

# New-age "Wright brother" wins award for wing design

by Jo Ann Lloyd

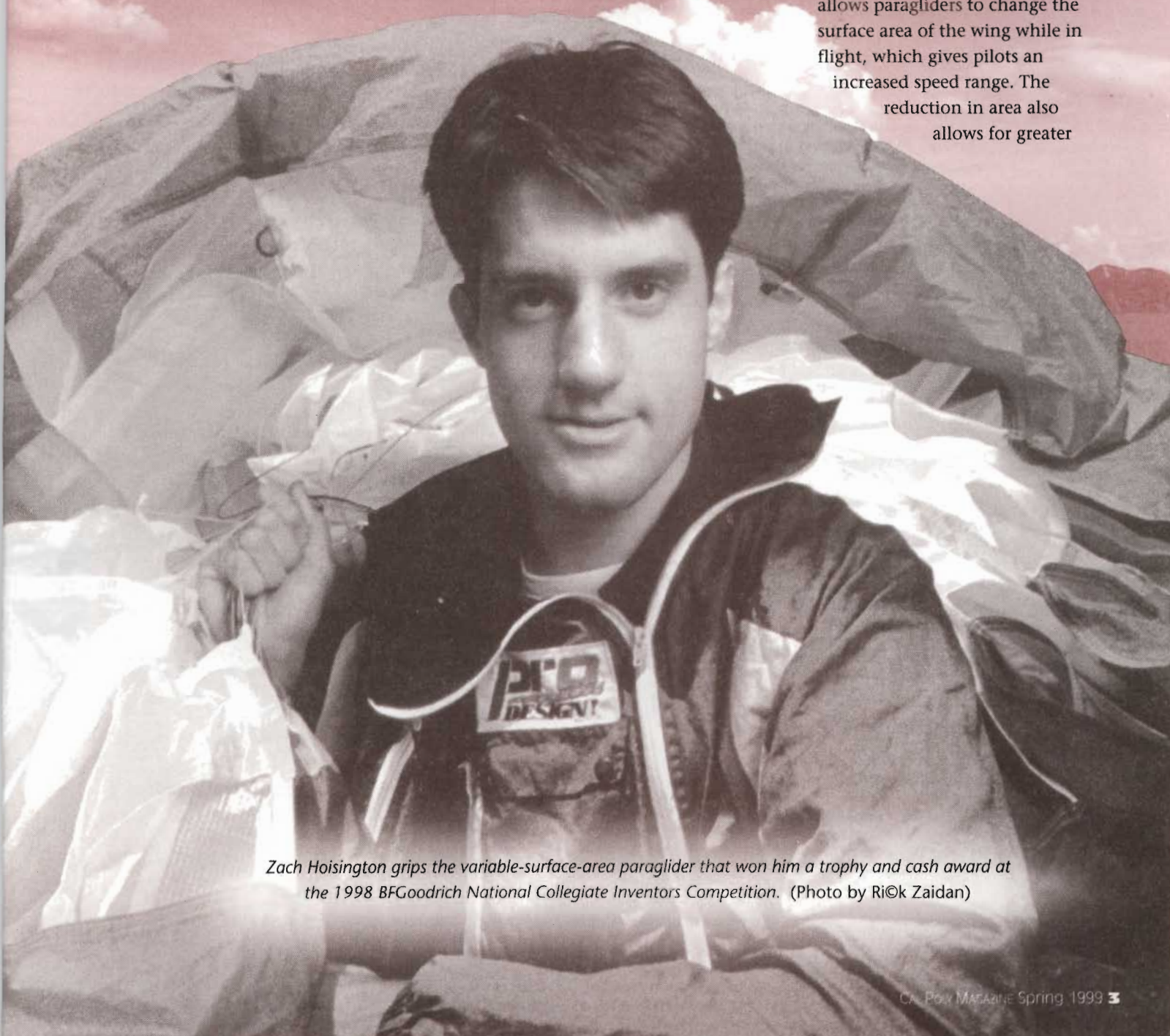
**A**eronautical engineering senior Zach Hoisington has lofty goals.

