

SWITZER

WHO SAYS BOATS CAN'T FLY?

ARTICLE RON POLLI • PHOTOS COURTESY SWITZER ARCHIVES



PERFECT FLIGHT : THE SWITZER WING IS DESIGNED TO 'FLY' ABOVE THE WATER...
...WITH ONLY THE PROPS MAKING CONTACT

Before there were Cats
there was "The Wing!"



One of the three Super Vee starts in Key West. The twelve raceboat Super Vee fleet ensured deck excitement and drama for spectators and racers alike

WING

Few boats are able to capture the imagination and stand out as being truly revolutionary. Rarely is a craft so 'out of the ordinary' that it turns heads and has people saying "What is that thing?" So when we learned about a strange looking boat that broke the mph barrier with just a pair of Mercury in line six cylinder hp outboards we knew this was a story that needed some extreme coverage. Especially since this boat was built in the early s!

During the birth of fiberglass boat building two brothers Bob and Dave Switzer left their mark on the boating world with a line of vessels called Switzer Craft. The brothers built several models all under twenty two feet with names like Shooting Star and Hydro Cat that helped them to earn a place in the record books and the hearts of performance enthusiasts of the time. But one boat that the brothers built and raced stands bow and stern above the rest. It set records that still stand today and will probably never be surpassed. Here's the story of the Switzer Flying Wing.

Bob and Dave Switzer have long since sold the company and retired but they were both eager to recall some of the greatest moments of their shared youth during our conversations. Along the way I asked how did you get into the boat building business and Bob launched right into the story right from the beginning "My brother Dave at the age of fourteen bought some plans for a sailboat for twenty five cents. He commenced building the boat until it was about ninety

percent done and then it was hung in the ceiling of our basement for a few years. When Dave turned eighteen he was drafted and before he went off to war the family dragged out that boat and finished it all of us together. It was a great family project and a real nice way to spend some time with Dave before he went to war. While he was gone I asked Dave if I could convert the sailboat to an outboard since the sailboat would not tack! Dave agreed and my dad pitched in and made the first Switzer outboard."

"When Dave came home from the war he looked at his old boat and said 'I would have done that differently'. Well that was it. We started working on a new boat and before it was done we had a few orders. My brother was so excited about selling our first boat that he sold it for exactly what the material cost to build it. Then one day my Dad came home from work early and told us that he quit his job and was going to work with us building boats. And that's the real story of how Switzer Craft got started in



SWITZER WING

WHERE IT ALL BEGAN...

Shooting Star For thirty five years we built a line of unique boats that stand out as some of the best sport boats of the 60s. One was the Shooting Star. It was a really rare and unique boat. It was at a time when boat builders were making the transition from plywood to fiberglass. Along the way we built one twenty two footer, the rest were between twelve and twenty feet. This was because of the layout of our plant. We needed to be able to walk around the boats so twenty was usually the limit."

Steering the conversation toward more modern times, I asked Bob about his racing exploits and how they developed the Wing. "By the way, my brother developed a ten foot long race boat for the APBA Class B stock

Switzer Hydro Cat So we left the racing efforts to our customers until June of 1964 when Mercury announced they were sponsoring a marathon race on Lake Winnebago Wisconsin, just east of their factory. They were adding an unlimited class on top of the Stock classes that would include employees of both boat and engine builders. When I heard about that race just nine days before the event, we didn't even have two outboard motors, but boy I wanted to race.

So I asked Dave if he could build me a boat for the race. He said, "You know Mercury is going to be running a fleet of twin engine boats and you only have one motor." I had one direct reversing 40 hp Mercury (the engine that started



NECK & NECK
Deck to deck racing action thrilled the spectators in Key West. Here the 39-foot Skater LUCAS OIL and the 38-foot Fountain WAZZUP battle it out as they come by the outer mole (Navy Pier).

racing called the Switzer Baby Bullet. Then we developed a thirteen footer for the Class D stock forty horse motors. I loved Marathon racing. Marathons were about eighty to a hundred miles, always in lakes or rivers. These races would last several hours, especially if the wind kicked up. In fact, in 1964 I won the Albany to New York race, first place overall with a forty horsepower Mercury Engine. Mr. Kiekhaefer was thrilled. He always attended these big races and I'll never forget him coming over and shaking my hand after that race. He was really proud of us."

