

## ENHANCING PRODUCT QUALITY MANAGEMENT SYSTEMS IN THE NONFERROUS METAL INDUSTRY

Yao Ruru, Koptieva H.

*National Technical University «Kharkiv Polytechnic Institute», Kharkiv*

Ensuring high product quality is a crucial factor for competitiveness and sustainability in the nonferrous metal industry [1]. As market demands increase and regulatory requirements become stricter, enterprises must continuously refine their product quality management systems (QMS) to maintain efficiency and meet global standards. This study explores key strategies for enhancing QMS, focusing on technological advancements, process optimization, and workforce engagement.

A modern QMS integrates automation, digital monitoring systems, and statistical quality control tools to minimize defects and ensure consistency in material properties. The use of advanced data analytics and real-time quality assessment enhances production precision, reducing variability and waste. Additionally, adherence to international quality standards, such as ISO 9001 and industry-specific certifications, strengthens market credibility and facilitates global trade [3].

Beyond technological improvements, human factors play a critical role in quality management [2]. Employee training, process standardization, and a culture of continuous improvement contribute to long-term product reliability and operational excellence. Furthermore, a structured approach to risk management, including predictive maintenance and lean manufacturing principles, helps enterprises proactively address quality-related challenges.

By implementing an integrated and adaptive QMS, companies in the nonferrous metal industry can enhance productivity, reduce costs associated with defects, and improve customer satisfaction. A forward-thinking approach to quality management not only ensures compliance but also fosters innovation, positioning enterprises for sustained growth in an increasingly competitive market [4; 5].

### References:

1. Krasnokutska, N., Koptieva H., Cirella, G.T., Kruhlova, O. (2024). Examining the Link Between Corporate Sustainability and Financial Performance: An Empirical Study with Implications for Post-Conflict Ukraine. Handbook on Post-War Reconstruction and Development Economics of Ukraine. Contributions to Economics. Springer, Cham.
2. Коптева Г.М. Кадрова безпека підприємства: сутність, складові та забезпечення. *Вісник Національного технічного університету "Харківський політехнічний інститут"* (економічні науки). №2. 2020. С.119 – 124. DOI:
3. Коптева Г.М. Теорія та методологія забезпечення економічної безпеки бізнес-процесів торговельного підприємства: монографія. Харків.: Видавництво Іванченка І.С., 2020. 254 с.
4. Mironova N., Koptieva H., Liganenko I., Sakun A., Chernyak D. (2022). "Modeling the Selection of Innovative Strategy for Development of Industrial Enterprises," WSEAS Transactions on Business and Economics, vol. 19, pp. 278-291,
5. Havlovska N., Koptieva H., Babchynska O., Rudnichenko Y., Lopatovskyi V., Prytys V. (2022). Diagnostics of the State of Safety-Oriented Enterprise Management System Using Neural Networks. *TEM Journal*. Vol. 11, Issue 1, pp. 13-23, .