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CREATION OF QUALITARIAN MODELS OF THE PROCESS OF DEVELOPMENT IN THE METALLURGICAL INDUSTRY AND MEANS OF QUALITY CONTROL

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Annotation:
The importance of modern qualimetric models for qualitative control of the development process in the metallurgical industry is increasing. This article analyzes the metrological foundations of quality control agents, new technological approaches to quality assurance in industry and their role in improving the product. The article presents the results of experimental experiments and systems developed using statistical analysis.

Keywords: metallurgical industry, quality control, qualimmetric modeling, metrology, innovative technologies.

Introduction

The metallurgical industry with the introduction of modern technologies is demanding new tools to increase competitiveness and ensure product quality. Optimization of production processes by making improvements in qualimmetric modeling and quality control processes is important. In this article, innovative methods of methodological development in metallurgical industry and the possibility of increasing the efficiency of production with them are explored.

Methodology:

In this study, the following methodological steps were performed while creating quality control tools for the metallurgical industry:

1.   Experimental approach: development of qualimetric models for quality control of metallurgical products.

2.   Quality control equipment testing: development and integration of metrology equipment for real-time product quality control.

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3.   Statistical analysis: analysis of experimental data and evaluation of the effectiveness of quality control system.

Experiment Analysis: In the study, the experiments were organized based on a three-stage factorial design. The options include:

- Level of precision for quality control.
- The measuring system and geometry of the product surface.
- Technological parameters (temperature, pressure, time) in the process of production of the product.

A total of 27 options were identified for the experiments, and quality control results for each option were measured.

Results and analysis: As a result of the experiments, the following data were obtained:

- The mean error of the geometric dimensions of products determined using measuring instruments was 0.03 mm.
- Thanks to quality control systems working in real time, the detection rate of defects in the production process is over 95%.

The statistical analysis confirmed that the studied systems were of a high level of accuracy and reliability.

Conclusions:

Efficiency in the metallurgical industry is found to be possible by creating qualmetrical models and tools of quality control. Real-time metrology systems are crucial in ensuring product quality and reducing losses in the production process. In the future, these systems may be more widely used in automation processes.

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