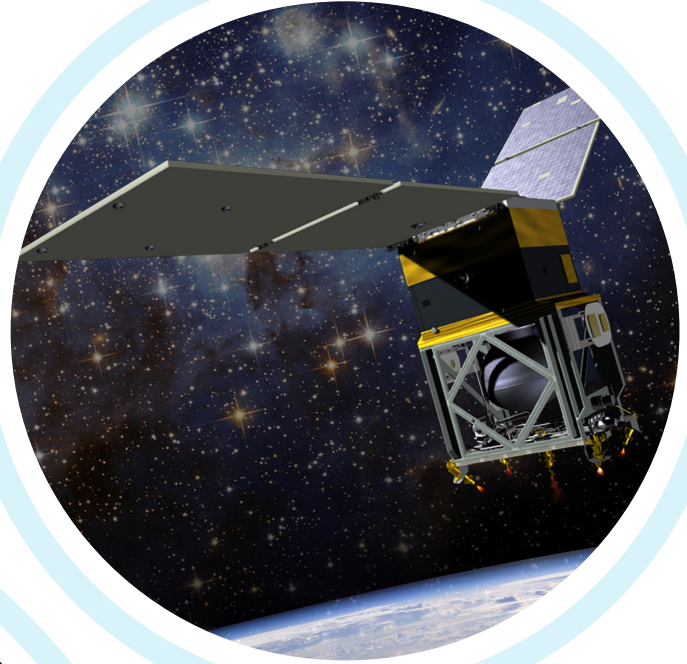


GPIM



Green Propellant Infusion Mission

Spacecraft propellant is going green. Ball Aerospace is leading the team that is demonstrating a new high performance, non-toxic propulsion fuel on orbit for the first time, flying on a Ball small satellite.



GO BEYOND WITH BALL.®

Overview

Ball Aerospace is working with NASA on a technology designed to prove the practical capabilities of a new propellant for future use in the aerospace industry. The Green Propellant Infusion Mission (GPIM), launched June 25, 2019, is demonstrating a hydroxyl ammonium nitrate-based fuel/oxidizer propellant blend called AF-M315E. Developed by the U.S. Air Force Research Laboratory at Edwards Air Force Base in California, this green propellant is an alternative to the traditional, toxic spacecraft fuel, hydrazine. In addition to enabling higher performance and improved safety for industry workers, the new propellant is less harmful to the environment and decreases the complexity and cost of launch processing. The capabilities of the non-toxic propellant is currently being tested during a 13-month space flight experiment.

Our Role

GPIM is a Technology Demonstration Mission managed by NASA Marshall Space Flight Center (MSFC) for the Space Technology Mission Directorate. Ball Aerospace, the prime contractor and principal investigator, leads a team of co-investigators from Aerojet Rocketdyne, Edwards Air Force Research Laboratory (AFRL), NASA Glenn Research Center (GRC), NASA Goddard Space Flight Center (GSFC) and NASA Kennedy Space Center (KSC), with additional mission support from the U.S. Air Force Space and Missile Systems Center at Kirtland Air Force Base. The project utilizes a Ball Configurable

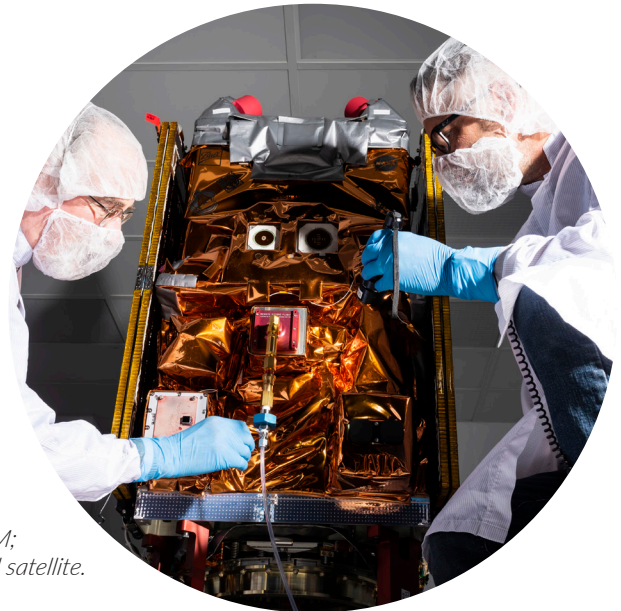
Quick Facts

- The AF-M315E propellant offers 50 percent higher performance over a traditional hydrazine system
- Green propellant's safe operational environment reduces ground processing time from weeks to days
- AF-M315E does not freeze, allowing for missions in cold environments
- Initial savings for each launch, using green propellant, are estimated at \$500,000
- This is the first time a propulsion system will be included on Ball's BCP small satellite bus
- Ball built the small satellite in only 46 days

Platform (BCP) small satellite bus with an Aerojet Rocketdyne modular propulsion system to validate the benefits of the non-toxic fuel for future satellite missions. Additionally, three Department of Defense experimental hosted payloads are flying aboard GPIM.



*Left image: GPIM;
Right image: BCP-Small satellite.*



Ball Aerospace
303-939-6100 • Fax: 303-939-6104
info@ball.com • www.ball.com/aerospace