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ANALYSIS OF CALCULATION METHODS OF TECHNOLOGICAL RESIDUAL STRESSES THAT APPEAR IN MECHANICAL WORK

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Abstract:	Keywords:
The article presents an analysis of the methods of calculating the technological residual stresses that appear during the cutting of machine parts with sharp cutting tools.	Residual stress, fatigue strength, endurance limit, work resource, research methods, submicrostrain, yield of material, mathematical model.

One of the basic characteristics of the surface layer fiziq state is the sign and value of the residual voltage, i.e. after the power placed in the detail istaken, the voltage inside the surface layer is balanced.

Residual voltage changes the strength and durability limit of details to exhaustion and has a profound effect on the working resource of aggregates. This variable loadwill also be of high value in working products. In the presence of compressive residual voltage in the surface layer, the endurance limit and the working resource of the aggregate usually increase, and the residual voltage to the stretch decreases it. (Matthew 24:14; 28:19, 20) Jehovah's Witnesses would be pleased to discuss these prosths.

The resulting rise in sea content in the womb of a sophisticated surface. Residual voltage occurs as a result of the redistribution of various fields (power, temperature, etc.) in the surface layer of the detail and the direction of dislocations and the weight of the crystal panel.

N.N.Davidenkov divides the residual voltage into three types: the first type is the balanced one another in a deformable body; the second type or macrocopication is balanced in several stores; and the third type or submicrokuchlanish is the same as the sizeof b.

Depending on the method of processing, cutting modes, and the geometry of the cutting tool, squeezing and stretching laughter appear. It can be determined by various methods of measuring residual laughter (this is a long and sermehnat jacircuit that can only control the values obtained by the armpit) and by calculating (which affects the processing parameters and allows you to get the necessary residual voltage).

The resulting embryo was allowedto develop in nutrients and then inserted into her womb, where it implanted. In the future, we believe that the residual voltage of the metal surface layer, their sign and value, depends on three factors: the shear force that affects the deformation circuit; the amount of heat generated in the cutting zone; and the struktra-phase

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change in the metal. The superposition of the aforementioned poles determines the characteristics of the residue voltages in the surface layer.

Analysis of methods of calculating technological residual voltages that arise in the cutting of wheels. Developing a computing method to detect residual voltages is a pressing issue. Today, due to the value of measuring equipment, there are no convenient and fast measuring methods. (Matthew 24:14; 28:19, 20) Therefore, interest in the analytical detection style of technological residual power in the world is growing, allowing important detailsto improve the quality of the surface layer and to develop computer programs based on them.

A notable feature of the Korshunov [1] model is that the physical boundaries of material acidity, taking into account *GJ*, allow you to determine the value of the residual voltage, which occurs based on *a* real whiteness limit a, i.e. during the transition of a residual voltage from flexible deformation to plastic deformation. According to the author, the measurement uncertainty of this method will be around 10%.

In A.Yu.Albagichev's scientific work [2] a mathematical model was developed that identifies residual voltage that is formed depending on the effects of power and temperature on the detail surface. In this case, single irregularity is modeled using a sphere. At the same time,there is a great deal of interest in the mathematical model provided by V.F. Bez'yazc hniy and N.A. Tixomirov [3]. It provides a mathematical model for calculating the total voltages, depending on the heat factor (temperature and structural-phase changes in its effects). The resulting embryo was allowed to develop in nutrients and then inserted into her womb, where it implanted. The resulting data of the method well illuminate the residual cylinder, which is formed in the traditional processing method. However, it requires the creation of a single private technically based style, taking into account the characteristics of formation in high-speed processing conditions.

Experimental research methods of residual voltage

There are various methods of determining residual voltages, including:

1. A mechanical method is to cut off a certain part of the material to obtain residual voltage from the detail being studied. Tomeasure the deformation or reaction forces that occur when the residual voltages are reversed, we create a residual voltage.
2. X-ray method is based on various interference effects of rengenic rays returning from the surface with residualvoltage, which are balanced.
3. The electrophysical method is based on changes in the electromagnetic properties of the surface layer with residual voltage.
4. Polyar-optic method (photoegilclicity and photoplastic) isbased on the direction of power and the speed of polyarized light (the voltage is determined by interference card). Methods of determining residual voltage are divided into destructive and non-decomposing types. Table 1.1lists the main types of residual strength

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1.1-jadval Methods of determining residual voltage