"Along the way we built a tunnel boat called the Shooting Star. We did real well with it on the racecourse. Then in 1964 APBA changed the Stock outboard rules to read: No employees of a boat and/or engine manufacturer would be allowed to race in the stock classes

backwards when reverse was needed). Dave promised that if I got another motor, we'd build a twin engine boat for the unlimited class. I called Charlie Strang, a friend at Mercury, and he let me borrow one of their reference engines until after the race. The next day I picked up the second engine and Dave, true to his word, started laying out a very unusual design that no one could make out at first. I've seen my brother start many boat designs, but this time he was truly inspired."

"The last race boat we built was the Shooting Star tunnel, so Dave had some ideas about using air under the hull to reduce the wetted surface and make it feel lighter underway. When he started working on this new boat, the first thing he did was to bring home a rib out of an airplane wing. We put the rib across two sawhorses, got a spotlight, and I taped twenty feet of three foot wide

brown butchers paper on the wall. Then Dave projected a shadow of the Wing profile on the paper that was fifteen feet long. Then we traced the shadow with pencils. Now he had the cross section templates to make the ribs of the wing section. At this point I still hadn't any idea what he was doing, but I never questioned Dave's ability to build boats. I always admired my brother; he's an engineer from dawn till dusk. If he says something's going to work, then you know it will. So I shut up and we built the ribs out of wood. Fat in the front and tapering back to the transom just like the Wing pattern."

Bob continues "He made a big fifteen foot long (the minimum length for that class) by feet wide section of wooden Wing, flipped it over and started adding sponsors. The front stuck out three feet beyond the Wing area. When he was done, we flipped it back over and put it on the ground and noticed it balanced at the rear of the front sponson. Then he took a jigsaw and cut out two holes for the cockpits, one on each side of the Wing, right at that balance point. We started to position the engines and while everyone else had them centered side by side with props practically touching, Dave had a different idea. He wanted to put them on the outside corners of the boat. Then we built up dorsal fins behind the cockpits that fared into the engines. Now, the boat really started to take shape. We skinned the deck of the whole boat in 1/2 inch plywood. We rigged and painted it, then took it down to the river for its maiden voyage. Mind you, this is all in just six days. Along the way Dave kept saying we really need to put a movable flap on the last two feet of the wing section, but we never had time to develop the flap on this first Switzer Hydro Cat. That's what we first called it."

"Before too much of a crowd gathered at the dock, Dave took off slowly to the north where the river takes a bend and he was soon out of sight. He was gone for a long time. I started thinking something broke, then all of a sudden I heard the shrill sound of two engines at plus rpm as he comes around the bend back toward the docks. She'd leap and flying for about 200 ft at a lunge then returned to the water just long enough to touch down and fly again. Head on, I could see daylight under the whole hull. It was amazing to watch run. People were standing next to me with their jaw literally hanging down to their chest. So was mine."

"Dave had built the front sponsons 12 inches deep while the rear were only 6 inches deep. This set the wing section at an eight degree angle of attack to the water and looked menacing even at rest. After the run we brought it back to the shop for the finishing touches, and the next morning it was time to race."

"Mr. Kiekhaefer had the race covered with all his best drivers. He had a Ted Jones 12' catamaran in the line up. Johnny Bakos had his new Power Cat. There were five Mercury sponsored teams in all different size boats to cover any kind of water conditions. Mr. Kiekhaefer was covering all his bases. He didn't like loosing, especially in his own

backyard. We waited until the last second to put the boat in the water. Nobody had ever seen a boat that looked anything like ours before. It was a long race from Fond du Lac to Neenah, Wisconsin and back with one turn at the halfway point. Right from the start the race was ours. We were able to just fly by all the other competitors over the 1/2 mile course and won first place overall. As you can imagine, Mr. Kiekhaefer was upset and amazed at the same time. A few years later he ended up being our best customer."

