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- Automatic Welding (https://patonpublishinghouse.com/eng/journals/as);
- Electrometallurgy Today (https://patonpublishinghouse.com/eng/journals/sem);
- Technical Diagnostics & Nondestructive Testing (https://patonpublishinghouse.com/eng/journals/tdnk).

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ORIGINAL ARTICLES

*Translated Article(s) from «Avtomatychne Zvaryuvannya» (Automatic Welding), No. 3, 2024.

**Translated Article(s) from «Avtomatychne Zvaryuvannya» (Automatic Welding), No. 4, 2024.

***Translated Article(s) from «Suchasna Elektrometalurhiya» (Electrometallurgy Today), No. 2, 2024.

****Translated Article(s) from «Tekhnichna Diahnostyka ta Neruinivnyi Kontrol» (Technical Diagnostics & Nondestructive Testing), No. 2, 2024.

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FUTURE TRENDS AND TECHNOLOGIES IN THE WELDING INDUSTRY: VISION OF DNIPROMETYZ TAS

The welding industry is on the verge of significant changes driven by new technologies and evolving market needs. DNIPROMETYZ TAS one of the leading manufacturers of welding wire in Ukraine, is actively adapting to these changes and offering innovative solutions.

KEY MARKET DEVELOPMENT TRENDS

Recent trends in the development of the welding materials market predict significant growth over the next six years. Welding technologies are widely used to create metal structures in various sectors of the economy. Welding plays a crucial role in construction, bridge building, pipeline laying, and other engineering projects. The main drivers of this growth are the automotive and fuel and energy industries, which actively use welding technologies for manufacturing metal structures. The energy sector is likely to meet the growing demand for solar and wind power plants. Pipeline construction is also expected to support market growth over the next six years.

The main factors driving the growth of the welding materials market are industrialization, urbanization, and technological progress.

MODERN CHALLENGES AND SOLUTIONS

The primary obstacles to market development are unstable raw material supplies and price fluctuations. Changes in trade regulations, supply imbalances, environmental requirements, currency fluctuations, and geopolitical threats significantly impact the cost of raw materials, negatively affecting the production and price of welding materials.

Industries related to the production of welding materials face a shortage of skilled welders due to the mass retirement of experienced workers. This has particularly affected sectors such as heavy engineering, automotive manufacturing, and construction, where welding technologies are most intensively used.

In response to this challenge, DNIPROMETYZ TAS actively collaborates with educational institutions, invests in the training of young specialists and provides consultations and technical assistance at all the stages: from material selection to product application.. The plant also actively collaborates with customers and focuses its efforts on user training, which strengthens our brand and creates strong partnerships.

Stable expansion of the welding materials market is expected in Europe, thanks to the already developed infrastructure. DNIPROMETYZ TAS is working on expanding the European market, particularly in Germany, whose economy is considered one of the strongest in Europe. The European Union is strengthening environmental protection measures, leading to an increase in the production of environmentally friendly products. This encourages the development of welding materials that will reduce pollution levels in the future.

Diversification of products and the introduction of new technologies are the main strategies for growth and development in the market.

KEY SEGMENTS OF THE WELDING MATERIALS MARKET

Depending on the type of welding material, the market is divided into solid wire (38 %), flux-cored wire (27 %), coated electrodes for manual arc welding (26 %), and wire and fluxes for submerged arc welding (9 %).

The solid wire market segment maintains its leadership due to its broad application in various industries. This segment is expected to continue dominating, as solid wire is actively used for arc welding in inert gases. Its high productivity, efficiency, and ability to create clean and strong welds attract the attention of new market players.

The welding materials industry is currently focused on developing simple and economical solutions for protecting parts from the environment. To prevent oxidation, solid wire is copper-coated, which improves conductivity. However, copper is unsuitable for some types of welding, increasing the demand for polished wire with a high degree of surface cleanliness. Such wire is especially useful in robotic welding, but its supply on the market is still limited.

Coated electrodes for manual arc welding, mainly intended for low-alloy and low-carbon steels, remain popular due to their wide range of applications and availability.

The product range of DNIPROMETYZ TAS includes a wide variety of diameters of copper-coated welding wire, as well as polished, non-coated welding wire. Wires of the G3Si1 and G4Si1 grades are produced in accordance with the international standard EN ISO 14341 (national standard DSTU EN ISO 14341). The plant strives to offer not only welding materials but also comprehensive solutions, including application technologies for effective welding tasks. The goal is for our customers to see DNIPROMETYZ TAS not just as a supplier but as a strategic partner capable of solving their tasks.

INNOVATIONS AND AUTOMATION

Automation and robotization of welding processes are becoming the foundation of the industry's future development. Robotic welding complexes significantly increase the productivity and quality of welding work, as well as reduce the risk of injuries. To fully meet the needs of its customers, DNIPROMETYZ TAS has expanded its range of welding wire by adding a new format — 250 kg drums for robotic systems. This product allows the automation of processes in large-scale production.

The plant uses advanced technologies from the Swedish manufacturer Lämneå Bruk AB and high-quality raw materials to produce welding wire. Quality control of the rod and testing of finished products are carried out in our own accredited laboratory, equipped with modern instruments for chemical analysis, mechanical tests, and welding technology tests. This ensures the production of the highest quality products, tested at leading industrial enterprises.

The integration of digital technologies with industrial processes is becoming increasingly important. The fourth industrial revolution, aimed at creating “smart” manufacturing, is already impacting the welding industry. DNIPROMETYZ TAS actively uses intelligent production management systems, which enhance its efficiency and flexibility, as well as improve customer orientation at all stages of production.

We pay special attention to certifying our products and have several important certificates. The production quality management system is certified according to ISO 9001 by the certification body “GLOBAL-CERTIFIC.” In addition, our products meet European TÜV NORD standards, confirming their high quality and compliance with international standards. We also have a Certificate of Conformity from Deutsche Bahn, which is a significant indicator of the reliability and quality of our products. Our G4Si1 wire has successfully passed testing at the E.O. Paton Electric Welding Institute and can be used in the production and installation of steel bridge structures. DNIPROMETYZ TAS has also been granted the right to mark its products with the CE mark, indicating compliance with safety and health requirements in the European Union.

LOOKING TO THE FUTURE

In the future, we plan to continue investing in the latest technologies and expanding our product range to meet our customers’ needs. We are confident that the use of our high-efficiency welding wire will help our customers adapt to new challenges and succeed in their activities.

Our vision for the future is to create innovative solutions that will enable welding technologies to reach new heights, ensuring high quality, reliability, and environmental friendliness.

DNIPROMETYZ TAS is always ready to support its customers on the path to success by providing them with the best products and solutions in the welding materials market.