18th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3)
Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Technologies (2B)

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IN-SITU RESOURCE UTILIZATION FOR FUTURE SPACE SETTLEMENTS

Abstract

Many crew members have less access to life sustainability element that are available on earth. Astronauts abroad ISS receives cargos from earth with food, air, water, rocket fuel, and spare parts. The farther the human being wants to explore the space, the more important it will be to generate their own life-sustaining elements. As human exploration become further, resupply missions will be more expensive, ISRU (In-situ resource utilization) will be more sustainable. One of the ISRU element that we will be focusing is Rammed earth, which is considered also one of the sustainable construction technique that can be developed further by using 3D printing or automated robotic arms to build the structure remotely without having human effort on site. This suits well to fall in ISRU, which initially be used and improved on earth then use its advance and fully matured system to be implemented. Using the Martian soil in making shelters for colonization on Mars, which aligns with the UAE's strategy in 2117.