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Philip Ufkes of UEC Electronics, LLC on ...

Treating engineering design and manufacturing like baseball

by Sally Deering



INSTANT REPLAY: Philip Ufkes (left) assists technician Nick Sorise with the final functional test of an airborne RF communications amplifier.

H LOOKING AHEAD...

UEC Electronics strives to stay market diversified by pursuing military, commercial, and entrepreneurial contracts. Being involved in a wide range of products and markets gives the company a diverse client base and visibility to various technologies and best practices.

Philip Ufkes, vice president and chief engineer of UEC Electronics, LLC, compares the company's manufacturing capabilities to a baseball diamond; each base symbolizes a different market, and each has its own unique level of customer expectations and requirements. For the \$20 million engineering-design and product-realization firm in Hanahan, South Carolina, first base represents computers, cell phones, and various other disposable, high-volume-manufactured products. Second base represents automotive and industrial products as well as military systems, vehicles, and vessels. Third base addresses aerospace, flight hardware, missiles, and medical equipment, where the stakes and compliance criteria are even higher. Home plate is reserved for satellites, space vehicles, and nuclear components—where expectations are the greatest and 100-percent compliance and precision are critical to the safety of individuals as well as to national defense.

"Our four-year strategy was to play shortstop, moving seamlessly and cost-effectively between second- and third-base customers and products," Ufkes says. "We have achieved this goal after receiving our AS9100 aerospace quality certification to build 'third-base' products and successfully landing and executing contracts in this market." In addition, UEC has recently built



"I am not optimistic that high-volume 'first-base' manufacturing will ever recover from where we are now in this country, as the trend has been to go offshore for so long now," Ufkes says. "I think we will continue to see a slow decline in many 'first- and second-base' markets; however, there are many mainstream and entrepreneurial opportunities where innovative and responsive manufacturers will do well in this environment. Low- to mid-volume manufacturing still exists; however, it is very competitive. When we're competing for business, we're often bidding against four, five, or six companies. Keeping costs under control is critical."

a facility that incorporates the latest surface-mount circuit-card-assembly technology. The technology is capable of performing "Class 3" work, in addition to many other process, quality, and technological improvements.

A full-service products and solutions provider, UEC has a proven track record of delivering the highest-quality engineering, integration, and manufacturing services. The company also specializes in product development, rapid prototyping, test and evaluation, integration, and turnkey complex assemblies. In the 15 years since Ufkes and his wife Rebecca founded the company, UEC's client list has expanded to include Space and Naval Warfare Systems Center Atlantic, Raytheon, Stanley Associates, Science Application International Corporation, Marine Corps Systems Command, Warner Robins AFB, BAE Systems, Boeing, Parker Aerospace, Cummins Engine Company, Cummins Turbo Technologies, IIT Power Solutions, and United Technologies Corporation.

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the design, prototype, and manufacturing of an MRAP-vehicle electrical system and the design and production of the AC & DC electrical-power distribution, interior lighting, troop seating, cabling, and mechanical subassemblies for the Marine Corps amphibious-assault-vehicle command-and-control upgrade. UEE Electronics also manufactures RF amplifiers and cockpit-panel assemblies for US-military rotary-wing aircraft and performs highly complex assembly and integration of missile-system components and test equipment.

Providing both the engineering-design and the manufacturing capability is a key strategy to UEE Electronics' success. Being involved in the client's complete product lifecycle from conception to finished product allows the company continuous involvement and continuity during rapid prototyping and volume manufacturing. If UEE engineers decipher a product or manufacturability glitch, they can remedy the problem in real-time, which expedites and optimizes the manufacturing process, ultimately saving the customer cost and schedule.

"There's an intermediate step between design and manufacturing where you verify and validate the design as well as [decide] how you are going to produce it," Ufkes says. "The design could be perfect, but you could introduce a flaw by the way you are putting it together. For example, if you lay out a printed circuit card and find that there are problems during the manufacturing phase—the components are too tall, too fat, spaced too tightly—because it is all occurring within our company, our engineers are right there understanding the problems and making the necessary changes and improvements. If we didn't have this capability, we wouldn't know about or ever encounter the manufacturing issues. We continue to develop lessons and retain this very important knowledge for future projects." [P]

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