



# Sport Aviation

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# GAME ON

Getting to know  
the GameBird

 P.46



**Finding Fun Again** 

John Bobcik's award-winning Kitfox

**Framing MOSAIC**

The path to certification overhaul

**Gliding to Gold**

Sarah Arnold's journey to a  
world championship



# GAME

GB1 GameBird



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# CHANGER



**THE AIRPLANE THAT'S CHANGING THE GAME FOR LONG-RANGE AND AEROBATIC PERFORMANCE**



BY CHRISTINA BASKEN

**"THE GAMEBIRD IS REALLY** the result or the end product of 10 years [of] flying and competing [in] this type of airplane, and a result of my personal wish list or what I picked up along the way, listening to people, flying with people, seeing what works and doesn't work in contests, where the market is," said Philipp Steinbach, CEO and co-founder of Game Composites.



Philipp Steinbach

**P**hilipp Steinbach founded Game Composites in 2013 with Stuart Walton, EAA Lifetime 1056127, three years after the business partners first met.

“Stuart and I met in White Waltham, West London Aero Club, in 2010,” Philipp said. “He was there when we demoed my old airplane. He went for a ride, ordered one, and that’s how we became friends.”

Stuart said seeing the GameBird go from an idea on paper to a flying machine has been a truly exciting journey.

“Game Composites has certainly been a highly educational and highly fun journey for me, and those two things together are rare I think in life,” Stuart said. “... Game has been a wonderful learning experience about building a business, developing a partnership, and, in some respects, following your passion. We started back in 2013 with really an idea and a piece of paper. Then, we began to iterate, think through the principles of design, the culture of the company, how we were going to make this happen, what we needed to do in order to make it happen. And step by step, piece by piece, we put in motion what has become a reasonably successful composite aircraft manufacturing business.”

Game Composites started out in England with a clean sheet design for the GameBird.

“The airplane flew first in July 2015,” Philipp said. “We got the type certificate in August 2016 from EASA (European Union Aviation Safety Agency) and then in April 2017 from the FAA. During the design and flight test process in England, we decided to move to Arkansas. So, we started planning and building this facility here, and then, in September 2016, we moved over here and started employing in May 2017.”

Game Composites currently employs 56 people. At the moment, the company is building about one GameBird every three weeks.

Philipp said while the GameBird is not strictly a pure aerobatic airplane, it does aerobatics very well.

“It also goes places,” Philipp said. “It’s fast, it’s got good payload, it’s got nice avionics in it, and is generally a nice toy, so to speak. You can’t replace your King Air with it, but it fits under the wing. If you want to do a loop and roll, it’s not going to scare you. And if you want to keep going all the way to the Unlimited world championships, the airplane can do it.”



***I THINK AVIATION IS COOL,  
PLANES ARE COOL, FLYING  
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I THINK SOMETIMES WE  
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Philipp said aerobatic airplanes have come a long way from the primary trainer airplanes that were used for the occasional loop and roll to pure competition designs.

"About 10 years ago, [aerobatic] airplanes already had way enough performance," Philipp said. "So, the challenge moving forward in design was not necessarily to increase the performance anymore; it was to get the handling to a level where a pilot with a reasonable amount of training can compete in the world championships without looking like an idiot, essentially. There are a lot of airplanes that you need to fly them a lot to fly them really well. And Extra has done a really good job with their 330SC, designing an airplane that has outstanding performance but is also very easy and predictable to handle. So, we tried to emulate that handling into a two-seat airplane simply because it's got a bigger market. Two-seat airplanes can be used for more than just aerobatics. You can take your friends for rides; you can use it for upset recovery training. You can do professional flight training or professional aerobatic instruction with it being a certified airplane. That was the basic train of thought behind all of this."

Philipp said they really pushed the envelope on expanding the structural limitations while designing the GameBird.

"If you take an old four-cylinder legacy airplane and you go into a vertical line — and you want to practice quarter rolls or vertical rolls in general — you have three seconds, four seconds maybe," Philipp said. "And in those three, four seconds, a lot of stuff happens. You need to learn a lot in a very short time. If you miss that little window, then gravity starts sucking, and it'll get scary rather quickly. In a modern six-cylinder airplane, like the GameBird, you have 10, 12, 14 seconds, depending on your loading and altitude in a vertical line. So, you've got a lot more time to figure things out, make friends with the situation, learn what a sight gauge is and what you do with it. And when you fall out of a maneuver, it's not scary because the structural limitations are so far out of what you could achieve in just messing up an ordinary figure that it's very unlikely to have any scary moments, as long as you're high enough."



