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Models for Successfully Applying Space Technology Beyond Its Original Intent (2)

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# INNOVATIVE APPROACHES TO HUMAN RESPIRATORY SYSTEM PROTECTION

**Abstract**

Maintenance of a high level safety with simultaneous rise of autonomy of the spacecrafts and the space station(s) are key issues in developing of the future manned missions. That is why developing of a new generation of regenerative life support systems is extremely important. At the same time complication of the systems leads to a wider range of possible technical problems which create a field for new solutions related to systems of personal protection for humans. Critical situations related to life support systems can ruin the balance of man-made environment onboard and can cause serious problems with human health and especially respiratory system. The scope of this study includes the identification of possible risks of chemical and biological nature. The study is based on a special testing bench called "Artificial Lungs". It allows taking into consideration important aspects of psycho physiological state of astronauts in different states of cyclogram, in off-nominal situations and environmental changes in the confined space onboard of the spacecraft as well as to examine different type of respiratory protective equipment. The paper is analyzing possible spin-offs of such technologies on Earth. Within such solutions, an extremely important aspect of life safety in ecological disasters is discussed. The paper also considers the constructive features of the devices.