

SCI-CONF.COM.UA

SCIENTIFIC ACHIEVEMENTS OF MODERN SOCIETY



**ABSTRACTS OF IX INTERNATIONAL
SCIENTIFIC AND PRACTICAL CONFERENCE
APRIL 28-30, 2020**

**LIVERPOOL
2020**

SCIENTIFIC ACHIEVEMENTS OF MODERN SOCIETY

Abstracts of IX International Scientific and Practical Conference

Liverpool, United Kingdom

28-30 April 2020

**Liverpool, United Kingdom
2020**

UDC 001.1

BBK 83

The 9th International scientific and practical conference “Scientific achievements of modern society” (April 28-30, 2020) Cognum Publishing House, Liverpool, United Kingdom. 2020. 1175 p.

ISBN 978-92-9472-193-8

The recommended citation for this publication is:

Ivanov I. Analysis of the phaunistic composition of Ukraine // Scientific achievements of modern society. Abstracts of the 9th International scientific and practical conference. Cognum Publishing House. Liverpool, United Kingdom. 2020. Pp. 21-27. URL: <http://sci-conf.com.ua>.

Editor

Komarytsky M.L.

Ph.D. in Economics, Associate Professor

Editorial board

prof. Jan Kuchar, CSc.

doc. PhDr. David Novotny, Ph.D.

doc. PhDr. Zdenek Salac, Ph.D.

prof. Ing. Karel Marsalek, M.A., Ph.D.

prof. Ing. Jiri Smolik, M.A., Ph.D.

prof. Karel Hajek, CSc.

prof. Alena Svarcova, CSc.

prof. Marek Jerabek, CSc.

prof. Vaclav Grygar, CSc.

prof. Vaclav Helus, CSc.

prof. Vera Winterova, CSc.

prof. Jiri Cisar, CSc.

prof. Zuzana Syllova, CSc.

prof. Pavel Suchanek, CSc.

prof. Katarzyna Hofmannova, CSc.

prof. Alena Sanderova, CSc.

Collection of scientific articles published is the scientific and practical publication, which contains scientific articles of students, graduate students, Candidates and Doctors of Sciences, research workers and practitioners from Europe, Ukraine, Russia and from neighbouring countries and beyond. The articles contain the study, reflecting the processes and changes in the structure of modern science. The collection of scientific articles is for students, postgraduate students, doctoral candidates, teachers, researchers, practitioners and people interested in the trends of modern science development.

e-mail: liverpool@sci-conf.com.ua

homepage: <http://sci-conf.com.ua>

©2020 Scientific Publishing Center “Sci-conf.com.ua” ®

©2020 Cognum Publishing House ®

©2020 Authors of the articles

UDC 001.1

BBK 83

The 9th International scientific and practical conference “Scientific achievements of modern society” (April 28-30, 2020) Cognum Publishing House, Liverpool, United Kingdom. 2020. 1175 p.

ISBN 978-92-9472-193-8

The recommended citation for this publication is:

Ivanov I. Analysis of the phaunistic composition of Ukraine // Scientific achievements of modern society. Abstracts of the 9th International scientific and practical conference. Cognum Publishing House. Liverpool, United Kingdom. 2020. Pp. 21-27. URL: <http://sci-conf.com.ua>.

Editor

Komarytsky M.L.

Ph.D. in Economics, Associate Professor

Editorial board

prof. Jan Kuchar, CSc.

doc. PhDr. David Novotny, Ph.D.

doc. PhDr. Zdenek Salac, Ph.D.

prof. Ing. Karel Marsalek, M.A., Ph.D.

prof. Ing. Jiri Smolik, M.A., Ph.D.

prof. Karel Hajek, CSc.

prof. Alena Svarcova, CSc.

prof. Marek Jerabek, CSc.

prof. Vaclav Grygar, CSc.

prof. Vaclav Helus, CSc.

prof. Vera Winterova, CSc.

prof. Jiri Cisar, CSc.

prof. Zuzana Syllova, CSc.

prof. Pavel Suchanek, CSc.

prof. Katarzyna Hofmannova, CSc.

prof. Alena Sanderova, CSc.