Motion	O'lchash uchun maximum chuqurlik	Fazoviy xal qiluvchi imkoniyat	Precision
How to parse the hole	Teshikning ~1-2 diameters	50 mkm chuqurlikka	±50 mkm
Curve method (curve or relaxation from voltage)	0,1-0,5 qalinlikka	0-0,5 qalinlikka	O'lchanuvchi minimal egrilik bilan chegaralanlan
X-ray nurlari-ning difraktsiyasi	<50 mkm (Ti) <5 mkm (Ti)	1 mm thick from the side; Depth of 20 mm	±20 MRa
Application of solid X-rays	150-50 mm (H)	From the side to the thickness of 20 mm; Parallel to 1 mm light	$\pm 10 \times 10^{-6}$ deformatsiya
Application of neurons (atomic database of deformation)	200 mm (H); 25 mm (Fe); 4 mm (Ti)	500 mkm	$\pm 10 \times 10^{-6}$ deformatsiya
Ultratovushli	> 10sm	5mm	10%
Magnitli	10mm	1mm	10%
Optics kombinatsiyalashgan	<1 mkm	Taxminan < 1 mkm	50 MRa

Foreign publications and the Internet have a lot of material devoted to this topic. A number of scientific studies have outlined a method of detecting residual voltage by parmalashing holes, which is one of the most common methods in Europe. Through the method of parmalashing the holes, the residual voltage measurement with the tenzodatchiks [4] is devoted to the measurement of the residual voltage. This analyzes a method based on ring-cutting from the material being studied. A similar style is also highlighted in the publication in Switzerland. However, the harmless (nerazrushayushiy) method of determining residual voltage is somewhat attentive.

A group of scientists from the Institute of Technology at Tokia State University in Japan have proposed a method of determining residual voltage using X-rays, taking into account the gradient of power. Researchers in Germany have suggested an original method, which is carried out by the use of diffraction. In Los Alamose, U.S.A., a device was created that detects residual voltage using golography.

The effect of technological residual voltageson the g exploitative properties of the detail. In recent times, there have been high requirements for the reliability and stability of details. Therefore, it will be necessary to take into account many factors that affect their ability to work. One of themost important organizers of the detail is the value and sign of technological residual power, which depends on the dynamic and s tasty stability of the detail, the accuracy of preparation, the resistance to fatigue, and the rust of the detail and structure.

In his [5] work, A.S.Gusevoutlines the technological factors that contribute to the processing of structural cya's resistance to fatigue as needed. He believes that the event aimed at creating a satisfactory distribution of residual voltages was effective. The

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performance that evening was an adaptation of the science being presented in a biased and opinionated way.

When affecting alternating loads, increasing the frequency of their exposure makes it difficult for the balloon metalto flow plastic. In this case, it is emphasized that residual voltage affects the strength against exhaustion. The resulting embryo was allowed to develop in nutrients and then inserted into her woning, where it implanted. The resulting embryo was allowed to develop in nutrientsand then inserted into her word, where it implanted.

[6] The scientific work provides an experimental assessment of the above. At the same time, experiments were conducted in steel samples covered with nickel. Depending on the technology of coatings,various marked residual voltages were formed on the surfaces of the samples. Samples with compressive residual voltages (around 42 MPa) on the surface were found to have slightly higher resistance to exhaustion than non-coating samples. Sample stretching strengthniching nickeling (176 MPa) resulted in a 30% reduction in tiredness stability. Residual macrocusing has also been found to have an effect on the resistance to four fatigues. If the technological residual voltage has not been overcome or strengthened, then they will cause a decrease in operational stability and cracks will also occur at a small load. The extent to which such cracks develop will depend primarily on the energy and energy accumulated in the material, falling. This, in turn,leads to the loss of the ability of the detail to work [6].

In their article, scientists from a group of Italian scientists have proven a correlation between cockroach voltage and metal exhaustion. At the same time, the connection between the expansion of metal from heat and residual ktips has been identified.

Residual voltage has some effect on the resistance of metals to coorsion. According to A.A. Matalin, the creation of compressive voltage affects the closure of cracks contained in the metal surface, while the product's resistance to corrosion decreases somewhat.

The experimental data showed that in details with compressive power in the surface layer obtained by rounding the roller coasters, the strength against corrosion increases by 4 times (see table 1.2.)

1.2-jadval

Corrosion stability of samples processed and not processed with rolars

Sinash must	Rolik bilan ishlov berilmagan		Processed Samples	
	Mustahkamlik chegarasi			
	MPa	MPa	MPa	MPa
Havoda	450	1000	550	1220
In water	110	240	470	1040

Summary

The resulting embryo was allowed to develop in nutrents and then inserted into her womb, where it implanted. This bending (congestion) makes pure processing very complicated as it can leave large sheep. To create a satisfactory distribution of power in a ready-made

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product, you will have to perform an operation with a special drob or such as thermal processing.

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