Unmanned Pilot Flight Training for the Professional UAV Pilot

For both FAA Certificated Pilots and Visual Observers

Licensed, Registered, Insured, FAA 333 Exemption Holder


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Until recently there were only two ways to acquire imagery from above – satellite and manned aircraft. Unfortunately, imagery gathered through use of these methods is both expensive and difficult to acquire.

Airborne Manned aircraft pose inherent risk to both life and property. Both the pilot and passengers’ lives are at risk should a mishap occur. Lives and property on the ground are at risk as well given that a manned aircraft must be large enough to lift both men and equipment. Risk levels are increased by the frequent need to conduct flights at low altitudes and low air speeds in order to accurately capture airborne images.

Unmanned Aircraft are significantly less expensive to run and require far fewer logistics to mobilize, set up, launch, relocate and refuel. Additionally, the use of Unmanned Aerial Vehicles (UAVs) rarely if ever endanger a human life either in the air or on the ground.

Technological advancements in sensor capability, computer processing and electronic miniaturization have allowed powerful and sophisticated sensors to be mounted on small Unmanned Aircraft Systems (sUAS) at a fraction of the size and cost of manned aircraft with no loss in image quality.

The use of Unmanned Systems to gather airborne data gives rise to 3 major advantages over manned aircraft as they are safer, cheaper and faster for nearly every mission.

**SAFER**

Any airborne aircraft poses some inherent risk. Most sUAS currently used for image gathering weigh less than 10 pounds, significantly lighter and smaller than their manned counterparts. This significantly reduces the risk to people on the ground in case of a loss-of-control event.

**CHEAPER**

Unmanned systems cost pennies on the dollar compared to the operating cost of manned aircraft.

The energy required to fly an aircraft under 10 pounds is exponentially less than the energy to fly a 10 thousand pound aircraft. Manned aircraft also require a minimum crew of a pilot and sensor operator, further increasing costs.

Unmanned Systems also benefit from a substantially less rigorous maintenance requirements than manned aircraft.

**FASTER**

Unmanned Systems are easily transported directly to the site, set up, launch and recover.

Flight plans can be created in an office and stored for future use in the field. Thus, missions are easily repeatable, whether the need is once a month, once a week, once a day or multiple times a day.

“Eliminating or significantly reducing the need to send inspectors into the field and onto damaged structures will have a huge impact on safety and efficiency. The technology behind the UAS and its cameras are vital to capturing high-resolution, georeferenced, accurate information and data.”

Source: Here’s How Drones Are Going to Transform the Insurance Industry by Randall Ishikawa; www.propertycasualty360.com, April 8, 2015

**INTRODUCTION TO UNMANNED AIRCRAFT SYSTEMS**

**Vortex UAS**

847-220-5193 | www.vortexuas.com | support@vortexuas.com
Vortex UAS is one of only a handful companies that has all of the requirements needed to satisfy the FAA’s requirements to fly legally in the US National Airspace in a commercial capacity.

- Business Holds an FAA 333 Exemption
- Uses Well-Trained, Vortex Certified, FFA Pilot License Holders as Pilots-in-Command (PIC)
- Uses Professional FAA Registered Aircraft
- Files NOTAMs for All Operations
- Files Supplemental COAs When Required
- Holds $1M in Liability Insurance Coverage

As required by the Section 333 exemption, all sUAS pilots must have an FAA Pilot’s Certificate. All Vortex pilots hold not only an FAA Pilot Certification but in addition are Vortex Certified Pilots.

Vortex Pilot Certification is the culmination of the Vortex Professional Pilot course. Vortex Professional students complete a rigorous course of study that includes Intro, Advanced and Pro ground schools, Intro and Advanced flight training, a knowledge test, a flight test and a mentoring program. The mentoring program requires that the Pro student demonstrates competence in a number of real-world operational situations.

Many individuals and companies have decided to operate Unmanned Systems without fulfilling the requirements of the FAA. This puts an extreme liability risk on those who are using that service.

**Vortex Pilot Certification**

Vortex UAS has established itself as a leader in Professional UAS Pilot Training and UAS Services. Under the guidance of Professional Pilots, with decades of experience in both manned and unmanned aviation, Vortex UAS Pilot Certification has set the highest level standard for Pilots in the UAS industry.

