



Lunar Lander Fuel Cell (LLFC) - ACO

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Project Overview

Blue Origin collaborates with GRC and JSC for the advancement of fuel cell system technology for Blue Moon lunar landers, advancing fuel cell stack Technology Readiness Level and integration towards actual flight hardware. This collaboration leverages NASA capabilities and hardware to develop a preliminary flight capable stack for ground testing and supports mission and architecture studies. This effort focuses on primary fuel cell power system specifications and operational requirements for Lunar Landers mission/service. Blue Origin provided the fuel cell stack hardware to be tested.

Technical Approach

- NASA provides Blue Origin H₂/O₂ fuel cell technology report
- NASA provides technical assessments of potential fuel cell system designs
- JSC conducts shock & vibration testing of non-operational stacks
- GRC conducts envelope and performance testing

Results/Summary

All specified design reviews and technology transfer activities were completed by Blue Origin and NASA.

JSC completed the shock & vibration testing in March 2021.

GRC is slated to start the envelope and performance testing in October 2021.



Contributing Partners

- Blue Origin
- Infinity Fuel Cell and Hydrogen (IFC&H)

Infusion and Transition Plan

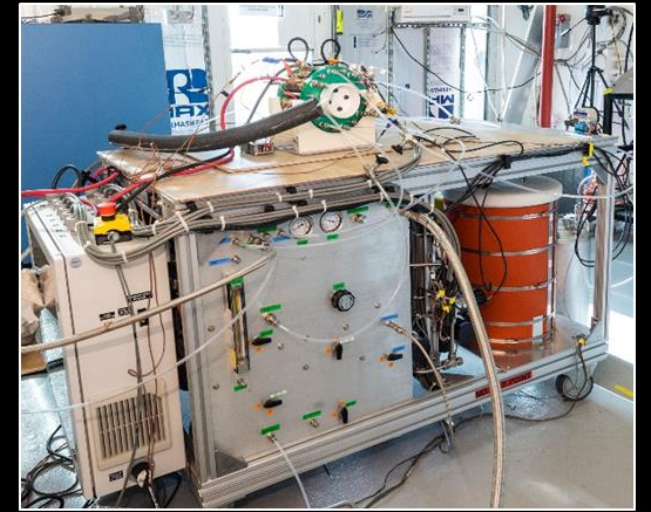
- Blue Origin baselined fuel cells as the primary power source for their Lunar Lander
- NASA incorporated Lessons Learned into on-going internal activities
 - AMPES Tipping Point
 - Regenerative Fuel Cell (RFC) Project

Current Status

- The fuel cell was damaged during shipping to GRC and is being repaired
 - Repaired fuel cell arrival at GRC date TBD
 - LLFC expected to continue (no added cost) into FY22



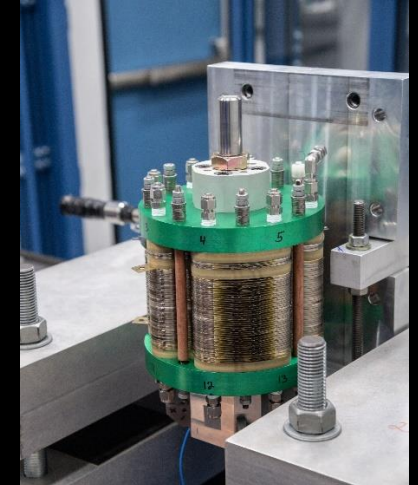
JSC Fuel Cell Testing Team during Performance Testing



Fuel Cell Stack installed on the Navy Fuel Cell Test Stand at JSC



Fuel Cell Stack installed on the Vibration Table at JSC



Fuel Cell Stack installed in the Shock Test Stand at JSC