Collection of scientific articles published is the scientific and practical publication, which contains scientific articles of students, graduate students, Candidates and Doctors of Sciences, research workers and practitioners from Europe, Ukraine, Russia and from neighbouring countries and beyond. The articles contain the study, reflecting the processes and changes in the structure of modern science. The collection of scientific articles is for students, postgraduate students, doctoral candidates, teachers, researchers, practitioners and people interested in the trends of modern science development.

e-mail: liverpool@sci-conf.com.ua

homepage: <http://sci-conf.com.ua>

©2020 Scientific Publishing Center “Sci-conf.com.ua” ®

©2020 Cognum Publishing House ®

©2020 Authors of the articles

14.	<i>Fedorova N., Sobolieva O., Madzihon V., Tkachenko L.</i> UNITED KINGDOM'S EXPERIENCE OF USING COMPUTER GAMES IN EDUCATIONAL INSTITUTIONS.	97
15.	<i>Fedoriv O. Ye., Melnyk N. A., Kopach O. Ye., Yurchyshyn O. M., Palytsia L. M., Fartushok T. V., Halabitska I. M., Tsvyntarna I. Ya.</i> EFFECT OF LEAD ACETATE IN COMBINATION WITH STEARATES ON BONE MARROW CELLS OF ANIMALS.	116
16.	<i>Hapon Yu., Chyrkina M.</i> STUDY OF CATODE MATERIALS IN THE ELECTROCHEMICAL METHOD OF WASTEWATER TREATMENT.	125
17.	<i>Khudik L. M., Tretiakova S. O., Ponomarenko A. M.</i> THEORETICAL JUSTIFICATION BACKGROUND ELECTRIC ARC METALLIZATION MODE TO THE RESTORE THE CRANKSHAFT WEIGHT TRACTOR.	129
18.	<i>Khrenova V.</i> EFFICIENCY OF THE PEDAGOGICAL CONDITIONS IMPLEMENTATION IN THE FUTURE CRAFT AND TECHNOLOGY TEACHERS' PROFESSIONAL TRAINING TO TEACHING TEXTILE CRAFTS AT HIGH SCHOOL.	133
19.	<i>Kovalenko-Marchenkova Ye., Tovstonoh O.</i> CRISIS OF THE NEW YORK STOCK EXCHANGE 2020.	143
20.	<i>Korniyaka O. M.</i> PSYCHOLOGICAL SUPPORT FOR UNIVERSITY LECTURERS' COMMUNICATIVE AND PROFESSIONAL SELF-FULFILMENT.	147
21.	<i>Korepanov O. S., Taiwo A.</i> HEALTHCARE IT MARKET ANALYSIS AS A BASIS FOR INFORMATION TECHNOLOGY IMPLEMENTATION IN HEALTHCARE ENTERPRISES.	157
22.	<i>Kokhan M., Mazur A.</i> ELEMENTS OF STARTUP ECOSYSTEM.	165
23.	<i>Kolotylo T. R.</i> IMMUNOPATHOGENESIS OF HIV AND TUBERCULOSIS.	170
24.	<i>Kyrylko N.</i> MANAGEMENT DECISION AS A RESULT OF MANAGEMENT ACTIVITY OF ENTERPRISES.	176
25.	<i>Loboda N., Bozhok Yu.</i> THE ROLE OF METEOROLOGICAL DROUGHTS IN LOW FLOW PERIOD ON THE RIVERS OF THE NORTH-WEST BLACK SEA REGION IN PRESENT AND FUTURE (BY THE CLIMATE SCENARIOS DATA).	185
26.	<i>Mahdalyna L., Chyzhma D.</i> UNDERSTANDING AND INTERPRETATION OF FOREIGN LANGUAGE EDUCATIONAL TEXT IN THE DEVELOPMENT OF STUDENTS' COMPETENCE IN READING.	195

УДК 621.793.72

**THEORETICAL JUSTIFICATION BACKGROUND ELECTRIC ARC
METALLIZATION MODE TO THE RESTORE THE CRANKSHAFT
WEIGHT TRACTOR**

Khudik Liudmyla Mykolaivna

Lecturer

Tretiakova Svitlana Oleksiivna

Candidate of Agricultural Sciences, Senior Lecturer

Department of Plant production

Uman National University of Horticulture

Uman city, Ukraine

Ponomarenko Andrii Mykhailovych

Candidate of Engineering Sciences

Associate Professor Cherkasy

state technological University

Cherkasy city, Ukraine

Abstract. The paper presents the calculation of the optimal mode of application of a durable resilient coating according to the multifactor mathematical model, which reflects the dependence of the adhesive strength of the coating with the base material, as the main criterion for optimizing the surface restoration, from five parameters of the technological process.

The analysis of the obtained results according to the experimental design matrix shows that the maximum level of adhesion can be reached by the current of 190 A, an electric arc voltage of 195 V, the plasma gas flow rate of $10.75 \cdot 10^{-4}$ kg/s, the material sputter consumption $3 \cdot 10^{-4}$ kg/s and spraying distance of 0.12 m.

