ISSN: 2350-0328

International Journal of Advanced Research in Science, Engineering and Technology

Vol. 6, Issue 10 , October 2019

Erosion parts of the working surface of the metal to weld sheeting with the metal powder and surpassing solid for metals' erosion

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ABSTRACT: The research was carried out on sheeting welding like roller material. The main objective of the research consists of revival erosion work surface by sheeting the welding with powder material. The research was carried out in order to determine materials'composition, structure, hardness and resistance for metals' erosion. As a result of laboratory research optimum structure of sheeting materials is determined and selected optimum method of sheeting surface welding.

KEY WORDS: To cover the weld, friction, wear, powder materials.

I. INTRODUCTION

Materials and energy stocks are being ended in this days, to provide people with high-quality machinery has been urgent task. Also in this direction, we can not provide the full longevity development of production cars. In this turn, present machines demand the introduction of a system of maintenance and repair formed. For this reason, the machine-tractor fleet of working age to keep maintenance and repair required to improve development and production.

The effectiveness of the economical repair cost is the major source of the run-down parts. We use old one and its shape whilerepair and restoration of the remaining materials. As a result, machine parts and the repair and cleaning materials are collected through the production of casting or forging-stamping machine will be much cheaper materials. On the restoration damaged parts of the machinery, we treat their surfacetherefore we spend little labor. Based on the application process to establish the details of the restored properties of the new spare part to ensure the properties or better.

Here it should be noted that vehicles, aircraft, ships, locomotives and repair of the power of the manufacturers of engines, as well as the experience of Western firms repair their car repair experience to the next level of not less than the amount of work, in many cases, remanufactured parts compared to the resource with a new one can be high. Their revival cost does not increasesthan60% of the cost of its production. The practical details, such as the establishment of science-based technologies and vehicles to establish the size of the regulatory work to ensure that, in some cases, the volume of revival metals are much better thanthe volume of new one [1].

Whileuse of machine and equipments ofmachinery in agricultural purpose, they loose their original size and mechanical propertyas the result of different factors then they may haveunusable arrearsor become worthless. We use spare parts of machineryt to replace them. Spare parts for the production of the metal, a lot of money and labor arespent in order to produse spare parts of machineries, in the result, itimpacts on the development of the automotive rapidly ofmachine-building.

It is known thattractors, automotive, construction, agricultural and earthmoving machines compose different shapes and materials. Price, design, simplicity, structure this kind of requirements are required from the machineries. as a result, the details of all the indicators of infinitely greater reliability can not be prepared. As a result, the car in the process of forming the parts gradually begin to lose their properties, and they have a variety of defects began to appear. Metals'

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
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erosion is the main proplem through these defects. This defects are detected and fixedwhile process of maintenance and repairing. Excavator ladles workers teeth, hammer and cultivators of the working bodies might be examples. Because these parts are ineffected than other parts for metals' erosion. Heat treatment conditions of exploitation of the working surfaces made of special grade of steel, working with the authorities to ensure the problem is not the workers' bodies simply preparing low-carbon steel, and they wear crash. This in turn have a negative impact on the effectiveness of the use of cars. The world's leading scientists working body of scientific literature published by the rapid spread in the fight against hard-alloy composition of the weld material shown to be an effective method of compensation. We are making the research on these kind of materials in order to surpass of the materials' surface by welding with different composite materials.

II. LITERATURE SURVEY

The world-renowned scientists, who conducted research on the friction and ingesting of the details, evaluated the main reasons for the failure of the machines as follows: In the work of I. V. Kragelsky, M. N. Dobichin, V. S. Kombalovs [2] it was said that the main reason for the failure of the machines was not a fracture, but an impulsive combination and the ingestion as a result of friction of the working organs.

In D. N. Garkunov and A.A. Polyakov's work [3] it is noted that "the main factor that leads to a decrease in the reliability of the aircraft and, as a result, a decrease in their service life is the ingestion of the details".

Professor M. M. Tenenbaum showed in his monograph [4]: "The high tensile strength of the details is one of the necessary conditions for the reliable operation of the machines and the maximum economic efficiency of their use, because as a result of the exact bending, many (80-90%) moving elements and working bodies of the machines lose their workability."

