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Перепечатка материалов журнала The Paton Welding Journal возможна только с разрешения редакции

Dear Readers!

This issue of «The Paton Welding Journal» offered to your attention is devoted to 50 years since the USA and USSR practically simultaneously launched systematic studies of the process of metal joining at a high-velocity collision.

By the mid of the 1960s, this welding method had already been used for mass production of bimetals and fabrication of critical metal structures.

The works on explosion welding were started at the E.O. Paton Electric Welding Institute in 1962. They gained particular development in the 1970s, when a specialized section was established, fitted with a shop for manufacture of charges of explosive materials and products, as well as sites for explosion welding operations. Later on this section transformed into the currently active Research and Engineering Center «Explosion Treatment of Materials». The explosion chamber of an original tubular structure with a 200 kg explosive capacity was built in 1973–1974. Since then, associates of the Scientific and Technical Complex «E.O. Paton Electric Welding Institute» have completed a significant work on investigation of the explosion welding process, development of the corresponding technologies and their application in the national economy. Noteworthy are such achievements as connection of branch pipes to pressurized gas pipelines by explosion welding, repair of a fuel tank of the «Buran–Energiya» rocket-space system, development of a welding method combined with simultaneous stamping, as well as a range of technologies for welding of adapters from dissimilar metals for high-current circuits used in electrometallurgy, electrical industry and in railway transport.

Along with explosion welding, other types of explosion treatment of materials were also studied. The Research and Engineering Center «Explosion Treatment of Materials» possesses the priority solutions for problems of explosion cutting of metals using elongated cumulative charges and explosion treatment of welded metal structures to reduce residual welding stresses.

Investigations of explosion welding and its practical application have gained acceptance in many developed countries. At the same time, the fundamental research efforts are concentrated mainly at the research centers of the CIS countries. Worthy of notice in this respect are achievements of the Volgograd school of explosion welding. The Volgograd State Technical University has a chair, which has been successfully functioning since 1962 and is the only chair in the CIS countries that trains engineers with the «Explosion Welding» specialization. This made it possible to provide the CIS countries with specialists, from whom a range of famous researchers and designers grew.

Up to now, the explosion welding has become one of the classic methods for producing permanent joints of metals, in particular, of dissimilar hard-to-weld combinations. The life confirmed that this unique process has not been exhausted as yet, and still has a great potential for development. A mass flow of the publications, mainly from the CIS countries, is indicative of emergence of the new research areas and widening of the field of technological application of explosion welding.

Much has been done, but much more is to be done.

Prof. B.E. Paton