

PWI Pilot Plant of Welding Equipment is 60



Cosmonauts V.N. Kubasov and G.V. Shonin with «Vulkan» unit before Soyuz-6 flight

Welding technologies, similar to many others, do not stay in one place, but have a steady tendency to develop, new materials are created, welding technologies are improved, as well as welding equipment, which becomes more cost-effective, compact and efficient from year to year.

A bright example of successful welding technology development is PWI PPWE, which celebrated its 60th anniversary on January 1, 2019.

From the moment of the start of its operation (1959), the main objective of the Plant was optimizing the technology of manufacturing new welding equipment, developed by PWI scientists. And over the 60 years of its history, the Plant has manufactured hundreds of thousands of equipment units for almost all continents of the world. Welding equipment manufactured by the Pilot Plant, was used for performance of welding operations in a broad range of conditions: from water depths to open space.

Among the known historical events, which were realized with application of PPWE equipment, the following should be noted:

- construction of «Bukhara-Urals» and «Druzhba» gas pipelines (A850 and A943 machines for welding large-diameter pipes);
- first welding operations with the electron beam, plasma and consumable electrode in space, performed by the crew of «Soyuz-6» spaceship (unique «Vulkan» apparatus);
- Soviet-French experiment in near-earth space (special hardware «Araks»);
- world's first cutting, welding, brazing and spraying of metal plates in open space at «Salyut-7» station (portable electron beam unit URI).

In the period from 1992 to 1998, during the unstable economic situation in Ukraine, when many production enterprises were closing, the Pilot Plant of Welding Equipment managed to preserve its production facilities and most valuable personnel resource. During this period the main activity of the Plant was manufacturing transformer equipment.



Laying the main pipeline

In 2004, in parallel with manufacture of classic transformers and rectifiers, a new department is formed, the main purpose of which was development of welding inverters. This department was formed from high class specialists — graduates of NTUU «KPI», who were immediately sent for training to Italy, to one of Europe's leading plants on manufacture of inverter welding machines. This yielded its results — Pilot Plant of welding equipment was the first in Ukraine to master manufacture of inverter-type welding machines, and today the Plant's products take up a considerable share of Ukrainian market of welding equipment. PPWE also is the only plant in Ukraine, capable of manufacturing welding equipment for welding currents from 150 A for household consumers up to 10000 A for Ukrainian industry giants.



PPWE central building

After the Plant has occupied a serious share of Ukrainian market, a decision was taken to actively develop exports. In 2012 the first export delivery of inverter-type welding machines to Equatorial Guinea was carried out. Since 2013 welding machines began to be exported to Georgia, Moldova and Azerbaijan. In 2014 the Pilot Plant received the European Certification CE for inverters, and in 2017 confirmed it for the entire line of inverter-type PATON™ machines. As of 2019 PATON™ products have been supplied to more than 20 countries all over the world — from Latin America to South Korea.

«During the entire period of its activity the Pilot Plant of Welding Equipment implemented the developments of the Electric Welding Institute. On the one hand, it was a great responsibility, but on the other, it always kept the team's creativity in good shape and allowed working with the newest developments in the field of welding that largely predetermined today's success of the Plant», — Victor Koritsky, PWI staff member, shares his impressions.

The Plant carries on close cooperation with PWI and PWI Experimental-Design and Technological Bureau, remaining the production site for manufacturing pilot equipment. Over the last several years, a number of National and International projects have been realized using the Plant production facilities, including:

- development of welding technology and equipment for manufacturing welded combined rotors by automated submerged-arc welding by an order of OJSC «Turboatom» (2013);
- project of State Oil Company of Azerbaijan (SOCAR) on severing two pontoons from a block by directed explosion method at construction of an off-shore stationary platform No.7 in the Caspian Sea (2014);
- project of State Company «Ukrspetsexport» on development and manufacture of a batch of welding equipment for tropical climate, which was supplied to one of shipbuilding plants in South-East Asia (2015);
- development of welding equipment for electroslag welding of metal up to 200–450 mm thick for mechanical engineering plant in Eastern Europe (2016);
- joint development by the Plant and PWI EDTB of multi-operator welding rectifiers VDU-