A Vortex Certified Pilot will have shown that he is knowledgeable and skilled in the use of sUAS, and knows what must be done to perform operations both safely and legally. Vortex Certification is not an FAA Certification because no FAA Certification yet exists.

When the FAA does finalize the sUAS rules and creates the sUAS license, Vortex UAS will train to exceed that standard and provide the opportunity for Vortex Certified Pilots to earn their sUAS license through the required training at no additional charge.

There is no financial penalty for pilots who get a head start by commencing their training now.

Whether you’re looking for in-house training for your own pilots, or looking to enter the industry as a UAS Pilot, we’re here to provide what you need.
Many industries are now recognizing the value of using unmanned aircraft to extend their service capabilities, as well as, improve response time and safety. The possibilities are endless. New industries are discovering uses for this powerful technology every day. The future of professional UAS services has incredible potential. We’ve seen it gaining strength at an astounding rate.

**Professionally trained, certified, UAS Pilots are urgently needed for these industries, and more!**

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**The Connection Between Drones and the Insurance Industry**

“Deploying drones to survey disaster stricken areas would allow faster observation, especially in areas that are not safe yet for human access on the ground. Drones can safely fly over the areas, map them and provide a visual assessment. Rescue and response teams would be able to evaluate conditions and assess the terrain, to plan better services and rescue efforts. Insurance companies would benefit from the data drones would provide, allowing them to assess damages and speed up processing of claims, and, hopefully, payouts to victims.”


**How Drones are Changing the Construction Industry**

“Some uses of drones in construction include taking images and overhead views to report progress in a project and monitoring of safety in the area. Because of the low-level flight achieved by drones, they can record many images that can be connected to create an overview of the project in real time. For example, a new stadium in California for the Sacramento Kings is using software and drones to monitor lags in progress with the construction. Information is gathered daily that is combined to compare with the architectural design and work plan along with information as to when sections of the design are scheduled to be finished. This helps to show areas that might be falling behind schedule in construction.”

*Source: How Drones are Changing the Construction Industry; PHD Contractor: December 9, 2015; [https://pdhcontractors.com/uncategorized/how-drones-are-changing-the-construction-industry/](https://pdhcontractors.com/uncategorized/how-drones-are-changing-the-construction-industry/)*

**Corbin Ball Associates names drone video as one of the Ten Transformative Meetings Technology Trends for 2015**

“Aerial (drone) video will provide new perspective for event photography. Convention video has been around for decades, but it has typically been limited to tripod-mounted and handheld cameras providing static shots. This is about to change. Remote controlled, multi-rotor helicopters, fitted with professional HD video cameras with stabilizing mounts are providing an entirely new prospective for event and meetings-related video.”


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**Vortex UAS**

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Captain Vince Donohue
President and Founder
Vortex UAS, LLC

Captain Donohue has been a professional pilot for over a decade and is presently the chief pilot of a Chicago-based corporate flight department. He has accrued 4 type ratings in airline, charter and corporate aviation and continues as a Certified Flight Instructor. He also serves as one of the founding members of the AUVSI Heartland Chapter encompassing the states of Illinois and Wisconsin.

Distinctions

Captain Donohue served as a Naval Flight Officer aboard USS Midway and USS Independence flying the E-2C Hawkeye in Operations Desert Shield/Desert Storm and received a Navy Commendation Medal with Combat “V” distinction (indicating distinction in the line of combat) in the Persian Gulf War.

Captain Donohue holds a Masters Degree in Unmanned Systems Engineering from Unmanned Vehicle University and is a published author, having two research papers published in the International Journal of Unmanned Systems Engineering (IJUSEng) in the Winter and Spring of 2015.

He is a UAV Pilot, Aerial Photographer and Videographer.

Qualifications

- Masters in Unmanned Systems Engineering, Unmanned Vehicle University
- Airline Transport Pilot with Experience in Airline, Charter and Corporate Flight Departments
- 12 Year Professional Pilot with Over 4300 Total Hours
- 4 Jet Type Ratings
- Currently Flying the Pilatus as a Single Pilot
- Perfect Safety Record with No Incidents or Accidents
- 6 Years as Chief Pilot Running a Flight Department
- Platforms Include Precision Hawk, Inspire Professional (with DJI X5 and DJI Zenmuse XT (FLIR) cameras, and the Phantom 3 Advanced)
Vortex training utilizes a methodical and detailed approach to training that mirrors the structure of FAA approved and successful manned pilot training courses. Vortex training is a 3-tiered series of courses that take the student from no experience to a skill and knowledge level required of a professional pilot performing safe and legal services in the field. All three levels involve a classroom (theoretical) portion and practical (flight) portion.

