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THE INITIAL STUDY OF KOREAN MARS DRONE CONCEPT FOR MARS EXPLORATION

Abstract

KARI(Korea Aerospace Research Institute) had started to study the mission and techonology development strategy for Korean Mars Exploration in end of 2024 issued from KASA(Korea AeroSpace Administration). Mars drone is one of the topic of this study. KARI has built the initial roadmap of technology development of Mars drone, which the rotorcraft type is considered primarily as rotorcraft type at first. During this study, the initial study of Korean Mars Drone for mars exploration mission was conducted based on initial technology roadmap. the initial development plan for korean mars drone will be introduced based on the initial study. KARI will consider domestic development capability and find out to achieve required technologies to develop korean own mars drone. Some technologies will be acquired from international cooperation with experience country or company. This paper will introduce these initial study results. First the preliminary road map will be instruced as four categories such as platform technology, sensors and communications, Mission equipment(cameras,etc) and simulation, space environmental test. Each technology category will be development 3 phases or 2 phases (each phase at 2 phases will have more long time rather than 3 phases). In last study, Initial study of Korean mars drone was conducted. This paper show the progressed work from previous study. The mission profile will be updated based on mars mission. This mission can be simple reconaissance or mars sample return. At the moment, the simple reconaissance mission is considered as the primary mission. Based on this mission, the initial sizing result was updated based on this study. Last study shows the inital maximum take-off weight of mars helicopter was within 25kg in condition with 2kg payload and with 5 min flight time. But this sizing result will be updated. This study will be conducted until end of 2025 this year. This study results can be changed accoring to this year study.