Keywords: durable coating, adhesion, electric arc metallization, spraying, self-fluxing powder, optimization.

It is well known that the main parts of wear in the crankshaft are the root and connecting rod necks. During the operation of the engine for a certain period of its operation, the diameter of these necks is uniformly reduced because of active abrasive wear caused by periodic friction of small particles of metal on the outer surface of the necks, which leads to their failure.

Therefore, the restoration of the crankshaft as a fast-wearing element of the tractor engine model "PMZ 10280" is an invariable process of tractor repair. The quality of the restoration of the work depends to a large extent on the way the repair object is repaired. Modern tractor-repair production has in its arsenal many different ways of renewal of HV, which ensure their reliable operation during the established inter-service life of tractors [1].

However, the final results of most methods do not provide the desired operating life of the unit and are marked by considerable cost [2].

An alternative way of solving the problem of the recovery of the crankshafts of tractors is the application as a result of electric arc metallization resistant to wear and corrosion [3] and relatively inexpensive powder spraying from self-fluxing wire. Unlike other types of gas thermal methods, electric arc metallization is more effective for restoring the crankshafts of tractors through the use of inexpensive powder wire, a simple coating process and high adhesive and cohesive adhesion of the coating to the base material.

The purpose of the study was to calculate the optimum modes of the metallization process using a multifactorial process model to obtain the most stable coating on the worn part of the crankshaft of the tractor "PMZ 10280".

The choice of research methodology was based on the works of Yu. Kharlamova, N.A. Budagyantsa, V.I. Orlova [1, 2] on the improvement of technology of restoration of worn parts of the crankshaft of the tractor brand "PMZ 10280" by optimizing the operating parameters of the process. Optimization of the deposition mode of the wear-resistant coating was performed according to the Box-Wilson method [4].

The maximum value of the adhesive strength of the coating with the base material σ_a (MPa) was selected by the optimization criterion. The determination of σ_a was performed using a technique specially developed by A.M. Ponomarenko [5] for determination of σ_a of plasma coatings on rotation bodies (including on the crankshaft necks).

The self-fluxing powder wire of the PP-NP30H6Y6RZ brand was chosen as the spraying material [4].

The main parameters (factors) of the experiment were the current I (A), the voltage of the electric arc U (B), the flow rate of the gas-generating gas $G_{PG} \cdot 10^{-4}$ (kg/s), the consumption of material sputtering $G_{POR} \cdot 10^{-4}$ (kg/s) and the distance spraying L_{DN} (m) in three (lower, main, upper) levels with a specific variation interval for each parameter.

As a result of the optimization of the mathematical model of the dependence of the adhesive force σ_a on five established factors by the method of steep ascent [6], the mode with $I = 205$ A, $U = 195$ V, $G_{PG} = 10,75 \cdot 10^{-4}$ kg/s, $G_{POR} = 3 \cdot 10^{-4}$, $L_{DN} = 0.12$ m, which provided the maximum stability indicator $\sigma_a = 35$ MPa.

Thus, the calculation of the technological parameters of electric arc metallization makes it possible to set the optimum process mode to achieve the most durable coverage of the details of the crankshaft of tractor engines during their restoration.

REFERENCES

1. Kharlamov Yu. A., Budyagyants N. A. Fundamentals of technology for restoration and strengthening of machine parts. Lugansk: Publishing House East-Ukr. nations. Un-them. V. Dahl, 2003. 389 p.
2. Orlov V. I. Gas-thermal sputtering of corrosion-resistant and wear-resistant materials. L.: LDNTP, 1986. 142 p.
3. Krylov S. V., Shalashniy A. N. Arc metallization as a method of corrosion protection of steel structures. — access mode: <https://profbuild.in.ua/en/state-2/1682->

electroduits-metalizatsiya-yak-sposib-antikoroziynogo-zakhistu-stalevikh-metalokonstruktsij

4. Adler Yu. P. Experiment planning for optimal conditions. M: Science, 1981. 389p.
5. Bykov V. I., Myakota I. S. Ponomarenko A. M., Tun O. I. Application of heat-resistant coatings. The CHITI newsletter. Part 2. Cherkasy: CHITI, 1996. P. 79-83.
6. Rumshisky L. Mathematical processing of experimental results. M .: Science, 1981. 195 p.

CERTIFICATE

is awarded to

Tretiakova Svitlana

for being an active participant in
IX International Scientific and Practical Conference

“SCIENTIFIC ACHIEVEMENTS OF MODERN SOCIETY”

24 Hours of Participation



LIVERPOOL

28-30 April 2020

sci-conf.com.ua

