

News Releases/Statements

NASA and DPI Partner in Landmark Study

First Civil Certification Study for 300+ lb UAV

DPI has partnered with NASA to conduct a baseline study of DPI's unmanned tandem helicopter, the DP-14 Field Hawk, for Civil Airworthiness Certification for National Airspace

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Essington, PA, July 28, 2014 -- The National Aeronautics and Space Administration (NASA) and DPI (Dragonfly Pictures, Inc.) have partnered for a **landmark project** that will change UAV use in America.. The joint project will develop an unmanned aerial vehicle (UAV) to study airworthiness requirements to support Federal Aviation Administration (FAA) certification in National Airspace.

Currently UAVs have very limited access to the National Airspace for commercial operations. Airworthiness and operational certification standards needed for routine access do not yet exist.

In May 2014, NASA initiated research to study the DPI tandem helicopter, DP-14 Field Hawk, to baseline airworthiness requirements for a category of UAVs weighing more than 55 lbs. The requirements developed will be for a very specific use: operation under an FAA restricted type certificate for precision agriculture. NASA chose precision agriculture since the operation can be well defined. Also, an FAA certification process already exists for manned aircraft performing the same type of operation.

The DP-14 Field Hawk is expected to be the first UAV over 300 lbs to operate with FAA certification in national airspace. The Field Hawk weighs 500 lbs (dry weight). Configured for precision agriculture, the Field Hawk can fly for 4.3 hours with 100 lbs payload or 2.4 hours with 430 lbs payload -- a significant increase in capability over small UAVs that weigh 55 lb or less. The agricultural payload will include a spray rig and spray tanks.

The airworthiness requirements proposed for the DP-14 Field Hawk will help create a roadmap for other UAV developers to build safe systems that can be certified for commercial use in the U.S.

“We want these aircraft to operate, and we want them to do it safely,” said **Kelly Hayhurst, Senior Research Scientist at the NASA Langley Research Center**. “That’s why we are extraordinarily excited about our partnership with Dragonfly Pictures, and are confident that we will be able to produce something useful for commercializing UAS... We are hoping that this

work will help build a foundation for establishing airworthiness standards that facilitate an entire industry to walk through the certification door. That's our ultimate goal."

Michael Piasecki, President, DPI, added, "It's an honor to work with NASA. These are can-do people, and NASA is a world class organization that has pioneered technology and contributed to major milestones in transportation and flight. The DPI 'crawl, walk, run' approach to robust aircraft design -- which has worked well in the past -- will work equally well for this joint project. We are excited about this opportunity to work with NASA to design a new, scalable UAV, and establish a method of certifying unmanned systems for safe, commercial use."

NASA and DPI have already completed the first step of this project, the Concept of Operations. In this step, they developed the use case scenario, described the system in its entirety (ground and air elements), and assigned system requirements.

NASA and DPI are now working to define the configuration of the aircraft and ground control system, identify safety concerns, and determine how those concerns can be mitigated.

About the DP-14 Field Hawk UAV

The DP-14 Field Hawk is a heavy fuel tandem UAV that offers advanced intelligence and precision flight for agricultural spraying. The Field Hawk weighs 500 lbs without a payload, can carry up to 430 lbs payload for 2.4 hours, or 100 lbs payload for 4.3 hours. It offers user-friendly waypoint navigation, is simple to operate, and requires only a single operator -- no skilled pilot required. As a vertical take-off and land (VTOL) aircraft, it can self-launch and self-land in unprepared, challenging terrain: uneven ground, slopes up to 15 degrees, small clearings, fallow fields, even icy roads. No runway or recovery equipment is needed. The DP-14 Field Hawk includes powerful onboard processing for payloads, as well as 3kW of power for payload use.

The DP-14 Field Hawk delivers intelligent path planning, cutting-edge perception, and dynamic obstacle avoidance. An operator can fly the DP-14 Field Hawk 24/7 in complex environments even when it's not safe for human flight, including rugged mountains, forest, rolling hills, barnyards, urban environments, smoke, heavy fog, and night. With a tandem design, the DP-14 Field Hawk offers stable hover, precision flight in winds up to 40 kts, speeds up to 105 kts, and rapid acceleration and climb. This is a tactical UAV designed for one-person operation, that can fit in standard vehicles, such as a small utility trailer or Sprinter* van.

Similar to the design of a Boeing CH-47 Chinook*, the DP-14 Field Hawk tandem UAV can carry cargo in its large internal 23 cubic foot area, or via external hard points. Carrying cargo inside the aircraft allows for fast, agile flight even under load—up to 50% faster than a comparable aircraft with a sling load. The DP-14 Field Hawk delivers precision cargo drops with an accuracy better than 3 meters.

The DP-14 Hawk is ideal for agriculture, forestry, wildfire life & safety, fisheries, geochemical research, precision photography, long-distance communications relay, and other missions where precision flight in complex terrain and self-launch/land at unprepared sites is important.

About DPI

DPI is the industry leader in small rotary wing unmanned aerial vehicles (UAV) in the U.S. DPI UAV have successfully flown thousands of hours, and are ideal for critical missions where precision autonomous flight, precision imagery, stabilized payloads, self launch/land, and life and safety are a priority. DPI is recognized for robust, low-cost low-maintenance UAV, world-class innovative rotorcraft design, and successful UAV deployment.

DPI tandem and multi-rotor UAV are ideal for precision photography, precision mapping, precision agriculture, forestry, wildfire life & safety, marine industries, geochemical discovery, search and rescue (SAR), infrastructure assessment, and other industries where the ability to operate autonomously in complex, unprepared terrain — such as urban, jungle, and mountain environments — is key.

DPI has been awarded twenty SBIR (Small Business Innovation Research grants), including a Phase 3 SBIR. Research topics include precision autonomous flight, dynamic obstacle avoidance, real-time predictions/use of limited sensor data, small long-range multi-mission UAV, autonomous medevac, and precision medical resupply in austere and complex environments.

DPI partnerships with cutting edge researchers and organizations help move advanced autonomy technology and payloads from research organizations onto DPI rotorcraft. DPI partnerships and customers include NASA, DARPA, Boeing, BAE, SAIC, L3, AAI, Northrup Grumman, Harris Corporation, Carnegie Mellon, Wintec, MicroPilot, Pegasus Servos, CloudCap, LIDAR USA, and other respected developers of aircraft systems and subsystems.

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