

POETS and Start-Up Company Earn Air Force Grant for Modeling Electric Aircraft Components

Outcome/accomplishment: The U.S. Air Force awarded a grant for modeling tools and controls for electric powertrains to university researchers and a start-up company associated with the Center for Power Optimization of Electro-Thermal System (POETS), an NSF-funded Engineering Research Center (ERC), based at the University of Illinois.

Impact/benefits: The new control system will help extract the transient capability of high-power electric powertrains used in future vertical-takeoff-and-landing (VTOL) aircraft. The system will help provide operational flexibility amid the short-term duty and emergency conditions that often will confront military and civilian VTOL aircraft.

Explanation/ background: The grant comes through the Air Force's Agility Prime program, a non-traditional project designed to accelerate the commercial market for advanced air-mobility vehicles. The electrification of air mobility, along with the electrification of all vehicles, is an accelerating field and POETS remains uniquely positioned to help advance these technologies.

The team is formed of POETS researchers and Hinetics, a start-up company created from POETS-funded research. It aims to characterize the performance of electrical components with physics models, model-base control schemes, and computer simulations to establish the value of different approaches.



Electric-powered aircraft that can land or take off in tight spaces show great promise for military and civilian applications, but demand the most efficient use of batteries, whose weight limits their range. (Credit: POETS)