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Rebecca Ufkes
UEC Electronics

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Wired for success

By Matthew Gregory

When UEC Electronics President Rebecca Ufkes takes visitors on a tour of her 80,000 square foot facility in Hanahan, S.C., the sights are always different. One visit is straight out of a *Star Wars* convention, with a set of portable ultraviolet (UV) light sterilization systems that resemble a fleet of space-faring robots. A tour on another day may reveal a test stand designed to emulate the weapons management system of a military helicopter. Among the boxes, cables and wires on display are the components for everything from biometric military gates to power units for Mine Resistant Ambush Protected (MRAP) vehicles to gun system control emulators for F-35 Joint Strike Fighters.

Ufkes has grown the engineering, rapid prototyping, assembly and manufacturing business in size and scope since it was founded in 1995 by taking on military projects for the U.S. Department of Defense. With UEC expanding its work in the aerospace industry, the company is gearing up for even more success.

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Wired for success

Rebecca Ufkes UEC Electronics

As president of UEC, Ufkes handles business development, customer relations and strategic alliances, while her husband, Phil, serves as vice president and manages engineering and operations.

Ufkes previously worked in Connecticut for Sikorsky, which designs and builds military helicopters. After coming to South Carolina in 1990, she began an engineering and consulting firm, which included freelance work for the South Carolina Manufacturing Extension Partnership (SCMEP). With all her experience, and her husband's design background at Cummins Inc., a designer and manufacturer of engines and related technologies, they decided it was time to start their own business in the Charleston area.

"We started with five people and 5,000 square feet and were only using half of the building. We were like, 'What are we going to do with all this space?'" said Ufkes.

Today, UEC has 120 employees and expanded into a new facility last year.

In the early days of UEC, the company focused its efforts on circuit cards, cable assembly and control modules for off-highway vehicles. Most of UEC's test equipment and wire harnesses were for the trucking industry. After experiencing a decline in business in the late '90s due to a drop in the trucking industry, the decision was made for UEC to become more market diversified.

"One of the Space and Naval Warfare Systems Command (SPAWAR) small business advocates introduced us to a program sponsored by the Navy that takes established businesses with potential and mentors them into Department of Defense providers. In our case, we had the infrastructure, but we didn't know how to do business with the government," said Ufkes.

After entering the Navy's Manufacturing Technical Assistance Production Program (MTAPP), UEC quickly became a prime contractor for the Department of Defense (DOD). UEC is currently participating in the DOD Mentor-Protégé Program with Raytheon Company, an American defense contractor that manufactures defense systems and defense and commercial electronics. The company also has expanded its operations into the aerospace industry by gaining AS 9001 certification and winning manufacturing contracts for flight hardware avionics sub-systems.

Hamilton Sundstrand, one of the world's largest aerospace technology suppliers, requested UEC's help to design and build two Development Test Systems (DTS) for the S-70B Naval Hawk helicopter.

"For that particular test system, we received the Weapons Management System (WMS) Interface Control Document (ICD), which defines the electrical and datalink inputs and outputs between the WMS that Hamilton Sundstrand is providing and the rest of the aircraft," said Phil Ufkes. "We essentially had to reverse the ICD because the DTS simulates the aircraft and the various weapons it carries. We must accurately control and simulate every signal in the aircraft that touches the WMS. For example, we had to develop a simulation for multiple torpedoes and the sonobuoys that detect enemy submarines. We also had to simulate all the cockpit weapons panels."

UEC then had to independently fail each signal in various ways to simulate all of the potential failures that could happen on the helicopter to guarantee the WMS recovers from all potential failure modes.

For another project, UEC built emulators for the gun on the AH-64 Apache helicopter that had to serve as the cannon on the front of the helicopter. UEC had to provide all the electronic feedback the helicopter would receive if the gun was really shooting – how many rounds were expended, barrel azimuth, and pitch and yaw.

In addition to its commercial, military and aerospace work, UEC helps entrepreneurs with patents and product ideas.

"Give us a concept, a patent or an idea for what you want to do, and we'll design a solution. Then, we can take it through prototyping and proof of concept, we can get it through all the required specific-industry tests and we can take it right into production," said Ufkes.

For example, a doctor approached UEC with an idea for portable sterilization units that use UV technology. When the units are placed in a hospital room, they can sterilize a room in 10 minutes by reflecting UV light off the walls and behind surfaces. The units can calculate and quantify how much sterilization a room needs and are self-calibrated to cut off when finished (or if a person enters the room).

When a retired military commander consulted with UEC about an opportunity to provide soldiers with a tool on the battlefield, the company went to work on a potentially life-saving product. When soldiers are conducting operations in hostile areas where staying undetected is paramount, they often face the challenge of having unplanned encounters with non-combatant individuals. UEC helped remedy this problem by developing the Time-Release Restraint System (TRRS), flexible handcuffs that have a built in timer to keep individuals restrained for a predetermined amount of time. The TRRS provides periodic verbal reassurance in multiple languages to restrained individuals. After the timer goes off, the device safely cuts the flexible restraint, freeing the detained individual. Currently, soldiers in Afghanistan are testing the TRRS.

UEC was recognized earlier this year when Rebecca Ufkes was selected as the U.S. Small Business Administration's (SBA) Small

The Airborne RF Communications Amplifier (far left) and the High Efficient LED Area Light are just two of the components UEC Electronics manufactures for Department of Defense vehicles.

Business Person of the Year. She went to Washington, D.C. to represent South Carolina in the national competition.

"I was nominated by the Charleston Small Business Development Center and received a letter from the SBA saying I was selected as the state winner and would represent South Carolina in the national competition. It is great visibility and great credibility," she said. "A lot of people say, 'Well, if you're so small, how can you do all this stuff?' Basically, it comes down to innovative engineering and competitive and quality manufacturing. We try to tap into as many markets as we can."

Considering UEC designs, prototypes, certifies and manufactures everything from control modules for excavators to missile system test equipment to city bus mass-flow sensors, the company's client list is exhaustive. How does UEC remain so diversified?

"Where we really bring the most to the table is when we're integrated – when we're doing the boards, the boxes and the wires. Sometimes the box is a little square enclosure. Sometimes the box is a 19 inch rack. Sometimes the box is an amphibious assault vehicle. We don't do anything differently. We're maybe doing more of it, but we're using the same skill set," said Phil Ufkes.

With new companies like Boeing coming to South Carolina, Rebecca Ufkes hopes UEC's client list will grow even more.

"The good news for UEC is we are seeing more interest in companies that can provide the entire process – engineering through production and comprehensive manufacturing, from circuit card assemblies and wire harnesses up through electronic sub-systems and complex system integration," she said. "That is exactly what we do."

Matthew Gregory is the multimedia coordinator at the South Carolina Chamber of Commerce and editor of South Carolina Business.

