

A Greenville company is making products that are out of this world – literally! Techshot, located near Galena on US 150, has been contracted by NASA to build a Bone Densitometer that can be used on the International Space Station.

The \$4 million project is expected to be completed and in space somewhere around the end of June.

Techshot has not been hired to start from the ground up with making the densitometer, but they have been tasked with taking a working densitometer and making it fit in a case where it can be used in the space station.

“We are taking an existing earth-based device and flyablising it,” said company Vice President Corporate Advancement Rich Boling. “Everything else we’ve done has been more this doesn’t exist anywhere else. The space station was designated in 2005 as a national lab and they are trying to outfit it with things that a lab on the ground would have. A lab on the ground would have an X-Ray machine and that’s why we are flyablising one.”

Boling did say very few of the original components of the land-based bone densitometer were able to be used.

“We had to essentially redesign or replace everything,” Boling said. “Partly because they are too delicate and partly because of electro-magnetic interference. This is the first X-Ray source on the station, period, so there are extra tests and precautions that NASA wants to go through before they put it in space.”

The purpose of the bone densitometer is to give scientists an accurate reading of what happens to bones in a near zero gravity environment.

Studies have shown that Astronauts bones are impacted from being in space, but this will allow scientists to have more accurate data.

Techshot is building one whole unit and many of spare parts.

“We’ve designed it to be really modular, which the earth-based unit is not designed to have parts replaced easily,” Boling said.

This is not the first project that Techshot has sent into space. In fact, Techshot’s beginnings can be traced back to a NASA experiment nearly 30 years ago.

Techshot Co-founder John Vellinger entered a science fair competition sponsored by the National Science Teachers Association and NASA in the early to mid 1980s.

Vellinger’s concept of a space-based incubator capable of caring for growing chicken embryos was well received not only by the fair’s judges, but also by the university and space agency scientists who had taken notice of his entry.

According to Techshot's Web site, for several years Vellinger continued to improve his concept.

Then in 1985, while a freshman at Purdue University, Vellinger was notified by officials with NASA's Shuttle Student Involvement Program that a corporate sponsor had taken an interest in his project.

Kentucky Fried Chicken (KFC) had agreed to help him build a flight-qualified incubator and it would be launched aboard space shuttle Challenger on mission STS-51L.

With the January 1986 launch just eight months away, Vellinger reported to KFC headquarters in Louisville, and began work on the payload with company engineer and eventual Techshot co-founder Mark Deuser. Though developing spaceflight equipment was new to both of them, they worked quickly to build and flight-qualify an innovative system for incubating 32 growing chicken embryos in the microgravity environment of space.

Vellinger and Deuser trained Payload Specialist Christa McAuliffe and her back up, Barbara Morgan, to maintain the unit, dubbed "Chix in Space" by KFC.

Deuser was one of the last inside Challenger when he personally checked on the operational status of the device prior to shuttle's launch on January 28, 1986.

What happened 73 seconds after Challenger's 11:38 a.m. liftoff stunned the world. Following the the tragic loss of the crew, the orbiter and the Chix payload, Vellinger returned to student life at Purdue University and Deuser continued his work developing custom equipment for KFC restaurants.

But it wasn't long before they got the call for which they'd hoped. NASA and KFC would give the pair another chance to build and launch their payload.

The birth of Techshot came in November of 1988. Word was Deuser and Vellinger were going to get another shot at the "Chix in Space"

In March of 1989, more than three years after the Challenger disaster, space shuttle Discovery carried the now new and improved incubator aboard its mid-deck during mission STS-29.

Vellinger and Deuser would incorporate and see other examples of their custom space research facilities launched aboard five more shuttle missions, three suborbital rocket flights and several sorties of parabolic flight aircraft.

Besides constructing the hardware, Techshot also has provided payload integration services for its space missions.

Today Techshot has 25 team members, most of whom are mechanical, electrical, chemical, or software engineers.

Several others are technicians or scientists, representing a broad range of disciplines.

In addition to the out of this world payloads, Techshot does work for the military and for commercial customers.

“It’s the NASA part of us that gets the most headlines,” Boling said, “but we do a lot of other stuff.”

Boling said usually Techshot is hired to create something that exists only in the inventor’s mind.

“A commercial customer hires us, or a start-up hires us to take what has been in their head and make it a real functional thing that can be handed off to a manufacturer who can make a bunch of them,” he said. “That to me is the longest yard in tech development is just going from that napkin sketch to here it is and it works.”

One of the latest military projects is improving a stretcher system used to transport injured troops from the battle field.

Medical helicopters carry soldiers on a stretcher, but the current design acts almost like a trampoline, which is not good for injured internal organs.

Techshot’s design keeps the soldiers completely still no matter what the movement is around it.

A commercial project the company has worked on is the AutoBot app.

“It plugs into your on-board diagnostic connection on your car and allows you to control all kinds of functions with your smart phone,” Boling said. “Lets you know where you parked it. If you have a fault code, this device would send you an e-mail and tell you what is wrong with your car and a coupon to get it fixed. So if you are driving in Florida you will get a coupon that says hey, change your oil and here are the locations near you to do it.”

These payloads are just a scratch on the surface of the type of things being created in Southern Indiana.

Boling said Techshot plans to make a public announcement when the Bone Densitometer is completed and about ready to make its way into space.