

IAF SPACE EXPLORATION SYMPOSIUM (A3)  
Moon Exploration – Part 2 (2B)

Author: Mr. Samuel Ximenes  
WEX Foundation, United States, sximenes@explorationarchitecture.com

Mr. Dallas Bienhoff  
United States, dallas.bienhoff@csdc.space  
Dr. Sara Ahmed  
University of Texas at San Antonio, United States, sara.ahmed@utsa.edu  
Prof. John Culton  
University of Adelaide, Australia, john.culton@adelaide.edu.au

## AUTONOMOUS ROBOTICS FOR LUNAR LANDING PAD CONSTRUCTION

**Abstract**

Landing on unprepared lunar surfaces can excavate tons of regolith, send high-velocity lunar regolith particles kilometers from the landing site and inject some particles into lunar orbit. Therefore, lunar landing pads are needed to protect surface and orbital assets from debris damage and provide solid, impervious surfaces for multiple landings near a permanent lunar facility. Astroport Space Technologies, based in San Antonio, Texas, is a space technology and construction company focused on using lunar regolith to create launch/landing pads for large, human-scale lunar landers and other lunar surface infrastructure. A concept of operations for landing pad construction using autonomous systems for bulk movement of regolith centered around a regolith melting and brick placement technology being developed by Astroport is presented. Discussed are civil engineering processes using autonomous robotics for excavation and site preparation for constructing the landing pad.