

## 6

## SPACE HARDWARE OPTIMIZATION TECHNOLOGY INC.

NASA business launches company; private sector ventures now are likely

BY SUSAN McDONALD  
BUSINESS FIRST CORRESPONDENT

Just working with the space program is a childhood dream come true for Mark Deuser and John Vellinger. Having a rapidly growing company is icing on the cake.

Deuser and Vellinger formed Space Hardware Optimization Technology Inc., better known as SHOT, in 1988 specifically to work with the National Aeronautics and Space Administration. The company, which develops biological and medical systems used in space research, is now expanding into private-sector applications for the technology it produces.

SHOT's founders are bona fide space junkies.

"The excitement of space intrigued us even during our early childhood," said Vellinger, who considered a career as an astronaut until a medical problem intervened. He now serves as SHOT's vice president and chief operating officer, while Deuser is president and chief executive officer.

The two men met as a result of a space-based medical experiment to study the effects of weightlessness on the development of chicken embryos.

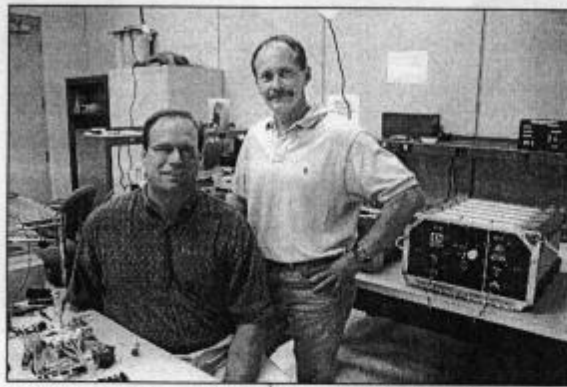
Vellinger had originally developed Chicken Embryogenesis in Microgravity, or CHIX in Space, as an eighth-grader.

Later, as an engineering student at Purdue University, he continued to pursue the experiment, securing funding from KFC Corp. to place it on a space shuttle.

He met Deuser, then an engineer for KFC in Louisville, when they worked together on the CHIX experiment, which was aboard the ill-fated Challenger shuttle flight that exploded shortly after launch in 1986.

Deuser and Vellinger had trained teacher Christa McAuliffe to run the experiment during the flight and were in Florida to watch the launch. They were disappointed by the loss of the experiment, but "our project paled in comparison to the human tragedy," Vellinger said.

The experiment flew again in 1989 aboard the shuttle Discovery, and the



John Vellinger, left, vice president and chief operating officer, and Mark Deuser, president, formed Space Hardware Optimization Technology Inc. to work with NASA.

BUSINESS FIRST • FILE PHOTO

100%  
to  
200%

results — the chicken embryos died — "prompted us to propose to NASA that we could build a new piece of equipment that would help us better understand the results of the first one," Deuser said.

SHOT's first home was a couple of rooms in a vacant Southern Indiana motel owned and renovated for them by Deuser's father-in-law. Deuser is a native of Southern Indiana.

"When John and I started the business, we were not flush with cash, so we moved into those offices to get the business out of my basement," Deuser said.

They funded the company's launch with personal assets, but neither knows the exact amount of their investment because "it was pay as you go," Deuser said. They deferred their salaries for the first two years while living off their personal savings, he said.

Their method of financing the startup was not by choice, however. Several banks turned down their loan requests, said Vellinger.

"A lot of them looked at us like we were crazy," he said.

Today, SHOT operates from a two-story building in Greenville, Ind., that houses laboratory and office space for the company's 75 employees, an increase from 50 last year.

Deuser and Vellinger will not divulge SHOT's revenues, but said the company has grown exponentially since 1997. About 95 percent of their business now is done for NASA, but its NASA work grew gradually at first, said Deuser.

"We would get a small contract to develop a concept for a new piece of equipment, then when that would go over well, we'd get another contract to build a prototype of it," he said. "We were just happy to be getting some work from NASA."

One of their greatest challenges has been finding the right blend of employees, said Deuser.

"We've worked hard to build a team of employees who work well together and have the right technical expertise, personalities, motivations and interpersonal

skills," said Deuser, who credits the expertise of the employees for SHOT's success.

A hand-picked engineering staff includes individuals with space experience as well as those with specialized innovative design skills. The staff also is quick to apply what it learns from each flight to improve upon existing hardware designs and/or to create new ones, he added.

The company grew very slowly for its first eight years and had a total of six employees in 1996. But then employees and revenue began almost doubling each year.

As a result of consistently delivering high-quality, reliable equipment on schedule and within budget, SHOT has earned a reputation with NASA as a dependable developer of innovative space hardware, Deuser said.

"Because that reputation grows exponentially with each successive space flight during which SHOT's products are used, the company is now winning an increasing number of contracts to develop more comprehensive equipment, including three payloads that are manifested to fly on early missions to the International Space Station," he said.

Deuser and Vellinger now are making plans to translate some of the technology they have developed for NASA into private-sector applications. For example, some of the biomedical technology SHOT has produced for use in space also can be used for separating cells and cell particles on the ground, said Deuser.

"We think moving into the private sector is going to allow us to sustain the growth we've had," he said.

Does he see the company going public? Future growth opportunities may require SHOT to raise additional capital, said Deuser, and an initial public offering is one of several sources of capital that the owners may consider in the future.

"Raising capital will become increasingly important as SHOT expands into private-sector markets."

©2000 Porsche Cars North America, Inc. Porsche recommends seat belt usage and observation of traffic laws at all times. Performance specifications for competitive purposes only.



The new Boxster S. When you buy one, we suggest you pick it up on a Friday.

Two seats. Top open to the full-blown romance of the road. And a new 250 horsepower Porsche engine. Lifetimes are spent dreaming about a car like this. Surely your first drive home should last a very long weekend. Come in to Blue Grass Porsche soon and see for yourself.



Blue Grass MOTORSPORT  
PORSCHÉ

4520 Shelbyville Road  
(502) 895-5295  
www.bluegrassauto.com  
info@bluegrassauto.com

Sales Hours: Open Mon-Fri, 9:00-6:00; Sat, 9:00-6:00 Service Hours: Mon-Fri, 7:30-6:30; Sat, 8:00-1:00