**Intro Course (4 Hours Ground School / 4 Hours Flight School)**

The Vortex UAS Intro Course is a beginner class designed for anyone interested in the fundamentals of piloting a drone. We discuss current career opportunities in the industry as well as what to expect as the industry matures. The course gives an overview of the components and mechanics of the quad-copter as well as its normal flying characteristics. Lastly, we discuss how to fly in a safe and legal manner. This ground school is designed to prepare the student pilot for the Intro hands-on flight training which is offered as the second half of the live, in-person training. This is a pre-requisite for the Advanced Course.

**Advanced Course (8 Hours Ground School / 8 Hours Flight School)**

The Vortex UAS Advanced Course is an in-depth class designed for pilots serious about entering the UAS industry. We delve deeply into the components and mechanics of the quad-copter, batteries, controllers, and autopilots. The class explores the use the DJI Phantom and breaks down each component of the DJI Go App. We discuss the requirements set forth in the section 333 exemption and what the essential procedures are to legally operate in the National Airspace. This ground school is designed to prepare the student pilot for the Advanced hands-on flight training which is offered as the second half of the live, in-person training. This is a pre-requisite for the Professional Course.

**Professional Course (2 Days Ground School)**

Those interested in entering the field of Unmanned Aviation as a professional pilot are encouraged to complete their training with the Vortex UAS Professional course. This course explores the application of sUAS in the four primary use areas of Precision Agriculture, Construction, Aerial Inspection and Aerial Photography/Videography. Vortex UAS Pilot Certification is offered to those student pilots who have completed the Professional Pilot course and have passed both the Knowledge test and the Practical (flight skill) test. Once passing these tests, student pilots will work closely with an instructor pilot who will mentor them in real-world situations and actual operations. Once the student pilot has proven his knowledge and proficiency in the real-world environment, the student will be awarded the distinction of being a Vortex Certified Pilot.

**Includes:**

- Intro and Advanced Courses
- Knowledge Test (written)
- Practical Test (flight)
- Real-world Scenario-based Mentorship
- Signoff in 1 of 4 Areas of Expertise
- Vortex Pilot Certification (after successfully completing Mentorship)
- FAA Certification Upgrade (when made available)
Vortex UAS Student pilots will complete their certification by completing a Mentoring program under the guidance of an instructor experienced in a particular field. Professional training requires real-world scenarios which provide the stepping stone to performing well in real-world situations.

The Mentoring program will incorporate performance requirements with a series of sign-offs. These will indicate that the Vortex Certified Pilot has performed the various tasks and skills from the planning stage to the final stage of producing actionable data. The sign-offs will confirm that the instructor pilot has observed the student performing the required task and that the student has performed to the satisfaction of the instructor based on the required level of proficiency.

The student will:

1. Observe the instructor performing the task or skill
2. Perform the task or skill with guidance from the instructor
3. Demonstrate to the instructor his understanding and ability to perform the task or skill without help and to proficiency standards

Performance standards are high to attain Vortex Pilot Certification. Student will be required to:

- Take the Intro, Advanced and Pro Ground School Training (live or virtually)
- Attended the live hands-on Intro and Advanced Flight Training (or test out)
- Pass a flight proficiency test to the level of the Advanced Class
- Pass a knowledge test based on the Intro, Advanced and Pro ground school classes
- Have been signed off on at least 1 of 4 specialty areas:
  - Aerial photography and videography (i.e. Real Estate, film, TV)
  - Aerial inspection (i.e. power-line, power transfer station, wind generator)
  - 3D imaging, orthomosaic (i.e. construction site)
  - Precision Agriculture

The certification process will take some time to complete and will no doubt be a challenge. The goal of Vortex is to train the best UAV pilots in the industry. Through this process, the Unmanned Aviation Industry will know that a Vortex Certified Pilot is a professional, well-trained and well-qualified pilot. And for that, there are no shortcuts.