Project Name: IRN - AP14972884 «Increasing the wear resistance of metal-cutting tools by the burn-in method»

Relevance: It is known that the Republic of Kazakhstan does not have its own tool industries and machine-building enterprises have to purchase metal-cutting tools with a high (inflated) cost from foreign manufacturers. All this leads to an increase in the cost of a mechanical operation, and ultimately an increase in the cost of manufactured products.

The solution to this problem may be to increase the wear resistance of metal-cutting tools and increase the period of their durability, which will favorably affect the cost reduction.

The idea of the project is to develop an effective and affordable way to increase the wear resistance of metal-cutting tools in the conditions of domestic machine-building industries. To achieve the goal of the project, it is necessary to perform an analysis and study of existing ways to increase the durability and wear resistance of metal-cutting tools.

Purpose: To increase the durability period of metal-cutting tools by increasing the wear resistance of the cutting part of the tool.

Expected and achieved results:

A method will be created to increase the wear resistance of metal-cutting tools based on the method of preliminary burn-in.

Currently, domestic machine-building enterprises are considered as potential consumers of the proposed technology.

The results of the project will be published:

- 2 (two) articles and (or) reviews in peer-reviewed scientific publications indexed in the Science Citation Index Expanded of the Web of Science database and (or) having a CiteScore percentile in the Scopus database of at least 50 (fifty);
- 3 articles in a peer-reviewed foreign and (or) domestic publication with a non-zero impact factor (recommended by COXON
- 1 patent of the Republic of Kazakhstan for an invention or for a utility model;
- 1 monograph.

Based on the results of the study, recommendations will be developed on the use of a method to increase the wear resistance of metal-cutting tools based on the method of pre-working.

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List of publications and patents published within the framework of this project:

1. A way to increase the wear resistance of metal-cutting tools -Bulletin of the L.N. Gumilyov Eurasian National University, series of Technical Sciences and Technologies, No. 3(140)/2022

2. Wear resistance of metal-cutting tools and the formation of secondary contact structures during cutting -Bulletin of the L.N. Gumilyov Eurasian National University, series of Technical Sciences and Technologies, No. 4(141)/2022

3. Issues of wear of metal-cutting tools -International scientific and practical conference "Seifullin readings – 18(2):"Science of the XXI century - the era of transformation"

Information for potential users: Based on the results of the study, recommendations will be developed on the use of a method to increase the wear resistance of metal-cutting tools based on the method of pre-working.

Additional information: Recommendations will be developed on the use of the method of running-in of cutting tools and testing protocols will be obtained in production.