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A PRELIMINARY STUDY OF REGOLITH BRICK MANUFACTURING ROVER

Abstract

The recent developing rovers are focused on the collection of resources. The development of a regolith in-situ rover that can manufacture bricks by mixing regolith and polymers is the goal of the research for the construction of a lunar base in the near future. To deliver resources from the Earth to Moon including important cement at construction of the Moon is cost inefficient. The recommended idea is to develop a rover technology to manufacture bricks by mixing local resources, regolith, with polymer. Current trend of the lunar construction research has been studying the construction of lunar bases in caves to avoid radiation on the lunar surface. However, mixing regolith and polymer have a potential to build a base on surface of the Moon as the radioactive shielding properties. It is also expected that reduction of dust effect during landing by constructing the landing site. This brick manufactures by heating for pulverization of regolith and screw kneaded of powder polymer. The main research is to mix heated and small particle of regolith and polymer, and then manufacture bricks by injecting to the inner frame with heat and screw again. The research was conducted by using the KLS-1 Korean Lunar Simulant. In addition, the developed rover is a rover that have function capable from regolith drilling to brick manufacturing. Manpower and factory construction costs are reduced as rover system can manufacture and move bricks, and in accordance with process automation and safety are enhanced. The specification including size, design of the rover will be described, and this technology will be developed to produce not only for bricks, but also other infrastructure purpose objects.