## GAMEBIRD, BUILT TOUGH

**Certain parts on** the GameBird, such as the rudder pedals and stick, are built to be sturdier than most parts on a typical airplane.

“Aerobatic machines are treated more like gym equipment than airplanes,” Philipp said. “The whole idea of somebody handling an airplane gently goes outside the window as soon as you enter a box. Every input is abrupt and sometimes brutal. So, everything has to be severely overbuilt and tested for much higher loads than the FAA requires normal airplanes to be tested to.”

## A CERTAIN LEVEL OF INDIVIDUALITY

**If you look** at the wing platform or the leading-edge radius, the wing is a little unusual, Philipp said.

“It’s designed to stall very abruptly, but also to regain airflow equally quick and precise, without hysteresis,” he said. “The aileron is essentially a smaller wing flying behind the big wing. If you look underneath, the GameBird has no spades (a kind of aerodynamic power steering), other than most aerobatic airplanes in this category. We spent a bit more time on the aileron airfoil design and what NACA calls overhang. So, the ailerons handle, in my opinion, very nice, with very good centering. The aileron centering feel is one of the defining features for an aerobatic airplane, making it easy for a pilot to accurately present the airplane in the aerobatic box.”

Philipp said it has a two-piece wing, so you can take the left or the right wing off independently, which makes it easy and quick to pack.

“You need two people and about two hours to take it out of a sea-freight container and put the plane together and fly,” Philipp said. “Compare it to a legacy airplane, where you take two or three people for at least a full day. The GameBird is much, much easier to take apart and put back together.”

The engine is a standard Lycoming AEIO-580-B1A.



**CLICK HERE**

TO SEE A VIDEO ABOUT  
THE GAMEBIRD



“People used to ask for more horsepower, but nowadays airplanes all have sufficient performance,” Philipp said. “It’s more about the handling.”

## COMFORT AND VISIBILITY

**It has good forward** visibility, which Philipp said makes it a nice airplane to fly cross-country.

“You can actually see where you’re going,” he said. “That’s also a bit of a difference to some of the older airplanes.”

Steuart said the GameBird is more maneuverable than any airplane he’s ever flown.

“The GameBird is one of the most enjoyable airplanes you could fly,” Steuart said. “It accelerates on takeoff like a jet, quite frankly. It’s more maneuverable than any plane I’ve ever flown.”

Steuart also noted that it “got all the details right.”



“The cockpit is very comfortable, very modern,” he said. “The baggage has been thought out, the oil door has been thought out, the shape of the wing has been thought out. It’s fast, it’s stable, it’s strong, it’s incredibly agile. It’s got incredibly balanced stick force. And it’s a delight to fly. It also, believe it or not, is a pretty good cross-country touring machine.”



# GAME ON

## Firsthand take on flying the GameBird

As a brand-new sport pilot, I got to experience the GameBird firsthand, and get in a little stick time, too.

### FIRST IMPRESSIONS:

***It's slick, it's clean, and it looks mean.***

From the exterior to the interior, it looks just absolutely fantastic, but more importantly it *flies* fantastic.

Most of us have heard the phrase, "It's a one-finger-flyer," and that doesn't always turn out to be true, but in this case, the GameBird truly is a one-finger-flyer.

It's like flying with autopilot on; it's that smooth. It does everything you want it to do with ease.

Philipp said earlier that this isn't strictly an aerobatic airplane, but, man, does it fly like one.

Every loop, roll, spin, and hammerhead seemed to respond to Philipp's input within a fraction of a second. Then, I got the opportunity to try a few rolls myself. With very little input to the left, we were rolling. This was my first time doing any aerobatics, and I wasn't sure how foreign it would feel to me. Between the flight characteristics and comfort of the cockpit, it felt like home.

First and foremost, I felt safe. With the bubble canopy, I couldn't have asked for a better sight picture. When performing rolls and other maneuvers of that sort, having a nice sight picture is very important.

The GameBird comes equipped with Hooker harnesses, and in the event of an emergency (based on a ground demonstration), the canopy comes off fairly easily.

