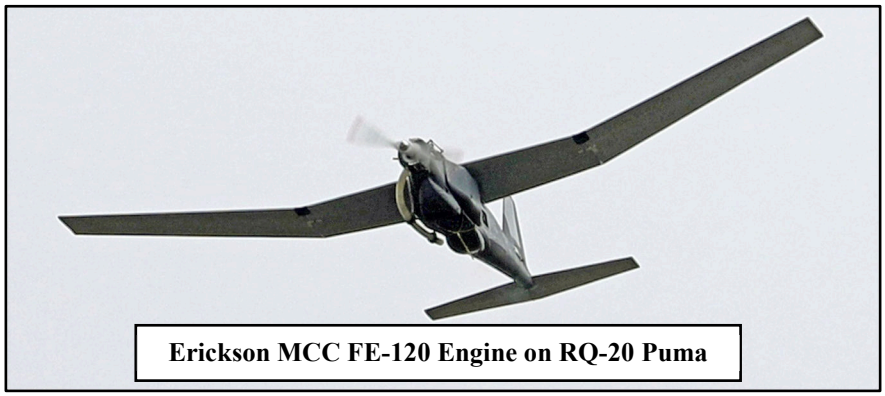
Engine Research Associates, Inc.

May 12, 2025

FOR IMMEDIATE RELEASE

Erickson MCC FE-120 Engine Demonstrates Quiet Operation in RQ-20 Puma Flight Tests

Fort Wayne, Indiana - Engine Research Associates, Inc. (ERA) flight tested the Erickson MCC FE-120 Engine in an RQ-20 Puma to demonstrate its quiet Internal Combustion Engine (ICE) on February 4, 2025. This was performed under an AFWERX SBIR Direct-to-Phase II contract that was focused on quiet Erickson MCC engine propulsion for Group 1 Unmanned Aircraft Systems (UAS). The Migrating Combustion Chamber (MCC) engine is a full expansion engine that provides a quiet and cool exhaust. It meets MIL-STD-1474E at six feet, therefore warfighter hearing protection is not required. The engine weighs 2.38 lbs. and produces 12 lbf. of thrust with a Biela 18" x 10" propeller. Initial flight testing demonstrated a low noise level of 45 dB(A) at a cruise altitude of 500 feet AGL. At this altitude, the sound level blends with an ambient background noise level of 45 dB(A), making it inaudible in an urban environment. This sound level was achieved without a muffler on the FE-120 engine.



Erickson MCC FE-120 Engine on RQ-20 Puma

Dr. Gregory Minkiewicz heads up the Efficient Small Scale Propulsion (ESSP) program for the USAF. He is working for the Air Force Research Laboratory at WPAFB as the ESSP Program Manager. The ESSP program objectives are to double the small UAS engine power-to-weight ratio and achieve single battle specification fuel operation. Dr. Minkiewicz attended this flight testing and said, *"The MCC Engine provides the United States Air Force with the quietest engine in its class and serves dual purposes for military application with quiet ISR coverage and radio control/commercial applications."*



MCC FE-120 and Puma Flight Test – BAI's Truck Launch

Berry Aviation, Inc. (BAI) completed the design modifications and integration engineering to replace the electric motor and motor control in the Puma with the MCC FE-120 engine and fuel system. They developed and implemented a mechanical launch system so the Puma could be safely launched from the back of a pickup truck. BAI also conducted the flight testing and captured acoustic data using their acoustic microphone array at the Choctaw Nation of Oklahoma.

The views expressed are those of the author and do not necessarily reflect the official policy or position of the Department of the Air Force, the Department of Defense, or the U.S. government.

About ERA - ERA develops and manufactures MCC engines. For more information contact: Jeff Erickson, Principal Investigator, jeff.erickson@ericksonmotors.com, ERA Inc., 3219 Stellhorn Road, Fort Wayne, IN 46815.

About Berry Aviation, Inc. (BAI) UAS division - They provide design and rapid prototyping of UAS platforms, launchers, and recovery systems. BAI also provides acoustic characterization of UAS as well as design solutions for quiet UAS platforms. For more information contact: Dr. Rick Gaeta, Chief Technology Officer & Technical Director UAS, rgaeta@berryaviation.com, Berry Aviation, Inc., 2708 Coyote Run, Stillwater, OK, 74075.

About Choctaw Nation of Oklahoma (CNO) - Choctaw Nation's Daisy Ranch aviation test facility in southeastern Oklahoma utilizes 44,600 acres of remote land tribally owned by CNO. They support innovative RDT&E of emerging manned and unmanned aerial system technologies in a safe and low-risk environment. For more information, visit: https://cnoaa.com/cno-test-site/.

About AFRL - The Air Force Research Laboratory is the primary scientific research and development center for the Department of the Air Force. AFRL plays an integral role in leading the discovery, development, and integration of affordable warfighting technologies for our air, space, and cyberspace force. With a workforce of more than 12,500 across nine technology areas and 40 other operations across the globe, AFRL provides a diverse portfolio of science and technology ranging from fundamental to advanced research and technology development. For more information, visit: afresearchlab.com.

About AFWERX - As the innovation arm of the DAF and a directorate within the Air Force Research Laboratory, AFWERX brings cutting-edge American ingenuity from small businesses and start-ups to address the most pressing challenges of the DAF. AFWERX employs approximately 370 military, civilian and contractor personnel at four hubs and sites executing an annual $1.4 billion budget. Since 2019, AFWERX has awarded over 10,400 contracts worth more than $7.24 billion to strengthen the U.S. defense industrial base and drive faster technology transition to operational capability. For more information, visit: afwerx.com.

Case Number: AFRL-2025-2410