



INTERNATIONAL CONFERENCE «WELDING AND RELATED TECHNOLOGIES — PRESENT AND FUTURE»

On November 25–26, 2013 in Kiev at the E.O. Paton Electric Welding Institute the International Conference «Welding and Related Technologies — Present and Future», organized by the National Academy of Sciences of Ukraine and E.O. Paton Electric Welding Institute, took place. More than 200 representatives of academic institutes, branch research institutes, research-design and engineering centers, industrial enterprises and education universities, chiefs and managers of business structures, etc. took part there. Among the participants of the Conference there were about 70 representatives from Austria, Bulgaria, Great Britain, Germany, India, Canada, China, Poland, Slovakia, USA, France, Japan, Belarus, Georgia, Kazakhstan, Russia, etc.

Among the honorary guests of the Conference Correspondent Member of the RAS M.P. Lebedev, the President of the Sakha Academy of Sciences (Yakutia); Prof. O.I. Steklov, the President of the Russian Scientific and Technical



Welding Society; Dr. V.G. Fartushny, the President of the Society of Ukrainian Welders; Prof. L.S. Denisov, the President of the Belarus Welding Society, were present.

At the Conference, 22 invited papers of scientists from many countries about the most impor-





tant scientific achievements, obtained in the recent time in the field of welding, surfacing, brazing, strength, new materials, non-destructive testing and technical diagnostics, evaluation of residual life of welded structures, surface engineering, special electrometallurgy, and also prospects for development of these directions, were listened and discussed at the plenary sessions.

Among the speakers, the famous scientists, such as I.V. Gorynin, Guan Qiao, J. Pilarczyk, U. Reisgen, Yu.M. Pleskachevsky, Y. Okamoto, S. Keitel, V. Lysak, M. Beloiev, B.S. Lomberg, A.V. Dub, P. Mudge, A. De, T. Mochizuki, Yu. Saraev, K. Alaluss, took the floor. The papers were of great interest among the participants of the Conference and were accompanied by questions to the speakers.

On November 26 in the reading hall of the PWI Library, 195 poster papers were presented for familiarization. The exposition included the following chapters:

- Technologies, materials and equipment for welding and related technologies (76 papers);
- Strength of welded joints and structures, theoretical and experimental investigations of stress-strain states and their control (44 papers);

- Non-destructive testing and technical diagnostics (16 papers);
- Surface engineering (36 papers);
- Special electrometallurgy (13 papers);
- Problems of welding in medicine, ecology, certification and standardization of welding production (10 papers).

The active exchange of scientific information about the investigation results had a mutual benefit.

In the period of work of the Conference a series of bilateral negotiations took place directed to cooperation and strengthening of collaboration, the Agreement about cooperation between the Society of Ukrainian Welders and the Russian Scientific and Technical Welding Society was signed.

Before the beginning of the Conference the plenary papers as the single issues of the journals «Аvtomaticheskaya Svarka» and «The Paton Welding Journal» (№ 10/11, 2013) and also abstracts of poster papers were published (see www.patonpublishinghouse.com).

By the end of the Conference the friendly reception for its participants was held.

V.N. Lipodaev, A.T. Zelnichenko



20 YEARS IN THE WORLD OF FLUX-CORED WIRES



Decomposition of the USSR and emergence of independent republics in the post-Soviet space at the start of 1990s was accompanied by upsetting of industry operation, breaking up and loss of production links, mass stoppage of production. In 1993 in Kiev a joint Russian-Ukrainian Company «TM VeldTek Ltd.» was set up by the initiative of PWI staff. The Company was successfully developing in the direction of flux-cored wire manufacture. This was promoted by the support of «Dnepropetrovsk Hardware Production Association», where the management appreciated the idea of restoring flux-cored wire manufacturing in Ukraine.

In 2001 flux-cored wire manufacturing was moved to a separate subdivision — «TM.VELTEK Ltd.».

Over 20 years of operation the Company implemented a number of important engineering measures on repair and upgrading of the main equipment, in particular, flux-cored wire production lines, charge section improvement, has mastered modern forms of product supply, has optimized technologies of manufacturing wires of 1.0–6.0 mm diameter. Series of modern welding and surfacing flux-cored wires have been developed and are manufactured at present. Such results have been achieved owing to dedicated efforts of highly qualified engineering and technical staff and workers.

