Aerospace Europe Conference 2023
Joint 10th EUCASS – 9th CEAS Conference

Abstract #XXX *(to be filled by the organizers)*
Preferred Topics: SPEXPLO
Corresponding author: DUPONT Cédric
e-mail of corresponding author: cedric.dupont@airliquide.com
Type: Oral
Status of corresponding author: Regular

Title

Results of Air Revitalization System study by adsorbent

Authors

Cédric Dupont [1], Romain Chauveau[1], Pascal Barbier[1], Alexis Paillet [2], Grégory Navarro [2]*

** Corresponding author*
[1] Air Liquide, France
[2] Centre National d'Etudes Spatiales, Toulouse, France

Abstract

Before 2030 the Moon should see a return of humans on its soil. This time the aim will be to stay on our closest satellite and prepare humans for longer missions towards Mars. Thus, the Moon will become an exciting playground for testing technologies and assessing permanent human life in space.
However, a lot of technological gaps are present and need to be addressed before thinking of a sustainable activity on the Moon is a reality. This is especially the case for space transportation (reliable lunar landers and rovers), habitat and human health (to provide efficient shelters for preserving human health) or ISRU (capability to use resources present on the Moon). A common point is the need to purify the local atmosphere for life support by removing carbon dioxide and other molecules. A purification system is needed to allow astronauts to remain in a lunar base or lunar vehicle. Gas purifying is also an issue for the extraction of oxygen from lunar regolith (ISRU).
This paper will present the results of a study performed with CNES on different types of adsorbents for a Moon application using a Vacuum Swing Adsorption process. The results show that today, the performances are well above the current state of the art.