

## SCIENTIFIC AND TECHNICAL CONFERENCE “WELDING AND RELATED TECHNOLOGIES FOR THE RECOVERY OF UKRAINE”

On February 27, 2025, E.O. Paton Electric Welding Institute (PWI), Kyiv, Ukraine hosted the scientific and technical conference “Welding and Related Technologies for the Recovery of Ukraine”. More than seventy researchers, engineers, and industrial practitioners from institutes and organizations in Kyiv, Dnipro, Lviv, Kamianske, and Poltava took part in the event. The conference was held in the format of plenary and poster presentations.

The conference was opened by the Director of the E.O. Paton Electric Welding Institute, Academician of the National Academy of Sciences of Ukraine I.V. Krivtsun. He noted that the conference was dedicated to scientific and technical challenges in the field of welding and related technologies. Without exaggeration, it can be stated that welding technologies, which have been widely used in various branches of industry for more than one hundred years, remain among the most relevant areas of development in modern industrial production. The potential for further advancement of these technologies requires continued scientific research and practical validation, which is precisely the focus of this conference.



Address by Academician of the National Academy of Sciences of Ukraine I.V. Krivtsun

During the conference, the following plenary reports were presented:



Plenary presentation by D.I. Stelmakh

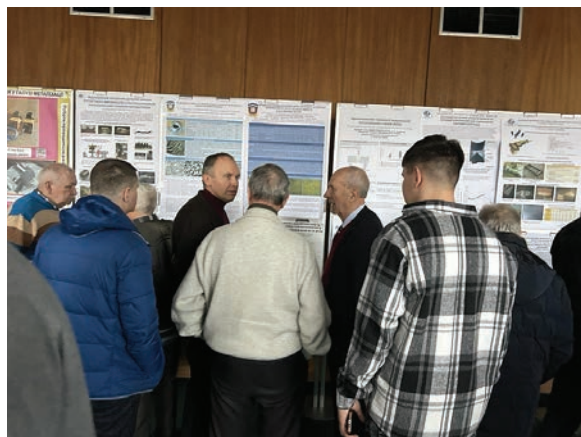
- Matviichuk V.A. “*GTE Components Made of VT6 Alloy: Additive Manufacturing and Properties*” (PWI);
- Kovalchuk D.V. “*xBeam 3D Metal Printing — New Research, Materials, and Technological Solutions*” (NVO “Chervona Hvilya”, Kyiv);
- Yarovytsyn O., Cherviakov M., Motrunych S., Volosatov I., Zviagintseva G., Pestov V., Khrushchov H., Tomko D., Junwen D. “*Materials Science Challenges of Arc Additive Manufacturing of Inconel 625 Alloy Parts*” (PWI);
- Korzhyk V.M., Ilyashenko Ye.V., Chygileichyk S.L., Torba Yu.I., Chechet O.V. “*3D Printing of Heat-Resistant Alloy Products by Additive Plasma-Arc Surfacing: New*

*Technological Approaches and Equipment Development*” (PWI; JSC Zaporizhzhia Machine-Building Design Bureau “Progress”; Zaporizhzhia Polytechnic National University);

• Shapovalov Ye.V., Dolynenko V.V., Koliada V.O., Vashchenko V.M., Novodranov A.S., Vashchenko O.Yu., Mangold A.M., Klishchar F.S. “*Development and Research of a Robotic System for Implementing WAAM Additive Technology for Manufacturing Drilling Tools*” (PWI);

• Korzhyk V.M., Strohonov D.V., Tereshchenko O.S. “*Application of Arc Plasma Torches with Tubular Copper Electrodes for Producing Fine Spherical Metal Alloy Powders*” (PWI);

• Demchenko V., Nomirovskii D., Krivtsun I. “*Optimization of Current Pulse Shape Based on the Criterion of Force Action of*



During the poster presentation session



Exhibition of equipment, materials, and technologies for welding and non-destructive testing

*Modulated Current*” (PWI; Taras Shevchenko National University of Kyiv);

- Kovalenko Dmytro, Krivtsun Igor, Biber Alexander, Mokrov Oleg, Pavlov Oleksii *“Features of Increasing Penetration in High-Frequency Pulsed TIG Welding of Carbon and Stainless Steel (Experimental Studies)”* (PWI; RWTH Aachen University; ISF — Welding and Joining Institute);

- Lobanov L., Stelmakh D., Dyadin V., Savytsky V. *“Technical Diagnostics of Bridge Conditions Based on Photogrammetry Using Unmanned Aerial Vehicles”* (PWI);

- Makhnenko O.V., Milenin O.S., Velykoivanenko O.A., Rozynka G.P., Makhnenko O.O. *“Numerical Analysis of the Operational Strength of Welded Absorber Rods of the Control and Protection System of the WWER-1000 Nuclear Reactor”* (PWI);

- Pavlii O.V. *“Digital Systems for Radiographic Inspection of Welded Joints”* (LLC Scientific and Production Firm “Diagnostic Instruments”, Kyiv);

- Yudin Yu.V. *“AOTAI Collaborative Robots as a System Solution to Workforce Crises Caused by the Shortage of Qualified Workers at Industrial Enterprises”* (LLC “WTC”, Kyiv).

The conference also featured 48 poster presentations in the fields of welding, electrometallurgy, non-destructive testing, technical diagnostics, and related technologies, prepared by specialists from Ukraine and countries outside the region.

Several companies participated in an express exhibition of equipment, materials, and technologies for welding and non-destructive testing, including:

- PJSC “OKO Association”, Kyiv — a leading Ukrainian developer of ultrasonic and eddy-current flaw detectors, including those for rail and weld inspection;

- LLC “Scientific and Production Firm “Diagnostic Instruments”, Kyiv — equipment and materials for non-destructive testing, as well as NDT and flaw detection services;

- LLC “WTC”, Welding Technologies Center, Kyiv — a full range of pipeline welding equipment and AOTAI collaborative robots;

- LLC “VELTEK”, Kyiv–Dnipro — a leader in the production of flux-cored wires in Ukraine;

- LLC “NVO “Chervona Hvilya”, Kyiv — technologies for 3D printing of high-quality parts from titanium, niobium, stainless steel, copper, and other metals using xBeam 3D Metal Printing technology with welding wire;

- LLC “Promavtozvarka”, Kyiv — welding equipment and systems for electric arc metallization.

The event brought together leading Ukrainian researchers, engineers, and representatives of industry, who presented current research results and technological developments in the fields of welding and materials science. Within the framework of the conference, advances in additive manufacturing, robotic systems, high-temperature materials, non-destructive testing, and digital technologies in welding processes were showcased. Special attention was paid to the application of modern technologies for the restoration of critical infrastructure, bridges, energy systems, and industrial facilities in the post-war period. Participants emphasized the importance of integrating scientific developments into practice, expanding cooperation between the scientific community and business, and training highly qualified specialists for the implementation of large-scale reconstruction projects.

The conference became a landmark event for experience exchange and for defining strategic directions in the development of welding technologies in Ukraine. The obtained results will contribute to strengthening the technological potential of the country and to the formation of effective solutions for rapid and safe infrastructure recovery.

Considering the scale of challenges in the field of welding in the implementation of Ukraine’s reconstruction projects, the conference participants expressed their wish to hold a similar conference annually on November 27, the birthday of Academician Borys Paton.

The collection of conference abstracts is available at:  
<https://patonpublishinghouse.com/ukr/proceedings/WRT2025>

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