

At Embry–Riddle Aeronautical University, a team of eight seniors designed and built a lunar garage, as specified by Marshall Space Flight Center. The garage is intended for the storage, maintenance and repair of lunar roving vehicles when we return to the Moon.

The lunar garage concept consists of a box–like structure, made from an aluminum frame and a multi–layered insulation (MLI) and beta cloth covering. The garage is equipped with its own power source, a solar array, to provide power to the interior lighting and rechargeable tool batteries. A dust mitigation system, consisting of brushes at the entrance of the garage, helps to prevent the abrasive dust from entering the work area.

With the help of a Space Grant, the team was able to build the garage aluminum frame to perform structural tests. They also built the university’s first thermal shroud, imitating the lunar environment, to determine temperatures that may be experienced in the garage. Thorough analysis through MATLAB and ANSYS was used to validate both the structural and thermal results.