Anat. V. Stepakhno, Chairman of PPWE Board, is demonstrating new samples of welding power sources to academician B.E. Paton

Acad. I.V. Krivtsun,
PWI Deputy Director



Pilot Plant of Welding Equipment of the E.O. Paton Electric Welding Institute is one of the main partners of PWI in the field of development and batch production of modern competitive equipment for welding and related technologies. Institute scientists, with the participation of PPWE, perform studies of different welding processes and technologies, determining technical requirements to equipment, which is necessary for their practical realization. The thus obtained results are the base for manufacture of modern power sources and other specialized equipment at PPWE. An example of such fruitful cooperation can be the joint work performed last year on determination of welding-technological properties of inverter power sources for arc welding with expanded functional capabilities, the results of which are already being used by the Plant in manufacture of the line of multifunctional digital inverters. A promising direction of further cooperation of PWI and PPWE can be joint work on organizing mass production of specialized equipment and tools for high-frequency welding and treatment of live biological tissues, developed by the Institute's scientists in cooperation with specialists of different medical institutions of Ukraine.

graded: HAAS turning center, HAAS vertical machining center and specialized rotary table were put into operation. This entire equipment complex is fully automated and allows performing a wide range of operations on manufacture and machining of parts in the shape of bodies of revolution. Conducted refitting and upgrading of production led to improvement of product quality, reduction of labour consumption of complex operations

1202P, which were used to re-equip the carriage works of SCB Foundry in the Czech Republic (2016);

- project for State Company «Ukroboronservis» on development of an automatic mortar coordinating system (2016). The Project was presented with success at XIII International Specialized Exhibition «Arms and Security–2016».

The Plant also continues successfully realizing the Institute's developments in its products, manufacturing classical-type welding equipment. Literally at the end of 2018 the Pilot Plant realized a project on delivery of four multioperator welding rectifiers PATON™ VMG-5000 for welding currents up to 5000 A for top Ukrainian enterprises — leaders of the mining industry and metallurgy. Modern pace of development of science and technology necessitates regular upgrading of production enterprises on the strategic and technological levels. It is impossible to correspond to the status of the national steel manufacturer without continuous investments into development of the industry, which is given special attention by the Plant management.

In order to expand the range of manufactured products and strengthen its market positions, PPWE management took a decision on setting up its own company for production of welding electrodes. As a result, at the beginning of 2016, a new company OJSC «PATON-Elektrod» was established, which began manufacturing welding electrodes of the most popular grades of the classic formulations: ANO-21, ANO-36, ANO-4, UONI 13/45, UONI 13/55, MR-3, special electrodes for surfacing of T-590 grade, for cast iron welding of TsCh-4 grade, for welding high-alloyed steels OZL-8 and TSL-11, as well as electrodes of Elite series by improved PWI formulation. And in 2017 the technology park for electrode manufacture was complemented by a modern line of the capacity of 12 tons per shift, as part of realization of the strategy of development of this sector.

In 2017 the Plant commissioned a section on production of cases for welding machines, which accommodated high-technology equipment of the known TRUMPF brand: coordinate-perforating press for treating large metal sheets, hydraulic bending press to give the required shape to metal parts and line of powder painting of finished products. And in 2018 the section of mechanical production was up-

G.V. Zhuk,
EDTB Director



Fruitful reliable cooperation of PPWE and EDTB for 60 years is still going on now. A large number of joint projects have been realized over these years. And now, when solving new tasks, EDTB can always rely on the enterprise, which is capable of embodying the most daring ideas. Continuous mutually beneficial cooperation of our organizations allows finding new customers, opening and expanding the markets.

