

27th IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM (A5)
Interactive Presentations - 27th IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR
SYSTEM (IP)

Author: Mr. Kiho Fukaura
JGC Corporation, Japan

Mr. Toshikazu Miyashita
JGC Corporation, Japan

Mr. Yoshitoki Tanaka
JGC Corporation, Japan

Mr. Takuya Yokoyama
JGC Corporation, Japan

Mr. Soichi Mori
JGC Corporation, Japan

JGC'S VISION FOR A LUNAR SOCIETY
“LUMARNITY™(LUNAR SMART COMMUNITY™)”

Abstract

In recent years, lunar development plans in various countries have been gaining momentum. For instance, the lunar exploration plan by ISECG[1] and JAXA[2] envisions four astronauts exploring the Moon for 42 days each year around 2030, and four astronauts stationed on the Moon around 2040. With reference to the scenario, assuming a lunar city of 1,000 people in the further future, we (JGC Corporation) aim to build a sustainable lunar society, named “Lunar Smart Community™(Lumarnity™)”. Lumarnity™ is defined as a community that sustains itself by regenerating resources, including electricity, hydrogen, oxygen, carbon dioxide, food, and human waste, while also efficiently utilizing these resources through mutual cooperation. As a leading contractor in the oil and gas industry, our plan is to promote this concept from the infrastructure and habitat related field. As a step in this direction, we are working on projects with JAXA and MAFF (Ministry of Agriculture, Forestry and Fisheries). For the JAXA project “Conceptual Study of a Pilot Plant toward the Realization of a Lunar ISRU Plant” [3], we are studying the concept of the ISRU (In-situ resource utilization) plant facilities to convert water resources into liquified hydrogen/oxygen as fuel, drinking water and gaseous oxygen for human moon exploration. Also, for the MAFF project “Government-led strategic project to develop and advanced resource recycling food supply system to support long-term stays on the moon and other bodies” [4], we are conducting the study regarding sustainable habitation infrastructure. To the realization of the future, the presentation will be about our vision, our response to the need for future lunar development and roadmap for our contribution.

[1] ISECG, The Global Exploration Roadmap Supplement (Oct 2022),

URL:https://www.globalspaceexploration.org/wp-content/isecg/GER_Supplement_Update_2022.pdf

[2] JAXA, Future Space Exploration Scenario 2021 (Mar 2021),

URL:<https://www.exploration.jaxa.jp/assets/img/news/pdf/scenario/2021/Scenario2021.pdf>

[3] JGC News Release “JGC Selected for the JAXA Project “Conceptual Study of a Pilot Plant toward the Realization of a Lunar ISRU Plant” (Dec 2023),

URL:<https://www.jgc.com/en/news/2023/20231206.html>

[4] SPACE FOODSPHERE news release, "Consortium with SPACE FOODSPHERE as representative organization selected for government-led RD project in space food domain" (Dec 2021),

URL:<https://spacefoodsphere.jp/en/news/89/>