



For Release November 7, 2011

Universities, industry team up for 'greener' electronics

BINGHAMTON, NY – Three of the nation's leading universities have joined with 15 US companies to launch a first-of-its-kind collaborative research center whose holistic approach to energy efficiency development could mean savings of millions of dollars and a much 'greener' electronics industry. Headed up by researchers at Binghamton University and its partners, Villanova University and the University of Texas at Arlington, the newly designated National Science Foundation (NSF) Industry/University Cooperative Research Center in Energy-Efficient Electronic Systems (I/UCRC E3S) will link the fields of information technology, telecommunications, electronic systems and cooling equipment to solve issues of energy-efficiency in data center operation.

Funded in part by the NSF, the center's primary support will come from the industry center members with whom researchers will work on projects of mutual interest. Fifteen companies representing the entire supply chain for data centers - from hardware manufacturing and software development to end-users - have already signed up as members. The list includes industry leaders such as Microsoft, IBM, Facebook, Commscope, Bloomberg, General Electric, Corning Inc., Endicott Interconnect Technologies, Emerson Network Power and Emerson Delaware Valley Liebert, Verizon, Comcast and Steel Orca.

"The center will address energy efficiencies in a way that has not been tackled before," said Bahgat Sammakia, interim vice president for research at Binghamton University and E3S director. "By looking at energy efficiency problems holistically – that is, from all angles and across many disciplines – the center will provide the kind of answers that leaders in the electronics industry are looking for. Each of the center's academic partners has expertise in a particular area and by tapping into these individual strengths, we will collectively find the answers to some of the industry's most challenging practical problems."

Although Binghamton University will be the primary focal point for this highly collaborative effort, both Villanova University and the University of Texas at Arlington will have support centers on their campuses as well.

“The Villanova College of Engineering and the Villanova research team are thrilled to be part of the NSF I/UCRC E3S Center. The center gives us an unprecedented opportunity to marry our deep expertise in thermal management of electronic systems with our rapidly emerging expertise in energy sustainability as we seek innovative solutions to energy efficiency in data center design and operation,” said Alfonso Ortega, associate dean for Graduate Studies and Research, and the James R. Birlle Professor of Energy Technology at the Villanova College of Engineering. “With Villanova’s strong commitment to education and research, students at all levels will have an opportunity to contribute energy and creativity. In addition, the more than 20 years of collaboration among the principal investigators at Villanova, Binghamton, and the University of Texas at Arlington will further enhance the joint research projects -- and results -- produced by our institutions.”

Focusing initially on data centers, which are becoming one of the nation’s biggest ‘energy-guzzlers’, the new center will focus on finding ways to allow electronic systems to monitor and self-regulate the amount of energy they use. As it stands, the energy spent on running data centers in the United States is about 2.5 percent of the total national energy expenditure, which is enough to power a couple of medium-sized cities for most of the year.

As the number of data centers increase due to growing demand for online services for everything from medical records to shopping, the need for greater energy efficiencies is becoming even more important. Lessons learned from reducing energy consumption in data centers will not only save millions of dollars, but will offer solutions to practical energy consumption problems in all areas of the electronics industry – from cell phones and tablets to gaming consoles and e-commerce.

The University of Texas at Arlington has been focusing on data center cooling for a number of years, said Dereje Agonafer, UT Arlington mechanical and aerospace engineering professor and site director for the center.

“The center allows us to significantly expand our mission in energy-efficient systems by focusing on a broad range of multi-disciplinary and collaborative research topics, including air side economizers, sustainability, effects of airborne contaminations on data center equipment, and cooling technologies for future high density interconnect devices,” Agonafer said. “Working with our consortium members gives us leverage into implementing our research activities in products.”

In addition to providing solutions to some of today's most challenging energy-efficiency problems, the new center is looking to the future by providing valuable industry-relevant training opportunities for undergraduate and graduate students.

"I/UCRC E3S center is committed to strengthening the United States' competitiveness in the electronics industry," said Kanad Ghose, professor and chair of the Computer Science Department at Binghamton University and E3S site director. "By attracting talented and motivated students to work with outstanding researchers and industry leaders, we can train the next generation to be the kind of broad-based scientists and engineers that the industry is going to need in the future."

The center will convene its first official meeting in December 2011 to review an initial line-up of research projects that industry center members have already identified as promising. Projects under review include activities associated with energy-efficient scheduling of workload, servers and cooling systems, the design of micro-scale servers, analyzing the effects of airflow and dynamics, and compact models activities. Work on these projects will begin as soon as they have been matched with teams of I/UCRC E3S researchers.

"The NSF I/UCRC Center for Energy Efficient Systems will play a key role in establishing deep partnerships between industry and academia," said Kushagra Vaid, general manager of datacenter hardware engineering at Microsoft. "Our goal is to jointly deliver breakthrough concepts for next generation cloud infrastructure. Microsoft is proud to be on the advisory board for this research center."

Roger Schmidt, IBM Fellow and chief engineer for data center energy efficiency at IBM Corp., is equally supportive of the new center.

"This I/UCRC represents a true partnership between industry and academia," Schmidt said. "It deals with a critical issue for industry, namely the escalating energy budget in data centers. This partnership will allow us to conduct research that is both timely and transformative in close partnership with academia."

Veerendra Mulay, a consortium member from social media giant, Facebook, said, "the consortium will play a key role in addressing cooling design issues in the dynamic data center business."

Contact:

A copy of this release, other recent releases and general information may be found through the Binghamton University home page on the Internet at <http://www.binghamton.edu>. To locate releases, please click on the link "For More News."

- Binghamton University: Gail Glover or Ryan Yarosh
607-777-2174
gglover@binghamton.edu or ryarosh@binghamton.edu

- Villanova University: Kathleen Scavello
610-519-6733
kathleen.scavello@villanova.edu

- University of Texas at Arlington: Herb Booth
817-272-7075
hbooth@uta.edu