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Launch pad

U.S. grant program helps small Indiana firm develop hardware for NASA flights

By Wayne Tompkins

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Space shuttle launches don't garner the attention they used to, but for a Southern Indiana company, the orbital flights remain a valued platform for research.

Space Hardware Optimization Technology Inc. of Greenville, better known by its acronym, SHOT, has just retrieved from the latest shuttle mission its bevy of 36 Japanese quail eggs.

The eggs were sent into orbit to study the effects of space flight on embryonic skeletal development. SHOT made the incubator that carried the eggs into space and back.

SHOT is one of hundreds of companies benefiting from a federal grant program without which the quail eggs would never have gotten off the ground.

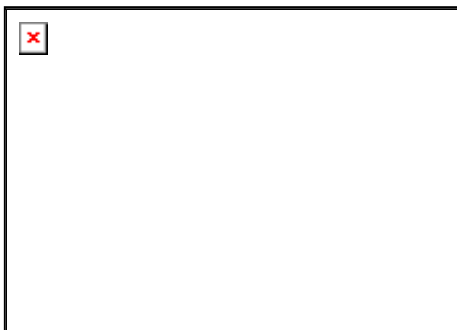
The Small Business Innovation Research (SBIR) program awards more than \$1 billion a year to small and start-up businesses performing innovative, high-risk research and development, with the goal of bringing those products to market.

As a NASA contractor, SHOT has used the grants to design, build, test and integrate biological and medical research hardware for six shuttle missions and is developing payloads for the International Space Station.

That hardware is used by customers doing research both in space and in laboratories. Astronaut John Glenn performed experiments on his 1998 shuttle flight using SHOT hardware.

SBIR, enacted in 1982, works with 10 federal agencies, including NASA, to address a classic small-business problem: promising ideas but little money to develop them.

"NASA SBIRs have been very good to us," said Mark Deuser, SHOT's president. "Part of the reason . . . is because we understand our NASA customer, which is an important part of getting a grant."



Mark Deuser, president of Space Hardware Optimization Technology Inc., showed equipment developed for use on space shuttle flights with help from federal Small Business Innovation Research grants. The machine at the top incubates eggs; a more recent experient used Japanese quail eggs.

(Photo/Patti Longmire)

The company has received about \$30 million in SBIR grants over 10 years -- the company's biggest source of money.

Eligible businesses must be U.S. owned and operated, be for profit, have fewer than 500 employees and employ a principal researcher.

What frustrates many small-business advocates is that few companies know of the program, especially in the Midwest. While Indiana firms received more than \$4.3 million in grants in 2000, for example, that ranked the state only 33rd in the country. Kentucky placed 39th with about \$2.7 million in SBIR grants.

Meanwhile, tech-savvy California and Massachusetts, with \$215 million and \$164 million in grants, re-spectively, greatly outpaced other states.

"So often, people don't know that this stuff is available," said Jerry Wheat, a business professor at Indiana University Southeast and faculty associate at the school's Regional Economic Development Resource Center. "We've helped some companies learn about and then understand in some reasonable depth what they need to do to apply."

Kris Kimel, president of the Ken-tucky Science and Technology Corp., a nonprofit company that develops strategies to foster high-tech re-search companies, said interest in SBIR is picking up as Kentucky "shifts to a more knowledge-based economy."

As a result, "there are more people and companies that have the wherewithal, the capabilities and the intellectual property to pursue these things," Kimel said. "We've certainly got a lot of area to grow."

Just because the SBIR program isn't well-known doesn't mean competition for the money is not intense, Kimel said.

"That's good, because it means the standards are high. What we want to be doing in Kentucky is supporting and investing in successful companies and successful projects," Kimel said.

"It takes a certain amount of persistence for an entrepreneur or a faculty member to go through the process and be successful."

Kimel said the challenge is not so much mastering government paperwork as it is "being able to clearly articulate your proposal and your project and having done sufficient background work to communicate and demonstrate its feasibility."

The SBIR program contains three phases:

- 1 Phase I, start-up. Awards up to \$100,000 are given to explore the technical merit or feasibility of an idea or technology.
- 1 Phase II, with awards of up to \$750,000 to expand Phase I results. Research-and-development work is performed and the developer evaluates the commercial potential of products. A company must have received a Phase I award to qualify.

Phase III, moving a Phase II innovation from the lab to the marketplace. No SBIR funds support this phase. The small business must find private money or other federal money.

Wheat says SHOT is a perfect example of the sort of enterprise SBIRs were meant to benefit.

"They're not exactly like the old-fashioned garage tinkerer, but they are like the modern-day version," Wheat said. "They had a do-zen other neat ideas and kept plugging away at it.

"Every time they came up with an idea, they'd apply for one of these SBIR grants," he added. "They did well getting those grants, and ultimately it was in the several millions of dollars that they were able to get."

Government announcements and solicitations for SBIR grants can be found at the U.S. Small Business Administration's Web site, www.sba.gov/SBIR.

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