It will be necessary to study the technological process of restoring the eaten details, the deviations of the details of each individual title in the selection of equipment and material. Fixed compounds, which are used in all types of techniques, such as tractors, cars, are the most common compounds. Among them are the majority of compounds "Val-rolling monarchy".

The use of hard alloy materials in the processing of details allows to sharply increase the refractive resistance of the detail, by ensuring that the hardness of abrasive quartz grains receive a layer that exceeds the hardness (Fig. 1) [5].

So, it turns out that the high hardness of the layer can lead to a sharp increase in the resistance to cracking under certain conditions. This can be seen from the following.

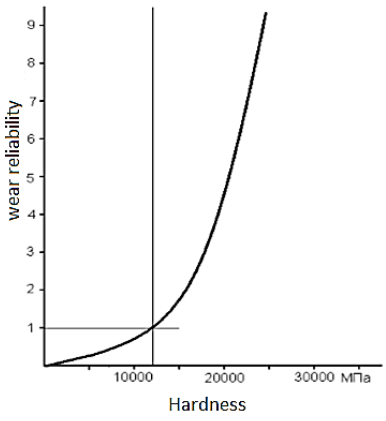

Fig 1: Graph of the connection between the hardness of the abrasive worn out composition material under the conditions of quartz particles and the refractory of worn out

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III. BASED ON THE RESULTS

In the Special scientific laboratory we carried out in order to determine the source of optimum weldingmaterial for yeyilishwhich has chromium, titanium, manganese, silicon these kind of carbide elements in their component we welded with the materials on its composition, structure, hardness and resistance for metals' erosion.

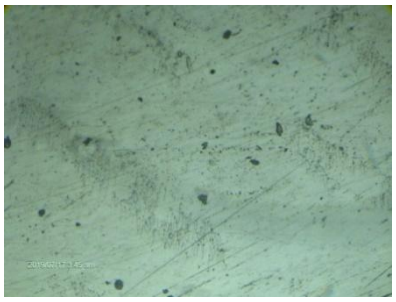
The certain electrode and the composition of the powder electrode materials were used in the laboratory.

E42 electrodewith ПГ-СР-4 metal powder coated weld samples of chemical composition, hardness and mikrostrukturasi are given below(Fig. 2).

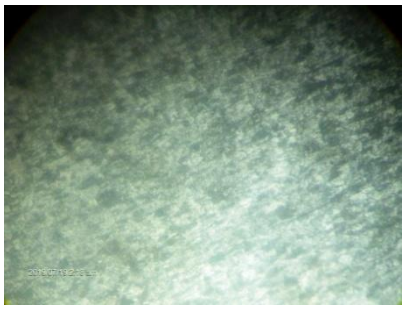
The chemical composition of weld metal covered

% C	% Si	% Mn	% P	% S	% Cr	Mo	% Ni	% Cu	% Ti	% B
0. 21	0. 80	0. 37	0. 052	0. 023	2. 79	-	17. 2	0. 37	0. 037	>0. 11

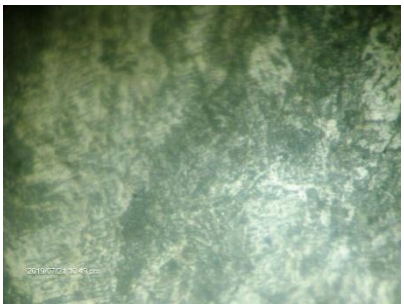
When we checked Metal model hardness of Rockwell press control, the main indicator of the metal hardness was 12-15 HRC and weld coating hardness was 41-44 HRC.



1-picture. Microscopic sampleafter chemical working.



2-picture. Microscopic sample ofthe main metal



3-picture. Microscopic sample of the metal after sheeting weld.

Fig 2:Microscopic shape of the sheeting weld.

Hardness of welding metal samples with E42 electrode, ПГ-ФБХ-6-2 and metal powder and microscopic shape are givenbelow(Fig. 3).

