NEW SATELLITE COMMUNICATION TECHNOLOGY POSITIONED FOR WIDESPREAD USE

The Department of Defense now has access to a portable antenna with tracking capability that can be deployed in places where these capabilities are traditionally limited.

With support from the Air Force Small Business Innovation Research/Small Business Technology Transfer Program and the Air Force Research Laboratory, Alabama-based GATR Technologies developed a version of its inflatable antenna that can follow moving targets. Also known as GATR TRAC, the new antenna is relatively lightweight and has a low-stowage volume so it can be easily transported then quickly assembled.
Tracking antennas are used to communicate with satellites in non-geostationary orbits, as well as with other moving objects such as aircraft. However, legacy systems require a rigid dish with heavy-duty structural support making them difficult to use in many situations.

“The GATR TRAC system is a significant step forward over traditional satellite communication systems available today,” said Peter Ricci, an engineer with AFRL’s Information Directorate. “It affords the user the ability to easily transport and set the system up in remote areas where it once was logistically impossible.”

GATR, which was acquired by Cubic Corp. in 2016, has already begun selling the new product to military and commercial customers.

BEHIND THE TECHNOLOGY

Early SBIR/STTR support from multiple organizations – including the Air Force and Missile Defense Agency – originally helped GATR to develop 1.2 meter, 2.4 meter, and 4.0 meter inflatable antennas to be anchored to the ground and fixed on communications satellites in geostationary orbit. The company has sold hundreds of these to the Department of Defense.

With more recent support from the Air Force SBIR/STTR Commercialization Readiness Program and AFRL, the concept was refined to create the 2.4 meter GATR TRAC. It features mechanical and electrical components in a ruggedized base with support arms that allow the antenna to track satellites moving across the sky.

To develop an inflatable tracking antenna, the company had to overcome the challenge of grasping a large flexible ball-shaped radome and pointing it accurately under varying weather conditions. The design evolution included improving reliability, creating a simple user interface, and upgrading assembly and disassembly procedures.

GATR TRAC has been demonstrated to reliably track satellites in low Earth orbit and produce usable imagery as part of a deployable ground station. It also has the ability to track satellites in other types of orbits.

The product packs into four cases that can be checked as airline luggage or shipped by traditional package delivery services, which lowers its cost of use while providing greater overall flexibility to mission planning. Assembly takes approximately 30 minutes.

SBIR/STTR-BACKED SUCCESS LEADS TO BIGGER THINGS

The company has already logged more than $2.2 million in sales of the new tracking antenna to the military, as well as a commercial customer that supports the Department of Defense. With hundreds of projected CubeSats in low Earth orbit that will require tracking antennas, GATR TRAC is also well positioned for a potential boom in demand.

GATR’s recent successes – from its acquisition by Cubic to sales of its latest portable tracking antenna – are a critical benchmark for participants in the Air Force SBIR/STTR Program. This type of commercialization helps to bring down costs and get technology to the warfighter while spurring the economy through small business growth.