"Dave [Switzer] had some ideas about using air under the hull to reduce the wetted surface and make it feel lighter underway..."

-BOB SWITZER

100 mph Wing "A year later, we got a call from Carl Kiekhaefer in the summer of '87. He wanted us to build him a boat that would exceed 100 mph using just twin six cylinder (6-cylinder) hp engines. By that time we had sold the first hull to a customer and started working on a second hull with slight modifications. The second hull just wasn't as good as the first one. We built a third with more modifications but it still didn't run like the first one did. We realized that Dave got it right the first time. So by the fifth hull, we went back to the original design and just added the movable Wing at the back of the boat, and we also added Plexiglas cockpit canopies much like they have now. The entire boat, when rigged race ready, weighed just over 1000 pounds."

"We finally delivered Carl's boat to Lake X in late November of '87 and I got to take it out for its first run. Now remember, this is the first boat we built with the movable flap. I ran around the lake a few times just to see how it handled. It was real close to the first one. At 100 to 110 mph it would fly for a distance, then plant and fly again. At full throttle with the flap in the neutral (up) position, the boat ran 100 mph at 1800 rpms. Once I got comfortable, I started to lower the flap and you could feel the difference, the more I deployed the flap, the lighter the boat felt. When I pushed the flap all the way down, my neck snapped back and the boat took off like a slingshot. At the outset the RPMs dropped back to 1800 and then slowly came back to 1800 as we climbed to 100 mph. With the flap all the way down, the front sponsons floated six

SUPER VEE
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#1 - SUPER VEE
The Rodriguez Group Fountain took top honors in their class - Congratulations!

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SWITZER WING

WHERE IT ALL BEGAN...

inches above the water; the back sponsons were floating three inches over the water as the air would escape from under the hulls by way of the air traps between the sponsons. We could fly it like that indefinitely. Carl got what he wanted—a boat that could run over 100 mph with a pair of 100 cubic inch hp engines. And that was the last Wing we built for three years.”

Time to Modernize “In 1978 we were forced to convert our production from plywood boats to fiberglass just to stay alive. We developed 10 models in just 10 months. Then one day out of the blue in late 1978 a guy shows

any multiple engine racing. So outboard racing moved to more of a Champ Boat racing format and twin engine boats died a slow death. But the Switzer Wing reigned King for five years running. It wasn't until years later when much larger boats started racing offshore that the door opened again to twin engine racing.”

Tell us a little about your racing exploits. “When we raced I used my left foot for the foot throttle. Since we always turned left I could brace myself with my right foot against a fake pedal. We didn't wear seatbelts at the time. Then my right foot had another pedal that worked the flap. The Wing was never known for making turns, but

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up at the shop with the very first Switzer Hydro Cat boat (the one that won the Winnebago race) asking us to do some repairs to the hull. We offered to replace his hull with a fiberglass version if we could take a mold off his. He agreed to let us pull a mold off his, and we did the exchange for free. Now that we had a mold, we crafted a more streamlined deck and we started building more of them for unlimited racing. Because the Wings enjoyed great success on the racecourse, Mr. Kiekhaefer offered to buy the tooling in an exchange for a sizeable order of them. Our first order was for 100 ft wings. He sent them all over the country to his favorite drivers. This is when Charlie Strang wrote an article about these boats and nicknamed them “the Switzer Wing.”

“Speeds in the unlimited class started to rise and people started getting hurt. Outboard Marine and Mercury had a summit meeting and agreed not to aid, sponsor or abet

if you'd lift the flap, the hull would touch the water and get around the corner. Some guys even got around soft corners with the hull in flight. Remember, we didn't put the flap on the boat until the fifth one. The first four sort of took these long jumps then landed, touch and flew. Then with the flap, we just packed the air under the hull and flew forever.”

