XTECHINNOVATON COMBINE

The U.S. Army Futures Command (AFC)

SUBMISSIONS CLOSED. SELECTION PERIOD THROUGH JUNE 18, 2021.

Total Money Offered: Total Prize Pool: $120K; Total OTA Award Pool: $1M

Challenge Topic: Advanced Energy Storage

Partner Agency: The U.S. Army Futures Command (AFC)

Submission Dates: April 21, 2021 — May 14, 2021

Winner Announced: July 24, 2021

Who Can Submit: United States-based companies and organizations

FINALISTS

Galley Power LLC/UEC Electronics LLC

Next Generation BB-2590 with an Innovative Power Flow Control Battery Management System
Focus Area: Topic 1 - Technologies for Battery Monitoring and Management

GLX Power Systems

GLX Cognicell Active BMS and Power Management System
Focus Area: Topic 1 - Technologies for Battery Monitoring and Management

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Southwest Research Institute

Novel Lithium Plating Prognostics and Fast Charge Controller for NMC Lithium-ion 6T Batteries
Focus Area: Topic 1 - Technologies for Battery Monitoring and Management

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Ateios

Safe, Conformal, High-Energy Dense Batteries using Rapid, Custom Manufacturing
Focus Area: Topic 2 - Safe, Printable, Conformal Batteries

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Storagenergy Technologies

Conformal Semi-Solid Zinc-Air Battery for Integrated Soldier Power
Focus Area: Topic 2 - Safe, Printable, Conformal Batteries

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UC Berkeley

Reconfigurable Li-Ion Battery
Focus Area: Topic 2 - Safe, Printable, Conformal Batteries

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DESCRIPTION

Background

The U.S. Army would like to invite interested entities to participate in the xTechInnovation Combine Advanced Energy Storage Challenge (also referred to as the Innovation Combine) being tentatively held on or around 21-22 July 2021 (subject to change). The Innovation Combine aims to engage with eligible U.S.-based companies and organizations and will provide a forum to collaborate with the Army, earn prize money, and provide potential funding opportunities to tackle Army challenges in Advanced Energy Storage.

The U.S. Army Futures Command (AFC) has partnered with the Assistant Secretary of the Army (Acquisition, Logistics, and Technology) (ASA(ALT)) to deliver this competition. The Army recognizes that it must enhance engagements with eligible U.S.-based companies and organizations by (1) understanding the spectrum of ‘world-class’ technologies being developed commercially that may benefit the Department of Defense (DoD), (2) integrating the sector of commercial innovators into the DoD Science and Technology (S&T) ecosystem, and (3) providing mentorship and expertise to accelerate, mature, and transition technologies of interest to the DoD.

The Innovation Combine is an opportunity for eligible entities (i.e., companies and organizations) to pitch novel advanced energy storage technology solutions directly to the U.S. Army. In addition to non-dilutive cash prizes, entities will have the opportunity to engage with U.S. Army and other partners through information sharing and networking opportunities. The Innovation Combine will provide operational and technical feedback from United States Government (USG) subject matter experts on proposed ideas submitted to this competition and offer the finalists cash prizes and opportunities to participate in the xTech Innovation Combine Accelerator to receive education, mentorship, and networking opportunities to help grow their businesses for military and commercial users.

Purpose

The purpose of the Innovation Combine is provide an innovative approach for eligible entities to compete for an award in the accelerating military technology ecosystem by pitching novel advanced energy storage technology solutions directly to the U.S. Army. Topic areas and associated problem statements are listed below. The efforts described in this Announcement are being pursued under the authorities of 10 U.S.C. § 2374a (Prizes for Advanced Technology Achievements) and 10 U.S.C. § 4003 (Prototype Projects) (formerly 10 U.S.C. § 2371b).

The crosscutting topic area of advanced energy storage is important across the U.S. Army and DoD. Given the advancements and complexities of power requirements for Army Soldiers and platforms, proposals submitted to this competition will have interest to various Army research and procurement programs. While the authority of this program is 10 U.S.C. § 2374a, a concept white paper submitted to the Innovation Combine may generate interest by another DoD organization for a funding opportunity outside of this program. The interested DoD organization may contact the submitting entity to provide additional information which may or may not result in partnership opportunities outside of this competition.

Problem Statements

The Innovation Combine aims to accelerate integration of technology prototypes for crucial Army capability gaps into military platforms. Submissions will be open to technology solutions that can considerably improve advanced energy storage by addressing either one or both of the problem statements below and shall meet the definition of a prototype project. A prototype project can generally be described as addressing a proof of concept, model, reverse engineering to address obsolescence, pilot, novel application of commercial technologies for defense purposes, agile development activity, creation, design, development, demonstration of technical or operational utility, or combinations of the foregoing. A process, including a business process, may be the subject of a prototype project.

Topic 1: Technologies for Battery Monitoring & Management

Problem Statement: The Army seeks new technologies which can be used to provide an accurate estimate of battery system state to various systems or improve management of batteries in air, ground, and soldier platforms. As high energy batteries are integrated onto Army systems to meet increased energy demands, there is a need for technologies that can provide accurate battery parameter estimation or manage multiple batteries on a platform. Some battery parameters to consider include current, open circuit voltage (OCV), and state of charge/health.

Topic 2: Safe, Printable, Conformal Batteries

Problem Statement: The Army is seeking printable and conformal batteries that can be integrated into parts of weapons, surveillance systems, equipment (such as a helmet, gunstock, uniform/armor), or vehicles, to power features such as night vision, tracking, and tagging. The battery must be able to support 72-hour missions and be conformable to multiple surface types while accounting for safety under different environmental conditions (such as weather and temperature). It must also enable mobility for the Soldier by avoiding the rigid and hermetic seals standard in Li-ion batteries. The proposer needs to select a platform to demonstrate the technology and capability. Upon successful demonstration of the technology at the Soldier-scale, there may be opportunities to explore further development into subsequent applications for robotics and larger platforms.

SCHEDULES AND PRIZES