Export deliveries of PPWE equipment

Classical equipment



Rectifiers



Transformers



Automatic machines



Multioperator power sources

Kazakhstan

Estonia

Latvia

Lithuania

Belarus

Poland

Uzbekistan

Moldova

Bulgaria

Georgia

Armenia

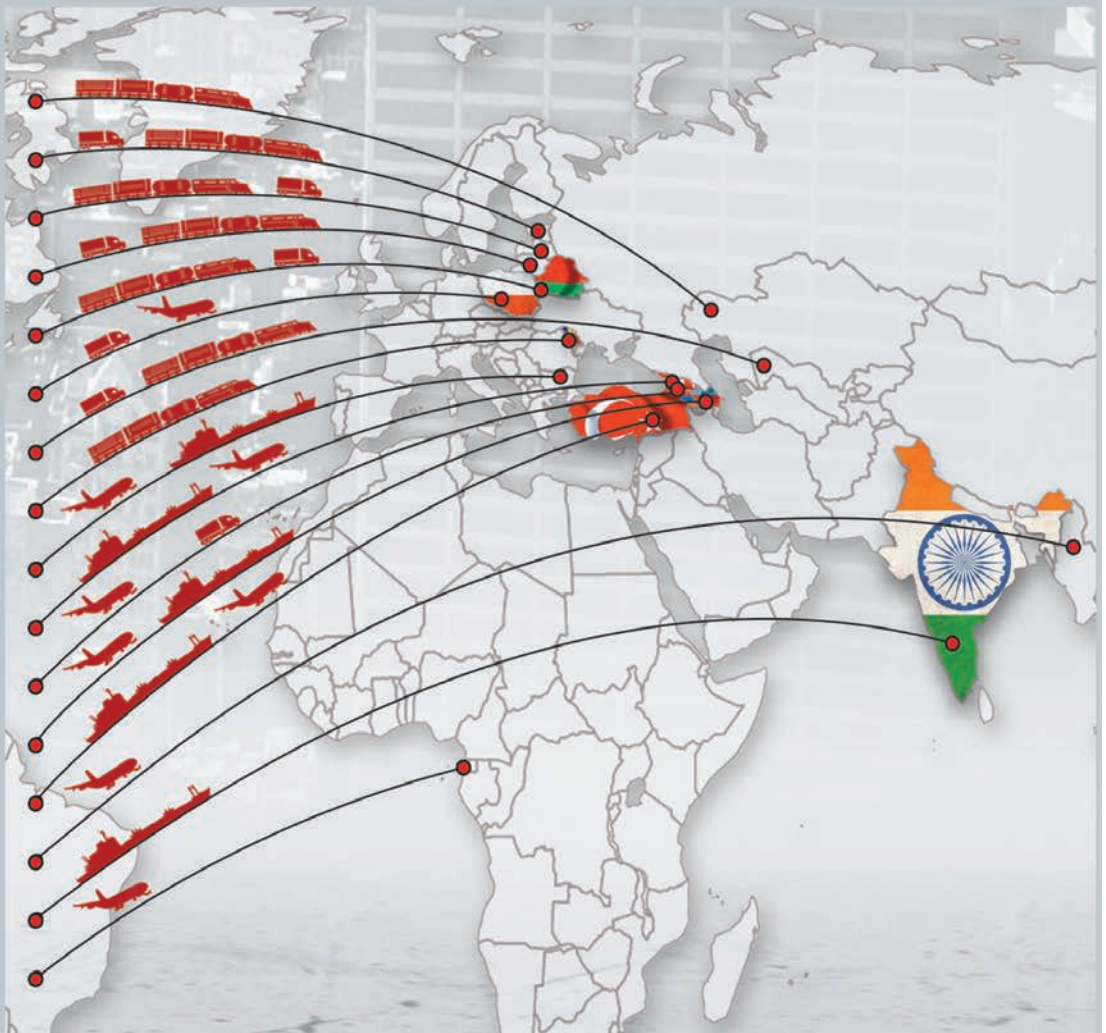
Azerbaijan

Turkey

Myanmar

India

Eq. Guinea



Inverter equipment



Welding



Semi-automatic



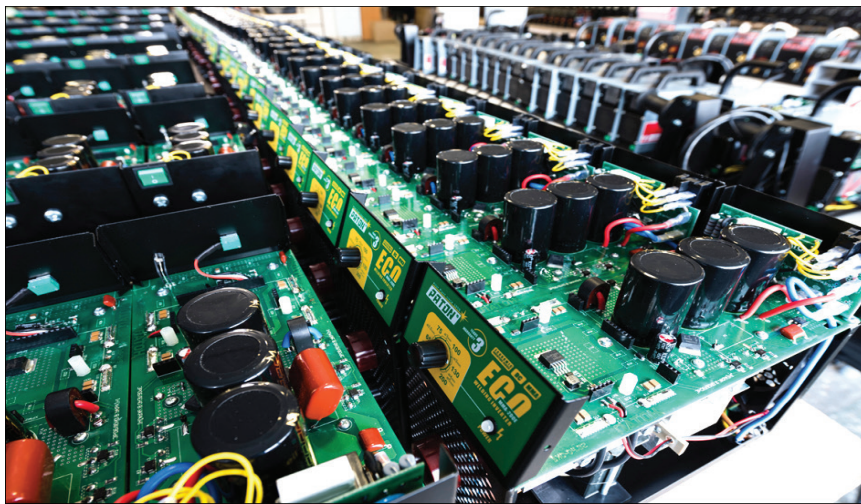
Argon-arc



Apparatuses for air-plasma cutting



Blank production shop



Assembly line of welding power sources

and shortening of certain production cycles, that allowed somewhat slowing down the increase of prices for finished products.

«The steps taken for upgrading the production facilities of the Pilot Plant and step-by-step realization of development strategy allow us looking to the future with confidence. Today the Plant is focused on development of new samples of welding equipment and extension of the product range. Active development of high-power inverter-type machines with up to 1200 A welding currents is conducted now. We hope that they will complement the line of PATON™ welding inverters in the near future», — Anatolii Stepakhno, Chairman of Plant Board is talking about plans.