Dave Switzer - the Architect Bob Switzer explains, “I've always been my brother's biggest fan. He's brilliant. I just don't know where he comes up with his ideas. Somehow he got it right on the first try, right out of his head. The boat was perfectly balanced, both in weight and aerodynamic lift. My bother has a gift. He had the earnest desire to make a boat that was fast, quick and safe. And with those three prerequisites, he developed and built the first Wing “start to finish” in just eight days.”

After Bob's very animated conversation I called to Florida and had a much different conversation with Dave Switzer regarding the same subject. It's clear that Bob and Dave are complementary to each other, having their own strengths and interests. Dave is much more of a deep thinker always seeking knowledge and exploring the unknown. To this day he's still developing new marine technologies.

ebm: Dave I see modern day catamarans with tunnel tabs but I've never seen one fly above the water. Do you think you built more of a ground effect vehicle than a boat?

Dave Switzer: "Oh yes, most definitely. A friend of mine who's a pilot once explained to me how airplanes don't like to touch down when the wings get close to the ground and the air pressure under the wing increases. That stuck with me. There were catamarans back then like Power Cats but if they went too fast they wanted to blow over. I knew we had to get the fat part of the Wing further forward. Instead of running the Wing perfectly flat, we tilted it upward by degrees. This gave more lift at the stern and actually put pressure on the front sponsons so it was very stable. I originally had placed the engines on outer edges of the transom and put the two man cockpit in the middle. When my wife saw it she said 'Why create all that drag why not put the cockpits in line with the engines' it made sense so that's what we did."

ebm: When you added the flap, did you want to trap the air from escaping out the back of the boat by creating a dam or were you looking to create additional lift on the top of the hull, like an airplane with its flaps deployed?

Dave: "We wanted to stop the airflow out of the underside of the boat and build some pressure under there. So the air had to escape the only way it could all around the perimeter of the hull, which meant the hull had to be free of the water. The hull had four flat planning surfaces, two on each side. We didn't call them steps back then. It was a hard ride to about mph but then it started to pack air, which lifted the hull and the pressure under the hull allowed the hull to fly over the water. You'd go over a wake and not even feel it. Once you got to an airspeed of mph, the hull would start to fly. Without the flap, it would just run along on the gearcases for about feet then plant and fly again. Once we added the flap, it would fly forever with the flap all the way down. You could run mph in a " chop and never feel it touch the water. Now and then a wave would slap the sponsons but the Wing would hold the boat level since the lift was behind the center of pressure."

"Some of the racers could get it around turns while the hull never touched the water at all. Those tall Kiekhaefer outboard engines probably acted more like a rudder on an airplane and helped it to make the turns while airborne."

ebm: How did the other race teams react to the Wing? Did a Wing win every race it entered?

Dave: "I don't know what they were thinking but we certainly were enjoying ourselves. We definitely brought something different to the racecourse and we had some terrific battles. We couldn't turn too well but we had an advantage on the straights. I remember several races where we had lead changes twice per lap. It was a lot of fun. I really enjoyed driving it because it was a whole new experience."

ebm: You made an eighteen and twenty footer?

Dave: "Later on the motors started getting bigger so we thought we had to have a bigger hull to accommodate the bigger power. Even though the difference in size was small, the difference in weight with the bigger motors was huge. It was hard to get the boat balanced. The hull really doesn't like weight. Once I started a race with two hundred and fifty gallons of fuel, I ran half the race in the water and took a pounding before it got light enough to fly. Once it was up, I thought, my God, this is amazing. It

**"We could fly it...
like that...
indefinitely."**

-BOB SWITZER

was so completely stable in flight because the water was no longer an influence on the running surfaces. I'd pull off the throttle and you could hear the engines backfiring as they spun down with no load on them whatsoever. When you came out of the throttle, the hull would fly along for a while before it landed like a seaplane. The slip had to be less than when the hull was in flight."