### LAST IMPRESSION:

***It's slick, it's clean, and it is mean.***

Overall, the aircraft has a really nice feel to it. While seated, it's a snug and comfortable fit. I enjoyed the "snug" fit, as it made me feel that much more connected to the aircraft while flying and performing maneuvers.





Stuart Walton

## COST AND PERFORMANCE

**The GameBird carries 81 gallons:** 28 gallons in each wing and 25 gallons in the header tank.

“Last year I ferried an airplane back from central Idaho to Bentonville,” Philipp said. “That was a 1,100-mile flight in five hours even. That’s a little more than 200 knots cruising. And I landed with almost an hour of endurance left in the tanks after that five-hour flight, in pretty much no wind conditions. So, it does quite well.”

Philipp said the cost of a ready-to-fly GameBird is about \$425,000. It comes with leather upholstery and all the Garmin avionics, and you can pick the paint scheme from the standard schemes online.

“We have an online configurator so people can pick their options and get to see the price straight away,” Philipp said.

While the GameBird is truly unlike any other aircraft, Philipp said it is most comparable to a CAP 232.

“So, if somebody can fly an Extra 330SC, they’re not going to have any problems with this,” Philipp said. “If somebody comes from a 300L, then the airplane has simply a lot more control authority. If somebody has flown a Sukhoi or a CAP 232, the CAP 232 is probably the closest to this in terms of flight characteristics or handling, whereas the Sukhoi is really the other end of the spectrum. The Sukhoi is probably the best example for an airplane that you need to fly a lot to fly it well.”



# BEHIND THE SCENES

## BUILT IN-HOUSE

All composite work, assembly, and paint are done in-house in Bentonville, Arkansas. Only welded and machined components are currently produced by external vendors.

Philipp said each airplane consists of about 330 composite parts.

“We need 330 molds to make one airplane,” he said. “And then all the build process is documented in approximately 1,100 documents. So, 1,100 work instructions define one serial number airplane.”

## MEET SCOTT KAGEBEIN, PRODUCTION MANAGER

“The way that our operation works right now is on composite group, they usually have the fuselage for 16 days, which is, of course, your parts makeup, your assemblies, and then your final assemblies, which the wings go in and the fuselage is complete,” Scott said.

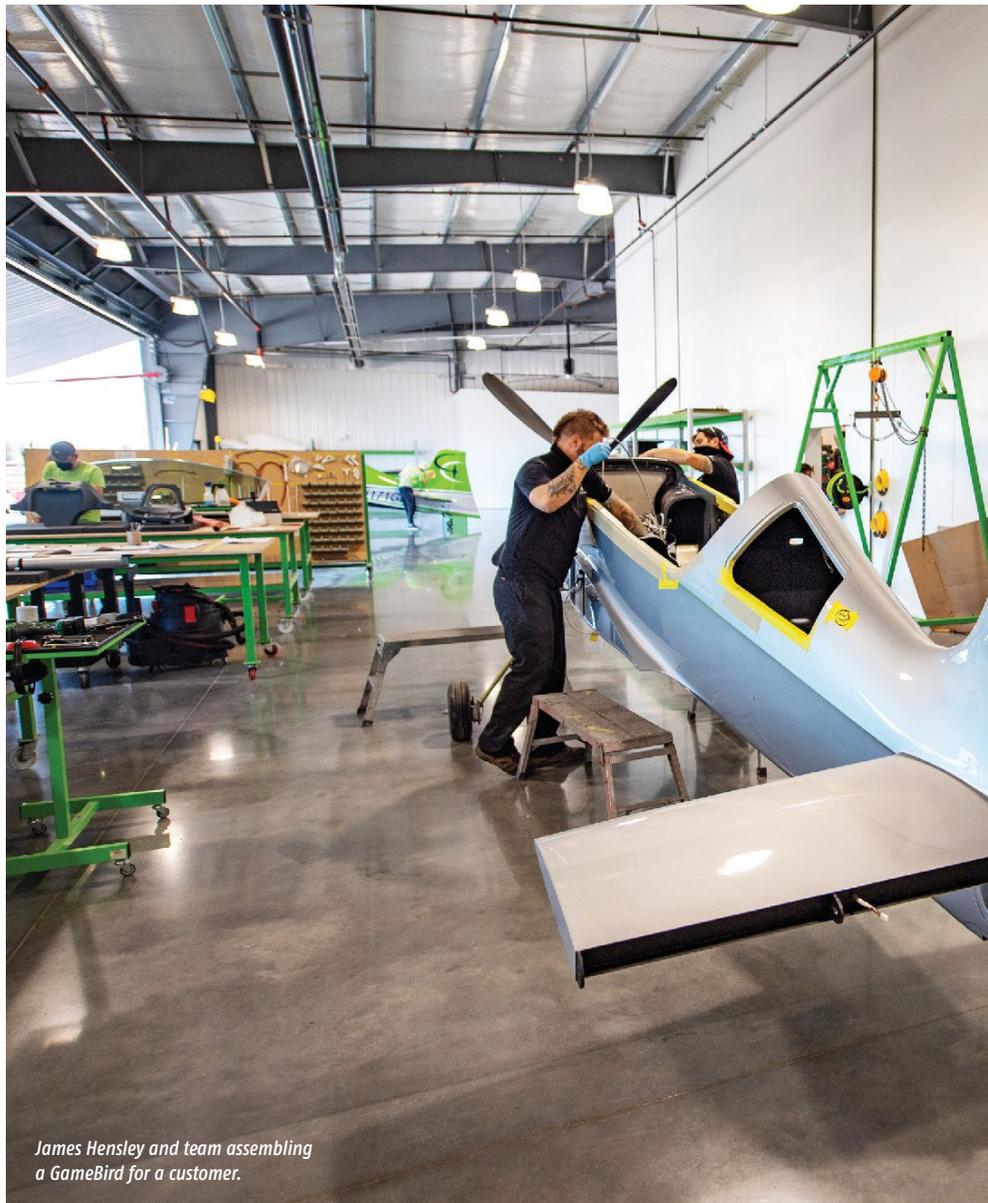
From there, it goes to the paint shop.

