U.S. Air Force Selects Bodkin Design to Develop Slow-Motion Video System to Improve Helicopter Testing

This innovation makes it possible to capture slow-motion video of the helicopter rotor as it is spinning at full speed.

NEWTON, MA, UNITED STATES, July 28, 2025 /EINPresswire.com/ -- Bodkin Design & Engineering (BD&E) has been awarded a $180,000 Small Business Innovation Research (SBIR) contract by the Arnold Engineering Development Complex (AEDC). The funding will support the National Full-Scale Aerodynamic Complex (NFAC) in conducting rotorcraft testing.

Instrumentation used for health monitoring, mounted on a helicopter rotor can come loose under centrifugal forces and vibrations. If not caught in time they can fail, and cause long delays, expense, and safety issues. This new system helps prevent that by delivering slow-motion video of the rotor as it is spinning at full speed.

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>
> *Andrew Bodkin, President of BD&E*

Conventional high-speed cameras record video at a high frame rate and when played back at a low frame rate produce a slow-motion effect. However this is not useful for controlling real-time processes. The innovative system under development, utilizes the “Wagon Wheel Effect” to make the fast spinning rotor appear to stand still or rotate slowly.

The device will permit operators to watch slow-motion video in a live feed of the spinning rotor during wind tunnel testing. It will allow operators to diagnose problems prior to catastrophic failure. The innovation includes the synchronous illuminator, high resolution camera and custom electronics to “freeze” the motion, making it possible to observe the rotor on all sides as

it spins.

“Gone are the days of waiting to download and analyze the data to figure out what happened.” said Andrew Bodkin, President of BD&E. “With this innovation we can see events as they are happening, and monitor and control systems that were previously uncontrollable.”

Bodkin Design and Engineering, LLC

Although this instrument is being developed for rotorcraft testing, the same technology can be used to support research, product development, and quality control across the aerospace, transportation, and manufacturing sectors. It also provides useful stroboscopic data for rotary equipment inspection and vibration analysis. This synchronous video system can additionally find application in television studios to reduce power consumption and waste heat.

About Bodkin Design & Engineering
Bodkin Design and Engineering are the Imaging System ExpertsTM. Specializing in visible, infrared and spectrographic camera systems. They manufacture hyperspectral imagers, laser trimers, illuminators and infrared calibration equipment. Headquartered in Newton, Massachusetts, the company offers custom design and build services to the international OEM, commercial, military, and research communities.

About the Arnold Engineering Development Complex (AEDC)
Headquartered at Arnold Air Force Base in Tennessee, the AEDC provides a comprehensive range of testing capabilities designed to simulate speed, temperature, pressure, and other conditions across a broad spectrum to support the needs of aerospace system developers.

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