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Address of Editorial Office:

E.O. Paton Electric Welding Institute, 11 Kazymyr Malevych Str., 03150, Kyiv, Ukraine
E-mail: office@paton.kiev.ua; <https://paton.org.ua/en/>

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Representative Offices of "The Paton Welding Journal":

BRAZIL, Arc Dynamics

Address: Nova Iguacu, Rio de Janeiro, Brazil
Daniel Adolpho, Tel.: +55 21 9 6419 5703,
E-mail: dadolpho@arcdynamics.com.br

CHINA, China-Ukraine Institute of Welding, Guangdong Academy of Sciences

Address: Room 210, No. 363 Changxing Road, Tianhe, Guangzhou, 510650, China
Zhang Yupeng, Tel.: +86-20-61086791,
E-mail: patonjournal@gwi.gd.cn

BULGARIA, Bulgarian Welding Society

Address: Blvd. Asen Yordanov No.10, Sofia 1592, Bulgaria
Pavel Popgeorgiev, Tel.: +359 899 96 22 20,
E-mail: office@bws-bg.org

POLAND, PATON EUROPE Sp. z o. o.

Address: ul. Kapitałowa 4, 35-213, Rzeszów, Poland
Anton Stepakhno, Tel.: +38067 509 95 67,
E-mail: Anton.Stepakhno@paton.ua

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- «Автоматичне Зварювання» (Automatic Welding), [https://patonpublishinghouse.com/eng/journals/as](https://patonpublishinghouse.com/eng/journals/as;);
- «Suchasna Elektrometalurhiya» (Electrometallurgy Today), <https://patonpublishinghouse.com/eng/journals/sem>;
- «Tekhnichna Diahnostyka ta Neruinivnyi Kontrol» (Technical Diagnostics & Nondestructive Testing), <https://patonpublishinghouse.com/eng/journals/tdnk>.

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***Translated Article(s) from “Tekhnichna Diahnostyka ta Neruinivnyi Kontrol” (Technical Diagnostics & Nondestructive Testing), No. 1, 2025.





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WELDING IN SPACE

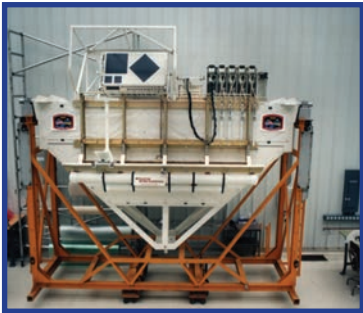
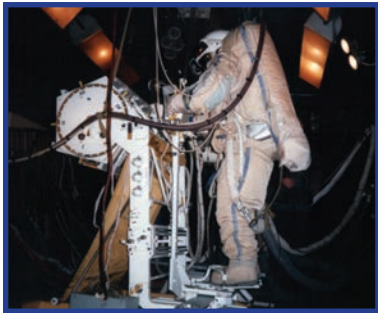
1984



In 1984, for the first time in the world, an experiment in outer space was conducted on board the Salyut-7 orbital station to perform technological processes of welding, cutting, brazing and coating using a universal hand-held electron beam tool. The experiment lasted 3 hours and 45 minutes. This experiment is considered the beginning of the era of “space technologies”.

1998

In 1998 the equipment has passed all pre-flight testing in the NASA KS-135 flying laboratory (L. Johnson Center, NASA, Houston), six dives in the pool (at the J. Marshall Center, NASA, Huntsville) and five ascents to 6 km in the pressure chamber.



NOWADAYS



The universal electron beam gun, which is the basis of the welding tool, is capable of working both manually (when used by an astronaut-welder) and automatically as part of a robot.



For the first time, a power source that operates in a vacuum has been created.

Additive technology is being developed with application of an electron beam gun with a wire feed mechanism in a vacuum chamber for repairing damage to space objects.