And, according to his senior project advisor Professor Russell Cummings, he also possesses "an incredible amount of inventiveness, basic intuition,

and resourcefulness." Those qualities — along with a passion for paragliding — led Hoisington to invent an award-winning design that improves both the safety and performance of long-distance paragliding.

Hoisington was one of three undergraduate winners in the 1998 BFGoodrich National Collegiate Inventors Competition. He received \$3,000 and a trophy for his "variable-surface-area parafoil" (V-SAP).

Hoisington's V-SAP design allows paragliders to change the surface area of the wing while in flight, which gives pilots an increased speed range. The reduction in area also allows for greater



Zach Hoisington grips the variable-surface-area paraglider that won him a trophy and cash award at the 1998 BFGoodrich National Collegiate Inventors Competition. (Photo by Ri©k Zaidan)



efficiency  
and stability at high  
speeds.

"Originally, paragliders could only move right or left," says Cummings. "There was no way to speed up or slow down, other than going down. Hoisington's goal was to devise a way to control the speed of the parafoil while continuing to glide."

The 22-year-old Hoisington has been paragliding nearly half his life.

"When I was 12, my father and I started flying together after seeing someone do it at a ski resort. We were both excited about trying it."

When asked about the advisability of taking up such a risky sport at such a young age, Hoisington admits with a smile, "It doesn't sound like a rational idea."

Although the idea might not sound rational, Hoisington is. Among other things, he is a very sensible young man with the ambition and tenacity to succeed.

Says advisor Cummings, "Zach is one of those rare students who is both imaginative and technically capable. As you might think, engineering students are

often very good at the analytical aspects of their work, but sometimes not as good with their creative abilities. Zach combines a solid understanding of the physical principles with incredible creativity."

Hoisington's main reasons for inventing the V-SAP parafoil were to improve the performance of

"He is a never-ending source of ideas," says Cummings. "I likened him to the Wright Brothers, who also had that rare combination of creativity, analysis, and experimentation. Zach truly learns by doing!"

Although Hoisington himself sometimes uses the V-SAP, he's not sure he'll be able to market it. "The idea is still being experimented



long-distance paragliding and improve the sport's safety. He began designing the parafoil two years ago — first testing the designs while standing on the ground in strong winds. Later he tested the V-SAP in flight.

*The V-SAP paraglider with its wings open (left) and contracted (right), enabling the pilot to change direction while in flight. (Photos courtesy Zach Hoisinger)*

with," he says.

"It needs to be flight-tested more."

It's possible that the invention won't ever be marketed for paraglider enthusiasts, Hoisington says. So he is exploring its potential in an entirely different area — space vehicle recovery.

"There's an exciting new field that is using parachute-type systems to recover space vehicles," says Hoisington. "The parachutes help guide the vehicles safely back to Earth. My invention could be used to help space vehicles land safely by giving them more speed and range and by allowing them to open up slowly during their descent. There's still lots of work to be done in this field, but I'm

hoping my invention will have application there."

Hoisington, whose hometown is Redding, says his lifelong love of flying dates back to early childhood. He remembers building paper airplanes at five. "I knew then that designing airplanes would be a fun thing to do, and I never really changed," he says. "I always liked things that flew."

After graduation, he would like to work for an aeronautical company in design — hopefully in aerodynamics.


When deciding on which university to attend, Hoisington visited aeronautical engineering

departments

at several schools. He first heard about Cal Poly in 1989, when students made international headlines by being the first to fly a human-powered helicopter.

"I liked Cal Poly's hands-on teaching methods," he says. "I think we have really excellent faculty in the Aero Department. Dr. Cummings has a great approach to teaching."

Hoisington's parafoil design is certainly not the last of his creative endeavors. He is involved in designing the university's aerodynamically built solar-powered vehicle and is building a hydrofoil bicycle that can travel on land and water.

"He is very personable and full of fun," says Cummings. "I saw him trying out his hydrofoil bicycle this afternoon in the rain. He was soaking wet with a big smile on his face." 

*Editor's Note: As of press time, Hoisington had won first place at the AIAA Region VI Student Conference and at the AIAA National Student Conference in Reno, Nev.*

