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UNCC startup marries technology, application

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Think high-tech startups went out with the end of the dot-com era? A visit to UNC Charlotte provides evidence to the contrary.

Shane and Bethany Woody have launched a small business and are building prototypes for precision motion-control systems. Their experience getting InsituTec off the ground has its novel aspects -- both are graduate students in mechanical engineering and are a husband-and-wife team.

But their experience is not unique. In the past three years, UNC Charlotte has played a role in some 20 business spin-offs at various stages of development, in industries such as biotech, information technology, optical engineering and precision machining.

The university also filed 81 patents based on research conducted in affiliation with the school between 1999 and 2002.

The name of the Woodys' startup derives from the Latin phrase "in situ," which means "in process." InsituTec's goal is to produce in-process measurement tools with applications in the automotive, aerospace and bearings industries. Precision measurement is a niche that UNC Charlotte is exploring as a way to contribute to high-tech manufacturing.

Despite the heavy ties to the university, the Woodys are as focused on the business side of InsituTec as they are for the technology.

"A lot of people do the tech development first. We try to do the business development along with the technical development, so that the technology is going to meet a customer need," says Bethany Woody.

Traditionally, making precise measurements during the manufacturing process has required taking a sample off the factory floor and into a lab. The problem is that while the sample is measured, the manufacturer is still making the product, often in dimensions beyond acceptable tolerances.

InsituTec's technology would allow in-process measurements that are long-range (up to one millimeter) and high resolution (accurate to one nanometer or less). A nanometer is one billionth of a meter -- about the length of 10 hydrogen atoms arranged in a row. This could allow precise measurements during the manufacturing process for bearings, cylinders and

pistons.

The measuring tools are designed "to correct any errors in the manufacturing process faster and reduce the amount of scrap," explains Woody.

With funding from The Boeing Co., InsituTec has developed a prototype "in-process measurement probe" that could be integrated into a specific machine and used to measure holes drilled for rivets. Another device, called an x-y scanner, could find its way into the next generation of high-resolution microscopes. About the size of a Rubik's cube, it allows precise horizontal and vertical adjustments. Its range of 0.5 millimeter to 1 millimeter is up to five times greater than that of existing technology -- an important feature since biological samples for measurement often exceed a microscope's scanning range. The company is in discussions with several microscopy manufacturers to include the technology.

"The systems that they have developed represent a significant advance in precision, speed and utility and are head and shoulders above any competition," says Stuart Smith, UNCC professor of mechanical engineering. "A number of new, and potentially competing, companies have recently emerged. InsituTec is, however, ahead of the game and I believe they have the energy and drive to stay in front."

InsituTec includes Shane and Bethany Woody, Smith as technical advisor, and part-time business development and research staff. Shane and Bethany met at UNC Charlotte, where both were undergraduates prior to entering the graduate program.

Bethany Woody doesn't believe working with a spouse is much different from working with a close professional colleague, except that "you can often tell intuitively what the other person's thinking," a useful skill in meetings.

It can be tough to balance the demands of business and graduate school, but Woody says, "We're doing it because we enjoy it." When not working long hours, the couple enjoys rock climbing, camping and running.

Where will InsituTec go next? The firm has applied for three patents through UNCC -- it would share future proceeds with the university through a royalty and licensing agreement. Its funding comes from grants from UNCC and the National Collegiate Inventors & Innovators Alliance, plus a cash prize from this year's Five Ventures conference on campus. The Woodys are seeking government grants and investments from venture capitalists.

After being burned by the dot-com crash, many venture funds are reluctant to bankroll early-stage companies. But Mark Wdowik, UNCC technology transfer director, says InsituTec shouldn't be discouraged. These investors are looking outside the Internet to fields such as biotechnology and precision engineering, and more are investigating Charlotte-area firms.

Beyond gaining scientific recognition and a future stream of revenue, the university hopes to help grow Charlotte's technology sector. Says Wdowik, "We look at startups as a great way of commercializing technology and creating new jobs for the region."

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