

# One COOL DUDE

DAN RINI AND RTI ARE DEVELOPING CUTTING-EDGE COOLING TECHNOLOGIES THAT COULD SAVE LIVES.

By Scott Leon



PHOTO BY PHELAN EBENHACK



Most of us living in Florida take our comfort for granted. We can even control our own personal environment with the simple flick of a switch — until we walk outside. But what if there were a way to create a personal air conditioner portable enough to take with you anywhere you went?

This may seem a bit decadent for everyday life, even in our summer heat, but what if your job required you to wear a heavy, barely-breathable suit for safety reasons under harsh environmental conditions? Imagine a soldier working in a sealed biohazard suit in a HazMat situation in Iraq, or a firefighter attempting to control an intense chemical blaze. In these cases a personal air conditioner

could actually save lives. The concept of personal climate control, one that has interested the military for decades, caught the attention of Dr. Daniel P. Rini, founder of Oviedo-based Rini Technologies, Inc. (RTI). An expert in cooling technology, Rini's company recently produced the first viable prototype of an ultra-portable personal air-conditioner.

RTI's work in the realm of cooling technologies currently focuses in two main areas. The first, for the U.S. Department of Defense, involves the development of a cooling system for high-power lasers used in missile defense systems.

"The lasers themselves are small enough to place into tanks or helicopters, but the cooling systems for these lasers currently take up entire rooms in a laboratory setting. Those systems need to be much smaller to make them useful in a fighter jet or on a HumVee," says Rini.

His company's second focus is on the development of the personal cooling system for the Army, NASA and the Defense Advanced Research Projects Agency.

"For twenty years, people have been working to get a personal cooling system down to about five pounds," explains Rini. "Any more than that and it takes away from a soldier's other necessary gear. We've been working for the last four years on a prototype and have finally produced one that fits all the requirements. While some of the components, like the cooling vest we use, have existed for a while, RTI is the first to produce a complete functioning

system that is small, lightweight and energy efficient. The cooling unit itself is about the size of a water bottle. It connects to a type of undergarment covered with tubes that connect to the cooler and circulate chilled water through the garment. In theory we can even reverse the system to make it heat instead of cool."

Since its founding in the spring of 2000, RTI has been issued four patents. Four more U.S. patents are currently pending, plus an additional one pending in Europe. One of the issued

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patents and two of those pending are related to the personal cooling system.

"That includes the European patent. While half of what we do is specifically for our government, the personal cooling system has a myriad of uses among civilian firefighting crews, police, first responders and hazardous material teams. We want to protect our technology, no matter where it's used."

Rini founded RTI while finishing his doctorate at the University of Central Florida (UCF). A native Canadian, he first came to Orlando to attend UCF as an undergraduate on an athletic scholarship and was one of those rare freshmen who fell in love with physics rather than changing majors to avoid it.

"I immediately switched to mechan-

ical engineering and became intrigued by thermal management technologies," says Rini. "I had the vision for this company while I was still in graduate school. I applied for and received several grants from the military and other government agencies to begin my initial research into thermal management systems.

"In reality, the whole concept of this company was fostered in large part by UCF's Technology Incubator, which was just starting up at the time. It was a perfect synergy for me because the

Technology Incubator Program's purpose is to foster the start-up of high-tech companies. I chose to stay near the university because it allows us to continue the collaborative research we've maintained."

RTI works with UCF's professors and graduate students regularly, he says, getting help with research needs. The shared success of the partnership has put RTI in a position to help fund graduate students and other research projects.

"In addition to UCF's outstanding engineering department, Orlando itself has had a continuing commitment to high tech development and related industries for the past decade," continues Rini. "It makes it attractive for companies like mine to set up here and provides the groundwork for us to remain competitive, successful and growing." 