

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 2 (2B)

Author: Dr. Marc Häming
Airbus Defence and Space, Germany, Marc.Haeming@airbus.com

Mr. Emanuele Monchieri
Airbus Defence and Space, United Kingdom, emanuele.monchieri@airbus.com

Dr. Achim Seidel
Airbus Defence and Space, Germany, Achim.Seidel@airbus.com

Mr. Marc Peter Hess
Airbus Defence and Space, Germany, marc-peter.hess@airbus.com

Mr. Manfred Jaumann
Airbus Defence and Space, Germany, Manfred.Jaumann@airbus.com

Dr. Christian Stenzel
Airbus Defence and Space, Germany, Christian.Stenzel@airbus.com

LUNAR IN-SITU RESOURCE UTILIZATION ACTIVITIES BY AIRBUS

Abstract

Exploration of the Moon is the next major step in human space exploration. For long-term sustainable exploration, a new space infrastructure needs to be established to facilitate frequent robotic and manned exploration missions. For example, Earth-Moon transportation and lunar surface transportation will be frequently required together with a new communication and navigation infrastructure, and new payloads.

Airbus Defence and Space is Europe's number one space enterprise and the world's second largest space business with a broad portfolio of high-tech solutions for telecommunication, earth observation, satellite navigation, human spaceflight, and space exploration. Based on its unique technology portfolio, Airbus can provide cutting edge solutions from space systems to entire exploration missions.

In-situ resource utilization (ISRU), namely the production of water, oxygen, carbon dioxide, and fuel at the Moon, is a key factor for long-term sustainable exploration missions. Therefore, new technologies are required to produce these consumables from lunar regolith or from water ice within the craters at the Lunar poles.

The European Payload Center (EPC) at Airbus Defence and Space is the leading supplier of science payloads, life support systems, operation support, and sustaining engineering services for the International Space Station (ISS). Moon exploration and ISRU are important future business fields. This presentation will highlight selected activities at the EPC with respect to moon exploration and lunar ISRU to supply consumables for future missions. For example, results of first experimental feasibility studies of CO₂ production as nutrient for a lunar greenhouse from a mixture of regolith and recycled carbon fibers will be reported.