

# TRAINING: The Key to Getting the Most Out of Your Avionics Investment

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**W**hen making a purchase decision about your avionics, have you considered the training? No matter what the brochures say about how easy it is to use, you still need to learn the controls and what the displays are attempting to tell you. Gaining the skill to operate that new piece of avionics is not just something that happens by circumstance, it takes a conscious effort to either learn the avionics on your own or solicit help from an expert. And it's not easy. It's also not cheap. Good training material or time with a competent flight instructor cost money, but the reward allows you to gain the most out of your new avionics investment.

Avionics usually come with a manual, but aircraft on the used market often lack those important tomes of avionics knowledge. Those manuals can also seem pretty intimidating, often exceeding the weight of the entire airplane flight manual. More often than not, these manuals are written by the engineers who designed the equipment. These engineers, who are no doubt very competent when it comes to designing circuits, are just not trained to teach. It takes a certain separation between

designer and trainer to create a good training manual.

The avionics industry has enjoyed phenomenal growth in the past few decades, but why is it that pilots are still struggling with the proper training for these advanced avionics? The level of required training just hasn't kept up with the need. Many ASRS (NASA) reports cite the problems that pilots are having with their avionics—busted altitudes, way-point fumbles, missed radio calls to just name a few. All this because the pilot wasn't properly or sufficiently trained.

There have been a few studies on the problem over the past few years and the results are not surprising. Pilots are not using their avionics to anywhere near their full capability. The results vary slightly, but pilots are generally using their avionics to about 15 to 25 percent of the unit capability. So, in essence, a pilot is only receiving a 25 percent return on the investment—about a \$4,000 return from a panel mount GPS that costs over \$15,000 to install. The rest is thrown away.

Why do you need training? Just as with any new skill, you need to learn the theory behind why something does what it does. And operating a new piece of avionics is a skill that must be learned. This can be done in many ways. Self-taught with the paper manual, check flights with a knowledgeable trainer or various multi-media courses offered on the market. The goal is to know the equipment to its fullest potential. This reduces the heads-down time required to actually operate the unit and

allows more time for more important piloting duties. You should know it so well that the operation becomes second nature when it counts the most, under the high-workload conditions of flight.

Avionics training is often “included” in the post installation check-out by the avionics shop manager, but these quickie checkouts usually leave the new owner more confused than before. Not because of the qualifications of the trainer, but it's just difficult for the pilot to absorb so much information in such a short time. Much like drinking from a fire hose.



Take a GPS for example. These new approach-approved GPS receivers have more features than most pilots will ever use, yet a pilot must be completely familiar with the operation before even attempting a practice approach in VFR conditions. It usually takes at least 20 hours of dedicated training to be comfortable with a new GPS.

A few training sources are available, but developing courses specifically for avionics has its challenges. Mostly because a course developer has a difficult time keeping up with all the

changes and it takes part engineer to even try to comprehend what the avionics are attempting to do.

But help is available. The few training sources that are available must be sought-out and enough time must be dedicated to them to make a difference. The first source of information is the paper manual that accompanies the unit. These definitely provide the information, but when the avionics manual is three times as thick as the entire airplane flight manual, it gets pretty daunting. Besides, operating a piece of avionics is a dynamic

activity, and pages in a book just don't offer the dynamic movement necessary to learn these complex units. Additionally, because of liability concerns, the manufacturer's manual just explains what each button does, not how or when to use it.

Your avionics shop manager or technician may be a source for training, but they have many customers and really cannot devote the time required to train you properly in all of the aspects of the new avionics, especially with a GPS or autopilot. A quick two-

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hour check flight to learn the new approach approved GPS is not nearly enough time to learn about flying an approach, even with a pilot who has previously used a GPS.

Weekend classroom courses are available in some areas, and many pilots feel more comfortable in this environment. The interaction from classmates and a live instructor offer the hangar flying stories and personal instruction that really contributes to the experience. Some people learn much better with the human interaction of an instructor-led classroom environment. Focused answers to pilot inquiries often provide a much more comprehensive learning environment, especially when the classroom is full of pilots with varying backgrounds. These classroom courses are a great opportunity, but unfortunately they're not offered in enough areas to be effective.

Flight instructors are looked upon as a source for avionics training. The one-on-one instruction is tailored to the specific avionics in your aircraft, and those flight instructors are extremely helpful when learning the integration between multiple units. The instructors also provide the all important feedback so necessary when learning a new skill. Unfortunately, they have the same difficulty in learning the avionics as most pilots. The avionics change so often, and comprehensive training is so difficult to obtain, that instructors cannot always offer the necessary training. An instructor that works closely with an avionics shop has an advantage in that

the shop keeps the instructor up on all the latest gear. Always ask your avionics shop if they work closely with a flight instructor.

Video courses are available for the more popular units, such as GPS, and provide a good overview of the more common tasks. But these are merely just a walk-through demonstration of the more popular features. They don't offer any interactivity or feedback, but they may be the only training available.

Computer Based Training, or just CBT, is training provided on a personal computer to provide an interactive, structured and self-paced learning environment. CBT has the capability to play animations, 3-D graphics, or videos, thus allowing the course designer options in presenting information in the most efficient manner. Sometimes, trying to explain a concept or procedure with words and still pictures in a paper manual just leaves the pilot confused. The multimedia capability of CBT can explain the procedure with animated computer graphics or videos. Thus, the pilot gains the perspective from the view of the operator, instead of an abstract view of the component.

The CBT provides a focused lesson that is both timely and pertinent. For instance, if a pilot knows that the next flight may involve a GPS Arc approach, that specific topic can be reviewed the night before. The menu structure of CBT allows the pilot to review just that section and not waste any time searching for the answers.

The CBT program is constantly monitoring the pilot. For instance, if a question is missed, the program can provide instant feed-

back of the right or wrong answer. If the topic is important, multiple methods to convey that information are presented. So the pilot leaves the CBT with a thorough understanding of the material.

By nature, pilots enjoy, and need, the hands-on approach when learning about a new piece of equipment. They need to touch it and feel it before the training becomes real. Computer Based Training can only provide a picture or video of the real thing, limiting the pilot's curiosity and comprehension of the material. Fortunately, the delivery of a CBT course can be interrupted with periodic hands-on training under the watchful eye of an instructor or experienced pilot.

Training is very important, not only so you get the maximum amount of utility out of your new purchase, but so that trying to learn the new avionics on the fly doesn't compromise safety. Your avionics shop manager may feel that the training is so important, that it's included in your bill as part of the installation. As much as the avionics are promoted to be easy to use, the reality is that using these new features is not easy and requires a lot of effort to learn correctly. A good installation or check-out in new aircraft is not complete without proper and thorough avionics training.

The initial purchase of an avionics training course may seem expensive and not necessary, but viewed from the longevity and ability to gain 100 percent utility out of the installation, the long-term costs are much more reasonable. How much is it worth to eliminate six months or more of utter frustration? ■