The main indicator of the metal hardness is 12-15 HRC and weld coating hardness was 50-55 HRC, When we checked hardness of the sample metal with Rockwell press control.

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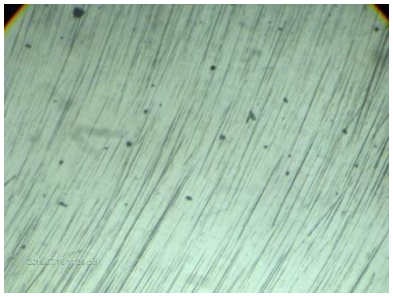
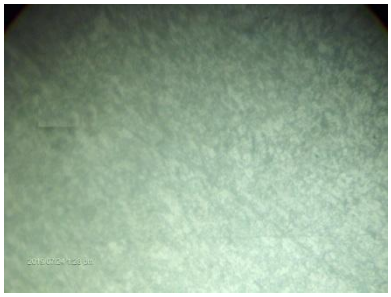
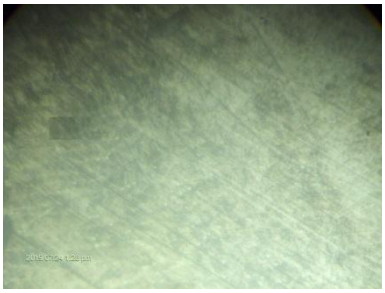


1-picture. Microscopic sampleafter chemical working.



2-picture. Microscopic sample ofthe main metal



3-picture. Microscopic sample of the metal after sheeting weld.

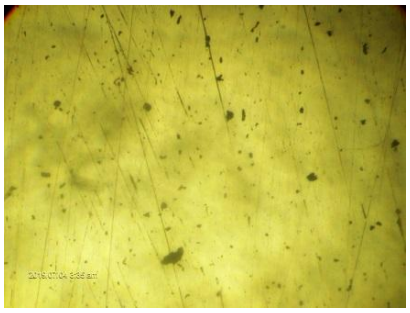
Fig 3: Microscopic shape of the sheeting weld.

Metallic powder coated weld sample with AHO-4 electrode, 50% ПГ-СР-4 +50% ПГ- ФБХ- 6-2and its chemical composition, hardness and mikrostrukturasi are given below(Fig. 4).

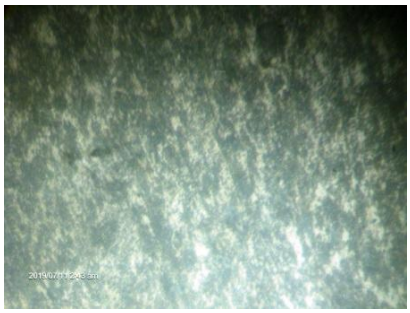
The chemical composition of weld clad grafted layer

% C	% Si	Mn	% P	% S	% Cr	% Ni	% Cu	% Ti	% B	W%	% V	As%	% Co.
0. 54	0. 74	0. 58	0. 054	0, 025	4. 41	4. 59	0. 19	0. 037	0. 08	0. 018	0. 02	0, 024	0. 04

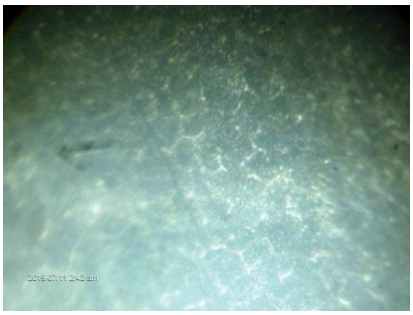
When we checked metal model hardness of Rockwell press control, the main indicator of the metal hardness was 12-15 HRC and weld coating hardness was 49-51 HRC.



1-picture. Microscopic sampleafter chemical working.



2-picture. Microscopic sample ofthe main metal



3-picture. Microscopic sample of the metal after sheeting weld.

Fig 4: Microscopic shape of the sheeting weld.

We can see main metal after microscopic analysis, for being metal structure consists of ferrite-ratio Perlis its rigidity is lower rather than welding combination with ferrite-ratio's rigidity

We learned Composition and microscopic shape of sample metal and tested to metal erosion on the friction machine. Step by step pressure force was increased to abrasive friction surface. The test results are given below(Fig. 5).