“Depending on the complexity of the paint scheme of the customer, it’s anywhere from five to seven weeks,” Scott said. “After that time, it’s roughly two and a half weeks before you have a plane ready for test flight.”

Scott said most of his groups in composite will build four or five parts a day depending on the size and complexity.

Every morning at 8 a.m., teams will clock in and the production coordinator will start kicking out drawings for everyone detailing their day-to-day operation of what they will be building.

“Each person builds their own part and gets a quality inspector buy-off at the end of the day,” Scott said. “They could build three or four parts a day, and all those go into our main assembly, which as the weeks progress, we can put the main fuselage together.”



*James Hensley and team assembling a GameBird for a customer.*



*Game Composites staff.*



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THADEN FIELD



# LOWERING THE GATES OF AVIATION

## Thaden Field

"At Bentonville airport, we've been on a bit of a journey, and we haven't always had the same level of activity that we have here today," Steuart said.

In 2018, Steuart and his brother became the official owners of Summit Aviation, the FBO at Thaden Field. The previous owner had done a terrific job, but Steuart saw an opportunity to make this FBO even more successful.

"There's been a dedicated group of folks here at our airport that have committed to a few basic principles — access to aviation, friendly environment, public-private partnerships," Steuart said. "We have a great relationship with the city. They've been a fantastic partner and giving people a reason to come out to the airport. Whether it's getting to see a warbird take off or a new GameBird come out of the factory and roll down the runway for the first time, or a Piper Cub land on a grass strip in less than 150 feet, or a seaplane take off and head out to Beaver Lake for some touch-and-goes in the water ... there's always interesting stuff going on around here. And we've begun to attract a level of activity here that over time has just become the talk of the town in a way."

Located within the airport is a coffee shop and restaurant open to the public. A beautiful park overlooking the water can be seen from the airport's large windows. Visitors can also enjoy nearby hiking trails after tying down their airplanes.

"This spring, we're going to open an archery range just around the corner, full competitive length," Steuart said. "The community's just really begun to buy into, 'Hey, the airport is for us. It's not just for pilots and their passengers. There's always something going on there. So, we want to be able to get out there. We want to be able to see it. We want to be able to get close to airplanes, maybe even touch them, maybe even go for a ride.'"

Chad Cox, Thaden Field executive director, said the flight school is really the heart and soul of this airport.

