

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Interactive Presentations - IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (IP)

Author: Dr. Sergey Bartsev

Institute of Biophysics, Russian Academy of Sciences (RAS), Siberian State Aerospace University, Russian Federation, bartsev@yandex.ru

AN EXPERIMENTAL CLOSED LIFE SUPPORT SYSTEM FOR SPACE AND TERRESTRIAL
APPLICATIONS

Abstract

The development and construction of the first internally controlled closed life support system (CES), in which air was completely regenerated, water recycled, and plant-based food produced, and development of CES components that could be used to substantially increase the degree of closure of the system have provided the basis for a detailed and substantiated description of RD phases necessary to finalize the technology of constructing custom-made CES. The interactive presentation and the video will describe the closed human life support system tested in long-duration experiments with the crew that stayed in the system and controlled its function from within. In addition, the presentation will show modern versions of CES units, which expand the configurational lability of possible modifications of the CES intended for different applications. The purpose of the interactive presentation is to attract the attention of specialists to diverse applications of life support systems and discuss the opportunities and the scenarios for practical use of CES in space flights, on the Moon, and on planets and asteroids, as well as the use of CES components in extreme environments on Earth – in Arctic and Antarctic habitations, at alpine heights, in arid deserts, and in underwater vehicles.