Regolith Size Sorter and Hopper
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Introduction: Regolith derived resources are required to support a future Lunar economy. These resources are needed for many applications for example: water extraction, oxygen extraction, and construction. These applications require size sorting of the regolith to operate or increase efficiency. Each application requires different particle size distributions. KSC developed a hopper which implements size sorting and transfer of regolith. The regolith size sorter and hopper investigates incorporating size sorting techniques, which are currently used in industry. A prototype unit was built and tested. The size sorting techniques included grizzly bars and a trommel. The grizzly bars work as a first step to block particles with a size above the spacing of the bars. The regolith remaining after the grizzly bars is deposited into a hopper with an internal auger. The auger conveys material to a trommel, which has a rotating screen. The screen hole size determines what size particles get sorted. The trommel has two exits: particles which fall through the screen and particles which fall out the end. Both material exits can be used as the primary sorted material depending on the required material size. A multistage trommel can be used to further sort particles to a specific particle size distribution.