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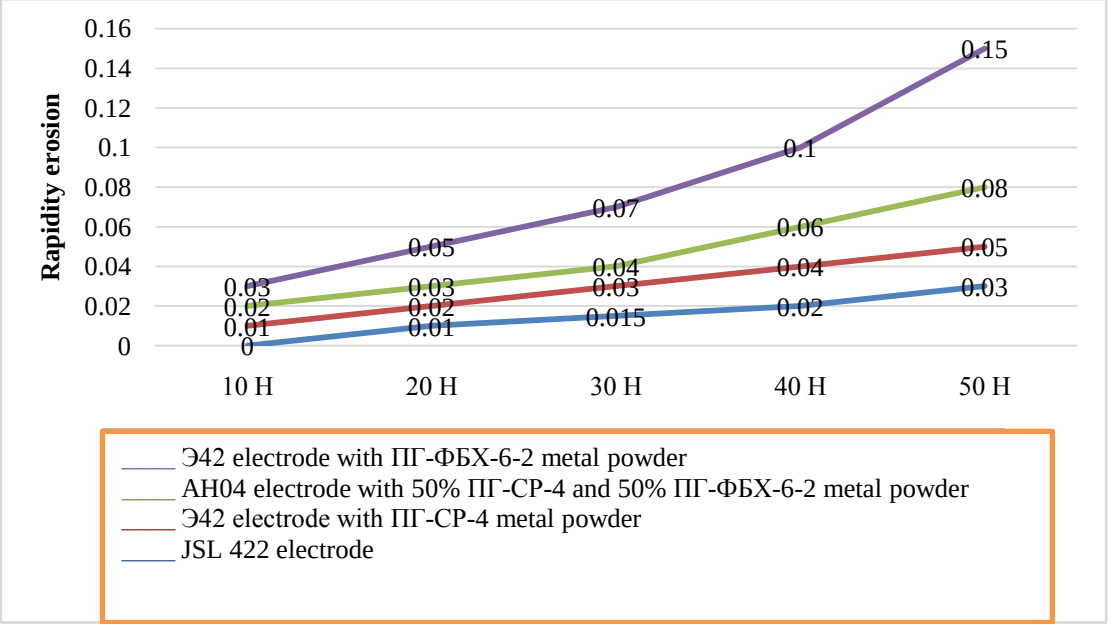

Fig 5:The average metals' erosion rapidity of sample.

We can see that chart based on the results obtained from samples coated weld wear covered is less than welding sample with the intensity of low-carbon steel electrode.

IV. CONCLUSION

1. As a result use of machines with little carbon steel such as(excavator, plow, cultivators, etc.) they are not working properly, Because to provide made of special grade of steel, working with the authorities is a problem, thus they are prepared from ordinary low-carbon steeland they wear crash. This, in turn, We need to mention that to change new spare parts instead of oldones is a important task in these days.

2. On the scientific literature published by leading scientists of the world are told that to struggle against fast metal's erosion of working parts hard-alloy composition of the weld material shown to be an effective method of compensation. Based on laboratory studies, we may surpass working spare metals by covered welding with hard-alloy materials.

REFERENCES

[1]K. Kasimov"Surpassing and restoringmetals' erosion", Monograph. Tashkent,pg no: 3-6. 2006
[2] I.V.Kragelsky, M.N.Dobychin, V.S. Kombalov "Basics of friction and wear", Moscow, Engineering, pg no: 526-527.1977
[3] D.N.Garkunov, P.I. Kornik "Types of friction and wear. Operational damage to machine parts", Moscow, Ed. ICCA,, pg no: 228-229.2003
[4] M.M. Tenenbaum "Abrasion resistance", Moscow, Engineering, , pg no: 270-271.1976
[5]A. S. Pronikov "Reliability of machines",Moscow,Mash-p , pg no: 590-592.1978

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ISSN: 2350-0328

International Journal of Advanced Research in Science, Engineering and Technology

Vol. 6, Issue 10 , October 2019

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