"We've worked together at the direction of Steuart Walton to build this place into somewhere special for people to come and enjoy aviation, not just as a means to get around from place to place but also recreationally," Chad said. "So, we've developed a network of grass strips in the region, there's actually 64 within 80 nm, [and] we have developed a large flight school that not only teaches traditional private pilot all the way up through certified flight instructor, but also tailwheel flying."

There's also the flying club, with seven airplanes available.

"The purpose of having the club here is to make aviation more accessible," Chad said. "When our students leave the flight school, it's easy for them to join the flying club and get around. This year we will fly 9,000 hours in the flight school. We have 10

instructors that are full-time and eight or nine of those are salaried."

Steuart said the flight school currently has 130 active students and an even longer waitlist.

"We actually have more people on the waitlist than we have students here," he said. "So, I think that's just an example of how successful you can be when you really try to get the community involved with your local airport."

Steuart said the idea is to lower that high fence and invite the public in.

"I think aviation is cool, planes are cool, flying is cool, engines are cool," he said. "It's all cool. But you need people, and people is what really makes it go," Steuart said. "I think sometimes we forget that because we build big fences. It keeps people out. We get a little frosty when people come in around airplanes or the airport or the hangar, and that pushes people away. So, airplanes are cool, but if you add people, add community, it will blossom. And that's what we're really learning here at Bentonville. But we're really excited about it. We're iterating, we're learning, we're failing a little bit, succeeding more than failing, which is nice. But really trying to keep the momentum going, build on what we've got and celebrate aviation by inviting the community in."

In 2019, Thaden Field was awarded Southwest Region Airport of the Year by the FAA.

## MEET JAMES HENSLEY, ASSEMBLY TEAM LEAD

“I manage the team that puts together the airplane once all the components are completed,” James said. “Typically, what happens is we will get our parts, the composite work’s been done, the body work and paint is done. We’ll get issued our work instructions and material kit, consisting of control system, engine, propeller, and all other components. My team needs to assemble all the parts into a complete airplane.”

James said part of the appeal of the GameBird is that, for the most part, it is not a complex airplane.

“It’s a fairly straightforward aircraft,” James said. “As far as comparing it to others, it really doesn’t have a comparison. We can pull the wings off this in roughly 30 minutes, we can pack it into a shipping container, send it to a new owner, and they can have it flying in an hour, hour and a half if they have a good team.”

James said the most rewarding part of his job is getting to see each build take off for the first time and working with a talented team.

“We have quite an astounding group that’s been drawn together on this project — extremely intelligent people — and the amount of handwork that’s done is quite phenomenal,” James said. “Everybody — composites, paint, my guys — they do an amazing job. And being around people that are craftsmen, it’s pretty special. But seeing it go from pieces and parts to flying in roughly two weeks after I get it, is nauseating and spectacular at the same time.”

## MEET RYAN FILBECK, COMPONENTS TEAM LEAD

“My team specializes in acrotanks, windshields, canopies, basically anything you see on the outside of the plane that’s not the fuselage,” Ryan said. “First thing in the morning, we’ll come in, whatever we made the day before we’ll demold and trim, [and] we’ll get those ready to get turned in and go on a plane. Then, usually in the afternoon, we’ll start making parts, bigger parts, and it takes about noon to 5, so pretty much a day.

“So, we’ll get an empty mold, it’ll be released, and we’ll put a resin on it at first if it needs primer and then start laying the fabric in, and then we’ll bag it,” Ryan said. “All our parts are carbon fiber. Some parts have core in them; it just sandwiches in between the carbon fiber layers.”

Ryan said each part varies in degree of difficulty.

“Some will be easier than others, some will be harder than others,” he said. “Some parts have harder angles, some parts are just bigger, more tedious spots in some parts. So, that’s why we split up into teams so we can specialize in certain parts, certain areas of the plane.”

Ryan said he personally enjoys working with the small, intricate parts.

“I’m more of a hands-on guy, so I like to be tedious. A lot of my parts, they will have small stuff or small, harder things to do in them, so it’s just more making it look nice.” *EAA*

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**Christina Basken**, EAA 1299943, is EAA’s multimedia journalist and an active sport pilot. When she is not taking photos or writing for various publications, you can find her outside enjoying nature.

*Stewart Walton flying his Spitfire and Philipp Steinbach flying a GameBird.*