Another important vector of Plant development is active expansion of export of its products. Today, the priority objectives of the enterprise export department include expansion of PATON™ product presence in the markets of the European countries, as well as entering the Central American market. Thus, over the 60 years of its activity the Pilot Plant of Welding Equipment has really gone a long way, with its ups and downs, trying to preserve and multiply its production and personnel potential to a maximum and improve the effectiveness of its operation. In the long run, this allowed it to become a leading Ukrainian manufacturer of welding equipment and materials, and PATON™ products to be in high demand both among Ukrainian welders and welding professionals all over the world.

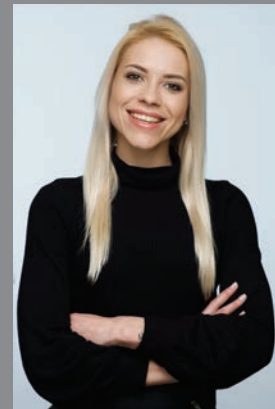
Editorial Board of «The Paton Welding Journal»

Vitalii Sokolyuk,
Director of
MasterWeld Sp.z.o.o Company



Our Company has been the official distributor of PATON™ welding equipment and electrodes in the Polish Republic beginning from 2016. During this time, the Plant products have proven their worth. This is high quality equipment and materials for welders of any qualification. This is exactly why PATON™ products are always in high demand, and we increase deliveries every month, accordingly, and see great prospects for PATON™ brand in EC market.

Daria Selina,
Export Director of the Plant



The Plant has certain achievements — in January 2019 we shipped a trial batch of PATON™ products to Costa-Rica, which, as we think, will be the start of subsequent effective operation in this region.