елементів базується на застосуванні проникаючих полів, випромінювань і речовин для отримання необхідної інформації про їх технічний стан та готовність до експлуатації. На підприємствах із виготовлення чи ремонту сільськогосподарських машин, в наш час, використовують наступні методи контролю (неруйнівного): магнітний, акустичний, вихрострумовий, електричний, тепловий, оптичний, радіохвильовий, рентгенівський, проникаючими речовинами. Фундаментальними засадами при втіленні концепції широкого застосування неруйнівного контролю і технічної діагностики є глибоке осмислення взаємодії зондуючого поля з неоднорідностями

матеріалу, дефектами, пошкодженнями, точне його математичне моделювання, широке використання новітніх інформаційних технологій. Важливе значення для прийняття рішення про ресурс сільськогосподарської техніки має опрацювання візуальної дефектоскопічної інформації. Одним з перспективних шляхів тут є спряження апаратури контролю з автоматизованими системами обробки зображень.

The purpose of research.Встановити To study the feasibility of different methods and ways of NDTімовірнісні характеристики показників in their the electionyand for effective and adequate assessments tehnochnoho state performance of agricultural machinery at arbitrary points of kontnrolno- diahnostuvalnyh works методів неруйнівноного контролю, які дозволяють визначити технічний стан сільськогосподарських машин.

Results. Quality assurance (reliability) of agricultural machines and their elements based on the use of penetrating fields, radiation and substances to obtain the necessary information on their technical condition and readiness for operation. In the business of making or repairing agricultural machinery, nowadays, use the following control methods (non-destructive): magnetic, acoustic, Eddy current, electrical, thermal, optical, radio wave, X-ray, penetrating substances. The fundamental principles in implementing the concept of widespread use of non-destructive testing and technical diagnostics is a deep understanding of the interaction of the probe field inhomogeneities material defects, damage, its exact mathematical modeling, extensive use of new information technologies. Important for deciding on resource agricultural machinery is processing visual information defectoscopic. One of the promising ways there are interface monitoring equipment with automated image processing systems.

Nowadays there is not enough universal, effective method of quality control SH machines that could give a comprehensive assessment of not only state one surface or part thereof, and all the details related to the unit or parts, components or machines in general. It is also important in controlling labor safety, environmental impact, the applicability harmless to the human body substances bezkontaktnist of surface detail, the ability to detect latent defects, determine the level of stress in the surface layers have the technological simplicity of implementation in a production environment, and more.

Experimental study of the real limits of detection of a non-destructive testing method based on nine of them and twenty three basic types of defects and damage are present after machining or their operation and the completion of repair and service work. Calculated

probability indicators use each type of defects at the 25-fold repetition of the experiment. The condition that limits the specific situation is the presence of defects or group naming U1 - u23. This range may be reduced in accordance with the real values obtained or extended with the need for additional experimental studies. The implementation of these methods prevents drastically reduce the production of defective products, the number of accidents and create consumer confidence in the high quality of the offered products.

Baseline samples were parts agricultural machinery. Results are given in the table. . The table shows the reduction Cast and surfacing slag vklyuchennya- y1; Sink - U2; porosity - y3; segregation - y4; crack - U5; emptiness - u6; plastic working internal cracks (at the surface) - U7; bundle - U8; dents - U9; surface cracks - U10; thermal, chemical and heat treatment cracks - U11; hydrogen crack - V12; burnout - u13; mechanical processing: crack - u14; lost - u15; volosovyny - u16; metal compounds: steel crack - u17; welding cracks - u18; neprokley - u19; nepropay - u20; maintenance, corrosion, surface - u21; intercrystalline - u22; fatigue cracks - u23.

Reduction are given with the designation: Pkij - total probability of defects whole range of non-destructive testing methods resulted; Xij - standard deviation of the probability of detection of a specific defect of these methods; Dij - dispersion; Mij - fashion. Analysis table revealed that the greatest number of features identifying specific defects have the following NDT methods, which have a total probability of defects: computer holography ΣPk5 = 0,0012; Acoustic, reflected ΣPk2 = 4.67, 08; penetrating ΣPk = 1.23, 09 radiation; holographic ΣPk4 = 5.21, 10; vyhorostrumenevyy (transformer) ΣPk3 = 5.11, 10; Magnetic ΣPk7 = 4.45, 11 and electric ΣPk6 = = 1.57, 10; Other methods have very low probability of detection based on 23 identified defects were found in practice in a wide range of parts for agricultural production.

Experimental studies have established and practically confirmed that no specific NDT method in question is not universal, has a limited scope. Most of these features allows you to record approximately defect without their quantitative values, depth, configuration, size or no records hidden damage. On the other hand, the monitoring of agricultural machines, especially in service, connected with certain difficulties (pollution, corrosion, and other significant damage) complicates the application of most methods of nondestructive testing. In such cases, have the advantage of contactless and automated methods.

Conclusions

Experimental study and calculation methods of probabilistic characteristics of indicators point to the need to create a new modern and improving existing methods. Should decide on integrating them in

the development of criteria for the use of a method of non-destructive testing in determining the level of efficiency in the manufacture of specific parts or restoration of the rational method of cultivation.

Remains topical solution in the presence of intense zones of contact layers loaded surfaces of the components and related products limit states. On the other hand, the monitoring of agricultural machines, especially in service, connected with certain difficulties (pollution, corrosion, and other significant damage) complicates the application of most methods of nondestructive testing. In such cases, have the advantage of contactless and automated methods. The principal feature of new methods of nondestructive testing is the use of modern computerized systems that enable us to explore products, establish their technical condition, accumulate statistically process the information quickly and accurately identify defects, damage, classify them, to determine the characteristics and parameters otherwise on the results of research and the probability of choosing the method performance characteristics of non-destructive testing.

The analysis of the literature, gained practical experience obtained preliminary results of theoretical and experimental studies indicate the possibility of full computerization in combination with systemic comprehensive approach that is most relevant and practically valuable to modernize, improve and create new methods of nondestructive testing.

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In Article pryvedeny Results Study Implementation raznыh of opportunities for PSI nature sposobov and non-destructive inspection methods when s Choice for эffektyvnoho Identify major defects and povrezhdenyy to obtain adekvatnыh indicators in malfunction and dyahnostyrovanyy agricultural machines.

Malfunction, dyahnostyrovanye, defekty, INJURIOUS, parts, Machines, Methods, Methods, Implementation, Identify.

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Вероятностные характеристики выбора методов неразрушающего контроля

Отформатировано: Шрифт: (по умолчанию) Arial, курсив, Цвет шрифта: Текст 1

РЕЗЮМЕ. В статье приведены результаты определения вероятностных характеристик выбора методов неразрушающего контроля деталей сельскохозяйственных машин при определении основных дефектов, которые имеют эти детали.

There are presented results over of study of marketabilities of different on the nature methods of non-destructive control are brought for the effective exposure of basic defects and damages at their choice for the receipt of adequate indexes at defect finding and diagnosticating of agricultural machines in the article.

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Defect finding, diagnosticating, defects, damages, details, machines, methods, realization, exposure.

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Probabilistic descriptions of choice of methods of nondestructive control

SUMMARY. In the article the results of determination of probabilistic descriptions of choice of methods of nondestructive control of parts of agricultural machines at determination of basic defects which have these parts are resulted

UDC 621,873

Dynamic analysis of the crane-SHTABELERAZ VIEW OF MECHANICAL SPECIFICATIONS ENGINE

VS Loveykin, PhD