Positive result of cooperation with enterprises is achieved owing to application of comprehensive approaches to order fulfillment, including, if required consultative assistance on selection of

material, optimum technology and equipment for its application and engineering support.

High scientific and technical potential of the Company, irrespective of the range and volume of batches, allows fulfilling the orders in the shortest time, taking into account customer requirements. Such an approach allowed occupying a quite large market segment in Ukraine, ensuring stable foreign contacts and becoming a firm partner for many enterprises. Experience of interaction and cooperation with research institutes and universities of Ukraine and Russia is to the company's credit.

By their applications and performance VELTEK wires now are not inferior to the products of leading foreign companies, that is confirmed by their high evaluation in the local and foreign exhibitions and independent ratings, company's recognition as a reliable supplier by leading enterprises of Ukraine and CIS, continuous widening of consumption regions and growth of sales.

«TM.VELTEK» developed a number of new flux-cored wires for building-up by surfacing.

VELTEK-N470 flux-cored wire of 2.0–4.0 mm diameter in combination with fluxes AN-20 and AN-26 and VELTEK-N470S self-shielded wire of 2.0–2.4 mm diameter are manufactured for building-up by welding of CCM rolls. These wires ensure self-separation of slag crust, absence of pores or cracks in the deposited metal in case of following the technological recommendations. Comparative testing of VELTEK-N470 and VELTEK-N470S wires showed that they are on the level of those of leading foreign companies.





Built-up rolls have the service life of not less than 1.5 mln t.

«TM.VELTEK» together with metallurgical plants «Krivorozhstal», «Dneprovsky F.E. Dzerzhinsky» and «Zaporozhstal» performed a package of work aimed at improvement of surfacing consumables, technology and equipment for mill roll surfacing. Standard flux-cored wires of PP-Np-35V9Kh3SF and PP-Np-25Kh5FMS grades were used to optimize the alloying systems and develop new flux-cored wires VELTEK, allowing for mill roll operating conditions, namely N370-RM, N460, N500-RM, N505-RM, N550-RM. Surfacing by these wires is performed using AN-20, AN-26 and AN-348-A fluxes. Application of the proposed wires improved the effectiveness of mill roll operation.

In cooperation with Nikopol Plant of Seamless Pipes «Niko Tube» performed work on introduction of hardsurfacing of continuous mill rolls by VELTEK-N480NT flux-cored wire with C-Si-Mn-Cr-V-Mo-W alloying system. The wire provides a stable process of DCRP surfacing using AN-20S and AN-26P fluxes, easy separation of slag crust, absence of cracks and pores in the deposited metal. Deposited metal hardness is *HRC* 50–56.

Self-shielded flux-cored wire VELTEK-N250RM of 1.6–3.0 mm diameter is successfully applied at reconditioning of mill stand and shear pads, spindels and couplings of roll drives, sprockets, bushings, shafts, hubs, etc.

Surfacing of dogging crane cores and striper crane jaws, exposed to impact and compressive loads at high temperatures in service, was implemented. For this purpose, 2.0 mm self-shielded flux-cored wire of VELTEK-N480S grade with C-Cr-W-Mo-V-Ti alloying system was applied, which ensures deposited metal hardness after surfacing equal to *HRC* 50–54, and hot hardness of *HRC* 40–44 at 600 °C. Application of mechanized surfacing with VELTEK-N480S wire instead of T-590 and T-620 electrodes allowed extending core service life 4–5 times. The problem of core reconditioning was solved in a comprehensive manner (equipment–material–technology).

Flux-cored wires of VELTEK-N300-RM and VELTEK-N350-RM grades of 1.6–4.0 mm diameter are proposed for crane wheel surfacing. Surfacing is performed with AN-348 and AN-60 fluxes or in CO₂. Over the recent years VELTEK-N300-RM wire has been successfully applied instead of solid wire Np-30KhGSA. Technology of surfacing using AN-348 flux and 3.6 mm flux-cored wire of VELTEK-N285 grade has been developed for heavy-duty crane wheels. Chromium-manganese deposited metal with the structure of metastable austenite ensures high wear resistance of the wheels through development of the process of self-strengthening at cold working.

The Company is taking an active social stand, providing financial support to local sports, medicine and science.