



DEVELOPED AT PWI

## WELDING IN SPACE

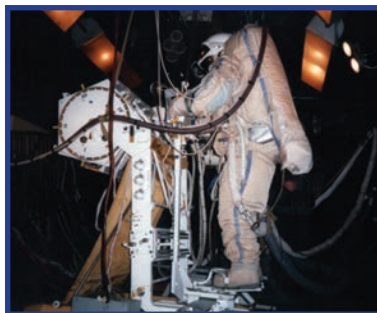
### 1984



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.