National Defense Center for Energy and Environment

AUTONOMOUS ROBOTIC REMOTE REFUELING POINT (AR3P) INTEGRATION AND TESTING OF COTS FUEL COMPONENTS AND STATIC ABATEMENT TECHNOLOGY

PROJECT OVERVIEW

The AR3P is a robotic refueling system for both manned and unmanned rotary-wing (RW) and VTOL aviation systems. System deployment will reduce or eliminate warfighter exposure at forward air refueling points (FARP). During this phase of the effort, technology maturation includes modification of the robotic arm and end effector fuel delivery system. Additionally, warfighter-recommended updates will be made to the large-diameter fuel hose, COTS standard high flow rate fuel nozzle, and small mount manifold.

BENEFITS

The AR3P program will reduce soldier exposure to 0, increase survivability of flight crews during long range missions by providing “pit stop” capability, support demand reduction of associated log support on the battlefield, provide improved time on station for Reconnaissance. Provide other robotic system with Remote Fuel Certification techniques. Satisfies the need of the Army for Autonomous Refueling and Rearming in Auster locations, and the needs of the Navy, in an improved range for littoral operations.

PATH FORWARD

Fuel component design updates will be made to the large-diameter fuel hose, COTS standard high flow rate fuel nozzle, and small mount manifold. Testing of the end effector static abatement circuit to enhance the overall TRL level.

2019, TRL 5 AR3P CDP Configuration, UH-60L, dry engagements (engine/rotors static), approach from side, passed fuel to the aircraft.

AR3P robot extension, connection, fueling, and KMAX departure. ROTORS TURNING

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FOR FURTHER INFORMATION

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