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The content of the Journal includes articles received from authors from around the world in the field of welding, cutting, cladding, soldering, brazing, coating, 3D additive technologies, electrometallurgy, material science, NDT and selectively includes translations into English of articles from the following journals, published in Ukrainian:

- «Avtomatychne Zvaryuvannya» (Automatic Welding), 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.

CONTENTS

ORIGINAL ARTICLES

INFORMATION

*Translated Article(s) from “Avtomatychne Zvaryuvannya” (Automatic Welding), No. 1, 2025.

**Translated Article(s) from “Avtomatychne Zvaryuvannya” (Automatic Welding), No. 2, 2025.

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

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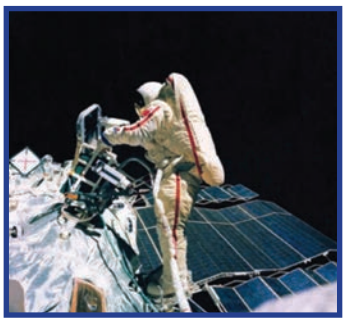
DEVELOPED AT PWI

WELDING IN SPACE

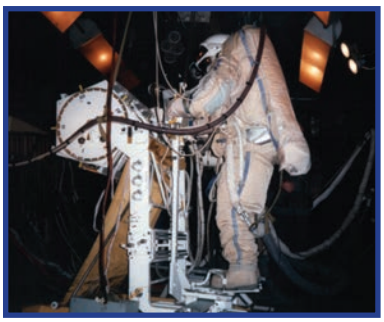
1984

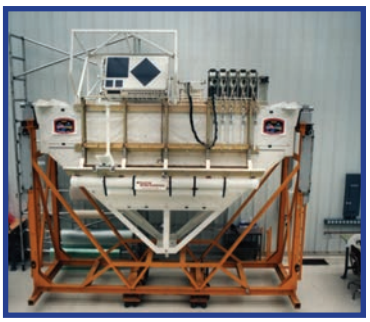


In 1984, for the first time in the world, an experiment in outer space was conducted on board the Salyut-7 orbital station to perform technological processes of welding, cutting, brazing and coating using a universal hand-held electron beam tool. The experiment lasted 3 hours and 45 minutes. This experiment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