

On the cutting edge of aerospace and club racing, F500 Racer Chris Huskamp comes from two worlds: racing and aerospace. In a recent interview, he highlighted their similarities, and even more surprising—the way that integral members of his support team bridge those two worlds.



FLYING *One Inch off the Ground!*

By David E. Kent

Photos courtesy Huskamp Motorsports Engineering and Wicks Aircraft and Motorsports, respectively.

Inside a narrow, high-speed turn affectionately known among as “The Kink” during the SCCA Runoffs at Road America 2009, Chris Huskamp had to make a split-second decision. Moving in excess of 120 mph toward a spun-out racer on the track, he knew there was no way to avoid hitting something, so he decided on the wall. These are not the types of days racers like to talk about; however, after a rebuild, he was again racing strong...due largely to his two teams: the one at the track and the ones that help with parts, fuel and racing gear.

Speed...A Part of Both Worlds

Chris Huskamp has two careers. One is as an Associate Technical Fellow with Boeing Research and Technology near St. Louis, MO. Huskamp holds numerous patents and has worked on projects supporting Boeing’s 787 *Dreamliner* and F/A-18 *Hornet*—and on something closer to the ground but still fast and aerodynamically configured—his own F500 racecar.

At Boeing, Chris implemented a key technology that allows the manufacture of flight-quality parts, a layer manufacturing process with precisely crafted digital models known as Rapid Prototyping (RP).

In 2003, he was introduced to the world of professional motorsports through a joint venture between Boeing and Renault Formula One, focused on RP. After five successful years of working with Renault's Formula One, including two world and drivers championships, Huskamp arrived back home to the United States with a strong desire to race. Soon afterward, he joined the Sports Car Club of America (SCCA) and purchased his own F500 racecar.

Crew Chief Leon Mitchell Discusses Strategy with Driver Chris Huskamp at Road America 2009

Shortly after the purchase, Bob Washington, a good friend and Boeing liaison engineer who not only performs hard-core repairs on Harriers, F-15s and F/A-18s



but also builds and flies his own experimental aircraft—mentioned to Chris that he ought to stop by a place called Wicks Aircraft in Highland, IL for his car parts.

Racing suits, tires, fuels, oils and other specialized support products applicable to the racing industry are vital to racers. No less so are the component parts and structural elements that make up the cars they design, build, drive, repair and upgrade. Bob, intimately acquainted with the hostile, high-stress, high-temperature environments inherent in both aviation and racing—and a regular Wicks customer—knew that with Chris ripping around a track at aircraft speeds, his car would need the same high degree of resilience, ruggedness and mil spec quality inherent in aviation parts. Nothing less would do. Because demand exists in both of Huskamp's careers for quick access to a variety of lightweight, impact-resistant materials able to operate optimally and reliably under extreme stresses and conditions, he was eager to work with a supplier “right down the street,” rather than halfway across the country.

Wicks Aircraft, now Wicks Aircraft and Motorsports, has long been known as the premier Midwest aircraft parts supplier with knowledgeable personnel. Going on Bob's advice, Chris visited them and was shortly ordering regularly from them, convinced that the combination of parts availability and specialized knowledge was a winner. He'd already seen similarities between aviation and motorsports, and understands that the same high-quality aircraft parts are the ticket for his racing as well.

Even though Chris is not involved with aviation outside of Boeing, his car “*flies* one inch off the ground,” often at speeds in excess of 130 mph. In a recent interview, he explained, “We're traveling around the track at speeds similar to those of most propeller-driven General Aviation aircraft. The main difference is in which way the lift works—but the electrical connectors, mil spec switches, and fasteners are all transferable technology—everything has to work perfectly in harsh environments while being subjected to nasty vibrations. It's something you see in aviation all the time.”

His racing career got moving fairly quickly and Chris formed a company around his work, explaining, "There are three components of the team I run with: One is the company that I run, Huskamp Motorsports Engineering, which, at this point, focuses on design work for parts on small formula and other race cars. With an emphasis on weight-shedding, it is obvious that my experience with aerospace ties right in. Utilizing high-tech materials and techniques on a level that's acceptable and affordable to the racer is what we aim for. And that's one of the places where Wicks ties right in—they're my single stop for our raw materials and hardware in that respect. They maintain stock of specialty aluminum, chromoly tubing, CherryMax™ flush rivets, flush washers for smooth aero surfaces, Cleco™ fasteners to hold the body in place for riveting, plus Camloc™ and other AN/MS fasteners for structural joints. You name it, they carry it."



Lightweight and Strong

"As a simple example," he continues, "most people have more excess weight in fasteners on their cars than they could ever imagine. For instance, if you look at the lifting capacity of an AN10-32 bolt, you can darn near lift a Mini-Cooper off of one. Obviously there are fatigue and impact issues, but in static load, that's the type of load capacity that is available in a small, 3/16ths inch, aircraft-grade bolt.

"Wicks carries all the optimal hardware: the right-sized bolts (with a range of grip lengths), and AN "Kay" (Jet) nuts, which solve the weight problem. We also use significant amounts of carbon fiber and Kevlar™ in the body. I can buy the cloth, the epoxy system, and vacuum bagging materials from them as well. We also buy the specialized tools there for jobs that use these materials. We're employing tools and techniques that the aviation guys have been using for years. There's very little that we can't make use of in racing, so the parts list is long."

After Chris hit that wall at Road America, Wicks had parts shipped overnight to the team, and they rebuilt the next day. He explains, "According to our Crew Chief, Leon Mitchell, the stock of fasteners, hardware, resin and composite materials from Wicks that we carry made all the difference in the rebuild."

The Bottom Line

Chris summarized with a list of significant factors that he believes give their team a winning edge, "I have to say too, that for other racers, they may be wondering how all

this ties together and how they can work their program like we are. The bottom line—one of the greatest benefits of working with Wicks is that they're so knowledgeable. I get exceptional help, as in, 'Hey, I got this problem, and I am wanting to do this...' And they always have the best solutions. They are technically savvy with regard to their products and subsequent use. They can and do help us work through issues and come up with solid solutions. 'Stock' classes like the rules we operate under don't necessarily have stock ways of doing things, so you have to be innovative in coming up with ways to be better, faster, stronger. And we have that latitude, but their people work on solving the issues we come in or call with."

Chris Huskamp leading the pack around a turn at Road America, September 2009



Like other support companies who work with the race teams on an ongoing basis, Wicks works alongside these and other racing teams to provide innovative answers to each one's unique needs.

Both Chris and team colleague Jack

Walbran raced at Road America in the 2009 SCCA National Runoffs. Because so much of what has been engineered into Chris's car applies to Jack's as well, Wicks continues to play a critical, baseline role as their supplier and sponsor.

In 2008, Chris Huskamp and Jack Walbran accomplished a 1-2 finish in the Midwest Division of the SCCA, with no squawks or DNFs for either one of the guys in SCCA Nationals during the entire race season. Both drivers attribute this to their primary and support teams, and the integral roles that aircraft-grade, maximum-performance parts play in their respective cars. Despite a rough outing at the Runoff, the duo repeated the 1-2 Divisional finish in 2009, which is a good indicator of things to come.

The benefits of quick access to parts like these cannot be understated. "Wicks does a fantastic job with quality, knowledge and stock of parts on hand. What a benefit they are," Huskamp concluded. "Those guys always have the best solutions."