AIR SUPPORT

Inflatable shelter business benefits from SBIR boost

More than 20 years ago, Glen Brown and Roy Haggard went on a journey to improve on a year's-old technology critical to the success of military missions, command centers, crisis-aid logistics and planetary landings: shelters.

The HDT Global Pipeline Bridge

Traditionally, military and civilian emergency support groups relied on metal or wood frame articulating structures that took a team to deploy and cover in canvas. But Brown and Haggard, with a little prompting from the military and the SBIR program, believed they could come up with a quicker, more efficient shelter solution that would cut down on required manpower without sacrificing durability.

Their solution? Air.

At first, the pair and their Lake Elsinore, California-based team were focused on building an air-filled bladder on which a special, proprietary braided material could be placed, forming a rigid beam. Under their newly formed company, Vertigo, Brown and Haggard termed the new technology AirBeam.

But it took a U.S. Army SBIR contract to illuminate the next steps forward for Vertigo.

"When they developed the technology, they weren't sure what application it would be used in. Then the SBIR came along and showed exactly how we could leverage it into a useful application," said Carl Pates, senior vice president and CTO for HDT Expeditionary Systems, Inc., which acquired Vertigo in 2009.

"It has a fairly special braid that goes over the AirBeam® bladder, which enables it to carry some high-level structural loads," Pates explained. "It's just like your car tire but can carry a large amount of weight. It made it perfect technology for shelters."

Not only were the AirBeam shelters structurally sound, they packed down into small crates and could be deployed or broken down in minutes under the supervision of as few as two individuals armed with an air compressor.

After the company's first SBIR contract in 1995, the product took off. Vertigo capitalized on the newfound success by building different size AirBeam structures, everything from micro versions two inches in diameter to a three-foot wide beam that can bear as much as 3,500 pounds as part of a deployable shelter that measures 82-feet wide. The shelters found a wide variety of applications, including as protective enclosures for helicopters as well as temporary hospitals.

"The SBIR program was really invaluable in getting Vertigo off the ground," Pates said... "Without it, the AirBeam technology wouldn't be where it is today.

"The AirBeam structure is a product we're very proud of. It's been revolutionary," Pates said. "The more time the military can spend in the fight rather than setting up shelters, the better it is for them."

But it's not only the military who has eyed Vertigo's technology. NASA, too, secured the use of AirBeam technology for one of its Mars landing missions, a milestone that Pates called a "moment of pride" for the company.

Carl Pates

Like the Army, NASA valued AirBeam technology for its weight, compact nature, and ease-of-use. But the agency also saw a benefit in the structures' lack of metal, which meant no electronic interference—a critical consideration when attempting to beam communication signals tens of millions of miles through space.

"Everything is going electronic, which means everything now has electronic signatures," Pates said. "So one of the benefits of the AirBeam is that, in eliminating the metal, we have eliminated electronic interference."

Photos Courtesy Carl Pates, HDT Global

The 40-foot, multi-function shelter, the 40 Series AirBeam, allows for multiple configurations and is designed to deploy rapidly with minimum personnel and support equipment. A smaller model, the AirBeam 2032, inset, is available in 13 different configurations.

HDT is now looking to take that advantage and leverage it even further. The company is currently hard at work developing a new proprietary material blend to encase the AirBeam structure that could potentially carry its own electricity (for lighting and powering shelters) or help mask electronic signatures (useful for preventing detection in a military setting).

"There's a lot of work being done in fabrics," Pates said. "We're trying to take this core technology and expand it to different applications."

Since acquiring Vertigo, HDT has expanded to include offices in Huntsville Alabama; Florence Kentucky, Cincinnati Ohio; and Swindon, in the United Kingdom—housing a total of roughly 1,000 employees. And Pates, who has been with the company for nearly two decades, said that he can't give enough credit to the SBIR program for the initial success of Vertigo, as well as the role it played in propelling HDT. "The SBIR program was really invaluable in getting Vertigo off the ground," Pates said. "It was the catapult that allowed the founders to take this technology that they had developed, plant this seed, and leverage it into how that tech could be utilized in a military application. Without it, the AirBeam technology wouldn't be where it is today.

"It's been huge for HDT because that AirBeam tech has been critical in growing our business as well," he added. "We've been able to grow it, it brought tremendous value into HDT and we continue to find new applications for the AirBeam technology today."

Vertigo, Inc. (HDT Global)

Modernization Priority: General Warfighting Requirements (GWR)

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