

The Space Shuttle Discovery housed Techshot's very first innovation – "Chix in Space." The payload was sent into space on the STS-29 mission March 13, 1989.



TECHSHOT, INC.

What is the best way to send chicken embryos into space? Eighth grade student John Vellinger asked himself this very question and soon started building a science fair project to find the answer. This project would not only gain the attention of NASA, but would spawn a company that continues to bring cutting edge solutions to the world of space travel. Vellinger, who would eventually become the Co-Founder of Techshot, entered his concept of a space-based incubator capable of caring for growing chicken embryos, and took home the top prize. Since that fateful science fair project over 30 years ago, the Indiana-based company has been developing complex payloads for microgravity research professionals. Techshot devices have flown aboard parabolic-flight aircraft, sub-orbital rockets, space shuttles, the SpaceX Dragon and are currently in use at the International Space Station (ISS).

PHASE III SUCCESS:

Yearly revenues of \$5-8 million

AGENCIES

NASA, DOD (ARMY, NAVY, AIR FORCE, MARINES), DARPA, NIH, NSF

SNAPSHOT

Through a new Phase III contract with NASA, Techshot will become the operators of equipment permanently housed aboard the International Space Station, including an X-ray machine and a high throughput device for conducting research on plants and cell culturing.

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The success of the company can be attributed to both the remarkable tenacity of Vellinger and Co-Founder & CEO Mark Deuser, as well as the initial seed money provided by NASA when they needed to get off the ground.

Let's rewind a bit. January 28, 1986. The day was set to be a milestone for Vellinger and Deuser, who were situated in the viewing area at Cape Canaveral, Florida, as the Challenger launch was being watched by the world. For the two young men, this was the day their innovation "Chix in Space" – that same science project John had been perfecting for the past 5 years – would be sent into space. Instead, 73 seconds after liftoff, the disaster that transpired shook the entire world. The devastating loss of the crew and the shuttle was a huge blow to the space industry, and sent the two men back to their respective work. Vellinger was a student at Purdue, while Deuser had been working as an engineer for the Kentucky Fried Chicken headquarters in Louisville, KY. Although the promise of their technology flourishing in space seemed to vanish with the orbiter, Vellinger and Deuser continued to develop their incubator with the promise that they would get a chance to re-fly the payload. On November 1, 1988, they decided to form their company, Techshot, and prepared to send their new and improved "Chix in Space" on the space shuttle Discovery. The STS-29 mission, along with the Chix payload, was successfully launched and executed on March 13, 1989. Techshot was in business.



LEFT: Techshot's Analytical Containment Transfer Tools (ACT2) being packed up and sent out to NASA for launch to the International Space Station (ISS) in June 2015.

RIGHT: Payload Specialist John Glenn works with Techshot's ADSEP hardware aboard Space Shuttle Discovery on STS-95. Photo courtesy of NASA

Not long thereafter, the company learned of the SBIR program.

"It was a great opportunity to satisfy some of NASA's interests and continue to conduct research and create an opportunity to really launch the company," explains Rich Boling, Vice President of Corporate Advancement. "Throughout the program, we were then able to identify military needs and other potential applications for our technology."

Techshot went on to develop its Advanced Space Experiment Processor (ADSEP), which operates in low gravity. The technology provides cell culturing and biphasic, electrophoretic, and magnetic separation capabilities. It shot to fame when Astronaut John Glenn was captured using the technology aboard the Space Shuttle Discovery STS-95. Because of the success, Techshot spun off IKOTECH LLC to further develop the technology, and is today being used in stem cell and diabetes therapeutics.

Another recent spinoff is Techshot Lighting, which produces LED tent lighting for all branches of the military. Other solutions include mechanical, electrical, and software solutions that offer widespread defense applications. For the aerospace industry in which it got its start, Techshot continues to develop microgravity research, processing and analysis solutions.

"We essentially created an innovation engine from the SBIR program," added Boling. "Had we not had help developing some of that risky technology, our products could never have been built. To have that agency help is a really valuable tool, and other small businesses can use that as well."

Today, Techshot is experiencing unprecedented growth. Through a new Phase III contract with NASA, they will become the operators of equipment permanently housed aboard the ISS, including an X-ray machine and a high throughput device for conducting research on plants and cell culturing. Through a payload operations control center on the ground, Techshot will have a staff that mans these consoles to communicate directly with the astronauts using its equipment.

Techshot occupies a 22,000 square foot facility in Greenville, Indiana, approximately 10 miles north of Louisville, Kentucky. The company employs 40 team members, most of whom are mechanical, electrical chemical or software engineers. The high degree of talent graduating from local universities such as Purdue University and The University of Louisville ensures a continued pipeline of employees for the company. Everything the company manufactures, from space hardware, to lighting, to circuit boards, is made in-house, or in the state of Indiana.

"As a small business working so closely with NASA, it's interesting that we're not located in Houston, or in Florida where NASA has operations," says Boling. "Yet we are more capable than ever to deliver solutions."