



10 **“Mechanical engineers from the University of Maryland are our secret sauce...”**

PHOTO: DOUGLAS GRITZMACHER



### SAVING ENERGY WITH ‘PERSONAL HVAC SYSTEMS’

Two research teams from the University of Maryland will receive combined funding of more than \$5 million from the Advanced Research Projects Agency-Energy (ARPA-E) to create personal technologies for keeping individuals comfortably cool or warm, while shrinking the energy needs of the buildings they occupy.

The Meta-Cooling Textile project, led by Department of Chemistry Associate Professor YuHuang Wang with co-principal investigators (Co-PI) Associate Professor Bao Yang (Mechanical Engineering/UMERC), Associate Professor Min Ouyang (Physics) and Assistant Professor Liangbing Hu (Materials Science and Engineering/UMERC), will develop a thermally-responsive fabric that extends the skin’s thermoregulation ability to maintain comfort in hotter or cooler office settings.

The Robotic Personal Conditioning Device team, led by Center for Environmental Energy Engineering Director and Minta Martin Professor of Engineering Reinhard Radermacher (Mechanical Engineering/UMERC) with co-PIs Professor Jelena Srebric (Mechanical Engineering) and Assistant Research Scientist Dr. Vikrant Aute, is aimed at developing a mobile platform to provide personalized cooling to individuals.

The UMD projects are two of 11 projects supported through a new \$30-million ARPA-E program entitled DELTA, or Delivering Efficient Local Thermal Amenities, which supports research to develop technologies that can regulate temperatures of building occupants, rather than of the overall building, dramatically reducing the building’s energy consumption and associated emissions.

LEARN MORE: [HTTP://TER.PS/PERSONALHVAC](http://ter.ps/personalhvac)

### GAME CHANGERS One of those sorts of epiphanies helped Drew Greenblatt drive his business through some tough times.

Before Helen Lan had first tackled Newton’s laws of motion, Greenblatt became CEO of Marlin Steel. The Baltimore-based manufacturer produced commodity bagel baskets and became known as the “king of the bagel baskets.” Early on, the company had no designers or engineers on staff and the company’s clients, Greenblatt said, had no use for a tape measure—the only unit of measurement was bagel load: if the bagel didn’t fall out of the basket, the basket was a success.

When business began moving overseas, Marlin Steel invested in automated manufacturing robots to increase capacity and precision, aiming to expand their business into a variety of custom-engineered stainless steel wire forms and products, but expensive machinery wasn’t enough to save the company. “We realized that the people we were selling to were mechanical and processing engineers and plant managers, and our employees didn’t have the training or skills to have productive discourse with this high-level clientele,” Greenblatt said.

Tapping into the talent pool at the Clark School proved a game changer for Marlin Steel, and 20 percent of the company’s workforce now consists of degreed mechanical engineers—with all of its active mechanical engineers alumni of the University of Maryland’s Clark School of Engineering. Today Marlin Steel’s clients include industry leaders across the spectrum, from Boeing and Pfizer to the Central Intelligence Agency and global brands, such as Toyota.

“We’ve gone from plus or minus a bagel to plus or minus 0.1 micron,” Greenblatt said. “When you’re jumping massively in terms of quality you also have to jump massively in the ability to understand the engineering challenge—quickly and accurately. Our mechanical engineers from the University of Maryland are our secret sauce—their innovations are powering our growth. They make sure we are not a commodity player, because they come up with such elegant, clever ideas that separate us from the pack.”

“Every day our engineers are grappling with multiple projects, which they own from the first interaction with clients to the day the product ships. They are able to pivot quickly and move from job to job creatively,” Greenblatt said. “I think a lot of engineering schools train people to sit in cubicles and crunch numbers, but we are in a time where we need more—we need an engineer who can not only know the math and the science, but also explain it effectively to our clients and demonstrate it.”

Marlin Steel Lead Engineer Tony Witt (’09, mechanical engineering) credits the Clark School’s curriculum for a smooth transition to a manufacturing career. “Each of my courses went above and beyond the typical textbook exercises to focus on practical applications for the fundamentals we were learning,” said Witt.

“The culture of the Clark School definitely pushes its students to be creative,” said Marlin Steel Mechanical Engineer Jonathan O’Connor (’11, mechanical engineering). “This emphasis has stayed with me and helps me come up with solutions to the unique problems I encounter here at Marlin Steel. Hands-on learning is really an integral component of teaching engineering.”

“We’ve had unbelievably low turnover from our University of Maryland team,” Greenblatt said. “Our engineers come with us to help at the most high-tech precision factories in the world—and they’re giving engineers at these factories advice on how to improve their flow. It’s a neat thing to be just a couple of years out of college and to be giving advice to somebody who’s been doing this for 20 years.”

### UAS TEST SITE MARKS INAUGURAL FLIGHT

In December, the University of Maryland (UMD) Unmanned Aircraft Systems (UAS) Test Site conducted flight operations with the UAV Solutions Talon 240, a 140-pound UAS with a twenty-foot wingspan, at Crisfield Airport in Somerset County, Md., successfully proving the operational processes and procedures required to fly larger UAS.

“What our team of scientists and engineers accomplished today is no small feat,” said University System of Maryland Chancellor William “Brit” Kirwan. “The University System of Maryland and our flagship campus, the University of Maryland at College Park, are focused on advancing our state as a leader in UAS research and this flight is an important milestone in establishing our capabilities as a world-class research base for UAS testing.”

The UMD UAS Test Site partners with industry, academia, and government agencies to offer demonstrated expertise to support UAS-related research, testing, and education through safe, efficient, effective operations. Other Test Site supported research flights in progress include natural resource surveys, high school and university student UAS research, utilities inspections, agricultural research, and support to emergency services.

LEARN MORE: [HTTP://TER.PS/FIRSTFLIGHT](http://ter.ps/firstflight)

