

THIN COATINGS PROTECT MILITARY INVESTMENTS AND FACILITATE SMALL BUSINESS GROWTH

UNITED PROTECTIVE TECHNOLOGIES (UPT), founded in 2002, excels at developing advanced coatings to increase durability, functionality, and the operational lifespan of devices and components in extreme environments. However, it took a One North Carolina Small Business grant to help UPT thrive in another type of extreme environment – the rough and tumble business world where young companies like UPT must find ways to navigate through the Valley of Death.

One NC Small Business Program grants work by matching federal Small Business Innovation Research (SBIR) grants, a key source of initial funding for many technology companies. UPT's SBIR story is unique, in that four months after winning its first Phase I SBIR, the Defense Logistics Agency (DLA) fast tracked it to a Phase III commercialization grant due to an immediate military need for the UPT product.

Founder and Chief Technology Officer Brent Barbee described the opportunity and challenges that came with this good news. "Nine months from the award of the Phase I we had prototypes on an aircraft going through testing. We had to quickly understand the technology and how it was going to work and get manufacturing readiness level up to the point where we could make it."

Despite this early success, the military's needs changed and UPT had to create a funding strategy that would be sustainable long-term. No company can avoid the Valley of Death, but SBIR grants and matching funds like those from the One NC Small Business Program do provide some protection for companies like UPT. SBIR grants allowed UPT to experiment with changing the chemistry, tooling, and build process to develop new coatings that are customized for both military and commercial customer needs.

UPT's primary product is a carbon-based nanocomposite film coating that is diamond-like in hardness, while also being flexible enough to bend without detaching from the part it is designed to protect. Importantly, it allows parts to last up to fifty times longer than alternative coatings. This combination of properties is invaluable for a wide variety of industries, including aerospace, military, medical, and manufacturing.

Barbee shared one example of the benefits of UPT's coating: "In a helicopter you can coat certain gear interfaces so if the oil pump goes out, the coating allows the aircraft to continue running. The friction is so low, and the coating holds the oil so well, that the

gears can operate without oil for a short period, allowing the aircraft to make it safely back to base."

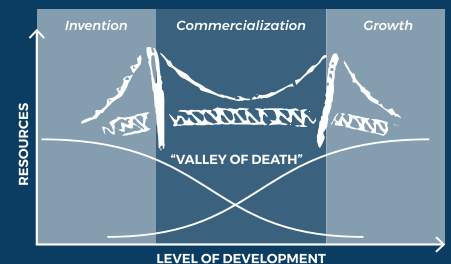
With regard to the One NC matching funds specifically Barbee says, "You build a company around your Phase I SBIR, but you don't know how much it's going to take. You don't usually have enough money to do the extra stuff. That [matching] grant from the state was great for us because I was able to hire a really a great employee who brought a lot of value, including building us a budget for our Phase II proposal."

With regard to their company growth, UPT CEO Marty Efrid shared, "Our revenue has increased 48-fold from our first production year through 2017. In terms of employees, we were in the mid-teens when we started the production side of the business, and now we are up to 38. In the beginning we were all engineers and a few business people. Now we have technicians and more focus on the research and development side [of the business]." This growth is thanks in part to the matching funds from the One NC Small Business Program grants that UPT received during the vulnerable Valley of Death stage of company development.

ABOUT THIS SERIES

Entrepreneurs and business owners face many challenges during the life of their companies, but none strike more fear and difficulty than the 'Valley of Death.'

A familiar phrase to venture capitalists and business executives, the Valley of Death is the period of time a company must navigate between the discovery of a business-worthy idea or technology and the point when the company generates enough paying customers and revenue for long-term survival, job creation, and profits. Finding funding sources to bridge this gap is an ongoing struggle.



The One North Carolina Small Business Program helps promising, technology-oriented companies in the state survive and thrive. By providing matching dollars to companies that have already won highly-competitive federal technology grants, the OneNC Small Business Program is an important solution for North Carolina companies facing one of the business world's toughest challenges.

BRIDGING THE VALLEY OF DEATH: A One North Carolina Small Business Program SUCCESS STORY



one north carolina Small Business Program

ABOUT THE PROGRAM

- Established in 2005 (§ 143B-437.80-81), the Program awards matching funds to small businesses that receive federal Phase I Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) Phase I grants.
- SBIR and STTR grants are the single largest source of early-stage technology development and commercialization funding for small businesses (more than \$2 billion annually) – larger than all private sources combined.
- Yet the federal grants are often not large enough to allow the small businesses to complete their work, and federal restrictions on the uses of grant funds often limit the businesses.
- The North Carolina Program supplements and leverages the federal funds, helping homegrown businesses commercialize innovative technologies & create jobs.
- Since Program Inception:
 - 398 grants awarded
 - Over \$24.7 million awarded
 - 255 different companies in 25 counties and 47 cities across the state have received funding
 - More than 900 jobs created or retained
 - More than \$500 million in external capital investment
 - More than 100 patents and copyrights already received, and another 250 applied for and under review
 - More than \$125 million in total sales resulting directly from the technology developed with Program funding
 - More than \$1.5 billion in total sales resulting indirectly from licenses of the technology developed with Program funding
 - More than 95 percent of the grantee businesses agree that the Program encourages the establishment and growth of high-quality, advanced technology firms in North Carolina
 - For more information, visit: nccommerce.com/sti/grant-programs



ABOUT THE COMPANY

- United Protective Technologies, LLC is an industry leading company that develops advanced coatings to increase durability, increase component functionality and extend operation life to technologies used in extreme environments.
- Year Founded: 2002
- Office Location: Locust, N.C.
- Current Number of Employees: 38
- Website: uPT-usa.com
- Federal SBIR/STTR Funder: U.S. Department of Defense - Department of the Navy and Special Operations Command
- One NC Small Business Grant Recipient in 2009, 2010, & 2017



Gears to be protected with wear-resistant coatings.



Sam Efrid, Chemist, and Alan Pope, Lead Production Technician, loading components to be coated, and verifying the correct deposition recipe.