"My biggest thrill comes from the development of new products. I left the racing to my brother. We got to work side by side with Carl Kiekhaefer while we had the Wing at Lake X. He was a remarkable man. He'd do the work himself. He loved to tinker with everything. We actually built a boat for Carl's personal use. It had canopies and it really was amazing to drive. There was no wind or noise. It was a real showpiece. I have no idea where it is or what shape it's in today."

ebm: When you projected that Wing shape on the wall and built the boat around the shape of that Wing, did you expect the boat to actually fly?

Dave: "Heavens no. I knew that to make the boat run faster we needed to make it lighter in the water. When it actually flew, I was amazed and thrilled."

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ExtremeBoats

SWITZER WING

Kenny Kitson - Wing Racer Bob and Dave both gave a lot of credit to Kenny Kitson as the racer with the most checkered flags from flying a Wing. It turns out Kenny lives near Mercury's X Site and still likes to hang out there with his buddies. He also likes talking about his days behind the wheel of a Wing whenever possible. Kenny still drives the Wing called Miss Diablo III that was given to

make a 90 degree turn in twenty feet at speed. They'd be halfway down the straightaway before we finished the turn. When those boats started coming out onto the race course we had our hands full."

"My favorite race was when they held the World Championships in Lake Havasu. It was a marathon race that was just perfect for this hull. It was a four mile long course with one right hand and three left hand turns. We ran for two hours on day one and four hours on day two. We'd just come in for fuel every hour and a half. I won that race a few times as well as the Parker nine hours race."

The Legacy Continues The Switzer Wing has withstood the test of time and developed quite a following. SwitzerCraft has it's own web based message board and occasional boat owner gatherings around the country. Thankfully there are also some fanatical fans that will spend their time and money to ensure that Wings live long into the future. First Bob Valachovic painstakingly restored Miss Diablo III and more recently Rich and Darren Luhrs brought a twenty foot Wing back to life to fly another day.

Rich and his son Darren bought their Wing a few years ago and after a complete rebuild by Joey Imprescia of East Coast Marine the boat is ready to hit the water. Only this time it has a pair of Mercury's modern monster two cycle marvels on the transom that might prove to be a bit too much for the hull to handle.

Rich what started your fascination with Switzer Wings? "I raced against them during the Switzer glory years when they were simply untouchable. I drove a Power Cats back then. It was a twin engined fiberglass hull with symmetrical sponsons. The Power Cats had "tunnel tabs" as well but without the tunnel width and air compression we never achieved the speed that the Wings achieved. In subsequent years we went after the Wings with twin engined vees like Glastrons Allisons and Eltros. Those vee hulls could out turn the Wings and take the ground swells that we encountered during long point to point marathons.

If Wings had an Achilles heel it was large ground swells and big wakes... anything that would fill the tunnel with water would slow it down and stop the flight. It took tremendous driving ability to truly make a Wing fly to its full potential. Thank God for people like Kenny Kitson, Dave Craig, Jim Mertens, Johnny Bakos, Ernie Threlkeld and Jan Schoonover. From the day I saw my first Wing in a magazine article I wanted to drive one...to this day I'm still awaiting my turn."

Did the Switzer design influence you when you built Shadow and Conquest racing catamarans? "The Wing design was always in the back of my mind while we were making our initial drawings. George Linder and I used bits and pieces of Wing technology while building our offshore cats. Did you ever notice that Conquests had a single step and on some versions air traps?"

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him by Mercury in 1975. He runs it once or twice a year at SwitzerCraft get togethers. In his day there was no driver more feared on the racecourse than Kenny Kitson.

Kenny what was it like to race the Switzer Wings? "I loved racing those boats and they helped me to earn several speed records. I used to fly those Wings so high going through the traps that the engines barely got enough water. Everyone else had the engines trimmed so that the front flew about five inches above the water and the rear was three inches above the water. I liked to have the engines tucked under so the back was higher than the front. I found it to be more stable and just as fast."

I heard the Wings were difficult to turn. how did you do it? "Getting around the corners was the tricky part of racing a Wing. I'm not sure if anyone else did it like this but I'd come to the corner take my foot off the flap pedal slow down and let the hull hit the water a few times then start working the throttles. I had the throttles lying sideways on the floor next to me. I'd use my fingers to split the throttles and either slow down the inside engine or speed up the outside engine. With the engines spaced so far apart it really helped the hull get around the corners. Once I got to the last pin I'd hold down the flap and bring the engines back to matching RPMs."

"Going down the straights we really had to watch the cross winds. If the hull was flying and there was a strong cross wind it could really twist you around. The Wings loved running into a head wind."

Did you win every race you entered? Who could beat you? "We won an awful lot of races with the Wings but we really had a tough time negotiating tight turns. When the tunnel hulls started coming out they could

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I guess you never got the idea of flying over the water out of your mind? "It was always my dream to fly a Wing so it was only natural that I would undertake a search for a Wing that my son and I could enjoy. After a year search, an opportunity to purchase one materialized one day on the Offshoreonly.com website. We'll be eternally grateful to Fred Cecil from Trick Marine for spotting it and alerting me immediately. Our hull and Bob Valachovic's both came from the same collector

Imprescia and multi time OPC National champion John Sherlock. Since we began talking, John Sherlock found and purchased a Wing of his own. He found it up on a boat dealer's sign over a highway. John works at Mercury's X-Site and had one of the Merc gurus run some projections for our boat. He came back with estimates showing that our Wing is probably the fastest outboard hull on the planet (current record is _____ mph) at least on paper. Given that the boat is a valuable piece of history and almost forty years old, I doubt that we'll ever find out how fast it really is. But let's just say that the potential is there to give Dave Scott a run for Budweiser's money."

How could this revolutionary technology seemingly disappear into the history books? "That is the magic question, given the amazing speed and safety record potential of the design, it's a shame that no one picked up where the Switzers left off. This sort of proves my sometimes controversial web (aka: T x) comments. The gist of which is that most hi performance boat designs are a derivative of something that is either commercially successful or "in vogue" at the time."

"Following all of the well deserved publicity that the Wing design has received lately, I'm pleased to say that there are a few projects emerging that will attempt to advance Bob and Dave Switzer's truly visionary designs. There are, as with all worthy projects, challenges that must be overcome such as to making the concept more suitable for the average driver. These designs have shown far too much potential to let the original design go to waste."

On behalf of all Extreme Boating fans, let me thank you for spending the time and energy to save this piece of history and I look forward to watching it run sometime soon. "I believe the Wing is a generation ahead of anything available today. I can only compare it to the original "Flying Wing" aircraft that came out of the Lockheed Skunkworks in the early '50s, only to lie dormant and unused for decades, until finally re-emerging with modern avionics and flight controls as the deadly B-2 bomber. This once shelved technology has gone on to eclipse all known stealth and performance envelopes." **Ron**

"The Wing will fly again"

-RICH LUHRS 2006



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in South Carolina. Jeff Buckley. As you might expect, forty year old race boats require tremendous restoration. I understand that Bob has invested well over _____ in the restoration of 'Miss Diablo III'."

Are there many Wings left? Do you expect to see more rebuilt? "I have created a listing of the remaining Wings and, at last count, there seem to be only _____ in existence. I have confirmed or seen ten of those. Sadly, none of the wooden prototype versions survived, but we are considering making a wooden replica of the original "Miss Skyway". At present, only one of the fiberglass versions is for sale, and the price on that one constantly increases."

Why did you opt for high tech monster motors instead of rebuilding the original Merc _____s? "After watching Bob and Kenny struggle with the restored power plants at the SwitzerCraft gatherings in Clayton, NY and Lake George two years ago, Darren decided that we should go with more modern power plants, and I agreed. We settled on a pair of Mercury's latest Formula One tunnel boat engines, making almost four hundred horsepower each. The huge horsepower wasn't actually our primary reason for purchasing these engines; we bought them because of their short midsection and lower units. The engines fit the hull perfectly. It will be interesting to see how almost eight hundred horsepower will make a boat perform that was originally designed when engines made a fraction of that output."

Thankfully, two of the best outboard setup people on the planet have pitched in to help bring our project to life: World champion offshore throttleman, Joey

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