Ohio State’s EcoCAR: The NeXt Challenge team receives multiple honors

EcoCAR: The NeXt Challenge, a three-year student engineering competition sponsored by the U.S. Department of Energy (DOE) and General Motors (GM), just completed its run following a week-long competition which took place at the General Motor’s Milford Proving Grounds in Milford, Michigan, and various locations throughout Washington, DC. Focused on vehicle integration of advanced propulsion technologies, the competition challenged universities across North America to reduce the environmental impact of a 2009 Saturn Vue crossover vehicle by minimizing fuel consumption, petroleum use, and emissions. Ohio State’s 30 student team placed second in the overall competition. The Ohio State team received numerous additional awards including the Freescale Innovation Award for the best use of innovation in the conception, design, and implementation of electronics and controls and the Bosch Diversity Award for diversity in a global business environment. They also received the Best Social Media Outreach Award for using a variety of social media in promoting the competition and clean vehicles. Katherine Bovee, a master’s student in mechanical engineering, received the Women in the Winner’s Circle Foundation Outstanding Women in Engineering Award. The university was recognized for its leadership in creating a diverse environment that includes international students and scholars and interns from other universities as well as high schools. Moving forward, Ohio State was one of 16 student teams accepted into EcoCAR 2: Plugging in to the Future, another three-year competition that will focus on electric drive vehicle technology. EcoCAR 2 teams will work to reduce the environmental impact of a Chevrolet Malibu, without compromising performance, safety, and consumer acceptability. By the end of this competition, the sponsors expect fully-developed vehicles equivalent to prototypes that are ready for a production decision. The EcoCAR challenge is an important example of how government, industry, and academia can work together to decrease energy consumption and greenhouse gas emissions in some of America’s most popular vehicles. In addition, the EcoCAR competitions are educating the next generation of automotive engineers by offering students unparalleled, hands-on experiences based on the real-world integrated vehicle design and development process.

Department of Defense funds purchase of research equipment

The Department of Defense plans to award $37.8 million to 83 academic institutions as part of the Defense University Research Instrumentation Program (DURIP). The awards are the result of a funding competition conducted by the Army Research Office, the Office of Naval Research, and the Air Force Office of Scientific Research. The DURIP will support the purchase of state-of-the-art equipment to augment current university capabilities or develop new university capabilities to perform cutting-edge defense research, enabling the purchase of scientific equipment costing $50,000 or more. Over 800 proposals were received for projects in surface chemistry and physics, computing and networks, electronics and electro-optics, neuroscience, fluid dynamics and propulsion, robotics and autonomous systems, and ocean, environmental and biological science and engineering. Roberto Myers, associate professor of materials science engineering and physics, has been selected for an award from the Office of Naval Research for a project titled “Robust and broadband ultrafast time-resolved spectroscopy of inter(sub)band transitions in highly confined nitride nanostructures using fiber laser technology.”

Ohio State innovation receives Ohio Third Frontier support

The Ohio Third Frontier Commission recommended more than $7.5 million for three projects through the Ohio Third Frontier Wright Projects Program. The program links the research of Ohio’s universities with the specific needs of Ohio’s industries to create economic development opportunities within Ohio and supports the long-term use of capital to promote educational and training programs for students and workers in targeted technology sectors. Ohio State, in collaboration with Egg Tech Limited, Weaver Brothers Poultry, Hertzfeld Poultry Farms, Hemmelgarn and Sons, Xigent Automation Systems, and the Ohio BioProducts Innovation Center, will receive nearly $3 million for a project that will focus on the development of a technology-based process for the pasteurization of whole shell eggs – a process which could reduce food borne illnesses by providing cost-effective, Salmonella-free eggs. Ohio State will collaborate on a $1.7 million project led by the Edison Welding Institute that will focus on
the development and commercialization of an advanced manufacturing technology for smart materials and structures. Smart materials will be embedded into metals for a variety of commercial applications including tooling, sensors, microchannel reactors, and reduced and/or controllable thermal expansion properties industries. Additional collaborators include Solidica Corporation, The Boeing Company, Velocys, the National Science Foundation’s Industry/University Cooperative Research Centers’ Smart Vehicle Center, Polytec, Honda R&D Americas, Parker Aerospace, Dukane, and Intelligent Assembly Solutions.

**John Glenn School promotes democracy around the globe**

The John Glenn School of Public Affairs received a $3 million contract from the U.S. Agency on International Development (USAID) to continue the Parliamentary Development Project (PDP), a program that teaches democratic process and legislative reform in the Ukraine. The PDP, which began work in 1994 under the leadership of Charles Wise while he was a professor in the School of Public and Environmental Affairs at Indiana University, is considered the longest-running sustained effort to promote democratic development in the world. In 2008, the John Glenn School, now under the direction of Wise, signed a $4 million, three-year contract to operate the program. From offices in Kiev and Crimea, the PDP will continue to strengthen and expand the democratic policy making systems for the executive and legislative branches of the Ukraine government, including the regional parliament in the Autonomous Republic of Crimea. PDP activities include training for government members and staff, the launch of an internship program for Crimean university students, and the publication of research on policy issues. The USAID labeled the PDP a “model program” and recommended that it be used as a template for other efforts to promote democracy around the globe.

**Undergraduate research flourishes at Ohio State**

The importance of research in the educational programs of Ohio State’s undergraduate students is overwhelmingly evident in the annual Denman Undergraduate Research Forum, the Summer Undergraduate Research Institute (SURI), and the Summer Research Opportunities Program (SROP). Since 1996, the Denman has provided students with an opportunity to showcase their research and scholarly work before a group of faculty and corporate judges. In spring 2011, 580 students participated in the forum. Projects featured everything from looking at S-stars, to examining how adherence to treatment affects adolescent patients with cystic fibrosis, to an assessment of education status among AIDS orphans in China. The SURI, organized by the Undergraduate Research Office, will enhance the research experience of more than 275 undergraduates through a series of enrichment programs, both professional and social. The SROP, sponsored by the Graduate School, is designed to help underrepresented students explore opportunities for graduate study and academic careers. SROP participants work with a faculty sponsor on a research project to develop the student-professor relationship that is crucial to success in graduate school. Nearly 40 students will participate in the SROP this summer.

**OARDC and Ford partner to test car parts made from dandelions**

Ford Motor Company has joined forces with Ohio State to find new uses for an alternative source of rubber being developed by scientists at the Ohio Agricultural Research and Development Center (OARDC) in Wooster. Ford is interested in substituting synthetic rubber used in plastic parts such as cup holders, floor mats, and interior trim with natural, domestically-grown rubber from the Russian dandelion, a plant native to the former Soviet republics of Kazakhstan and Uzbekistan. OARDC crop scientists and engineers are developing a commercially-viable crop from Russian dandelion seeds and extracting rubber from the plant’s fleshy roots. Ford will test the domestically-grown rubber for characteristics such as strength, durability, and impact resistance. Ford joins a list of university and industry partners involved in this project that includes the University of Akron, Oregon State University, the Ohio BioProducts Innovation Center, Bridgestone Americas Center for Technology and Research, Cooper Tire and Rubber, Veyance Technologies, Inc., and the U.S. Department of Agriculture. Funded by a $3 million Third Frontier grant and a $380,000 U.S. Department of Energy grant, the Russian dandelion project clearly demonstrates how research contributes to job growth, economic development, and industry engagement in Ohio. Ford is also looking into the use of guayule (a southwestern U.S. shrub) as a source of natural rubber. Katrina Cornish, endowed chair in bio-based emergent materials at Ohio State, developed and commercialized the technology to obtain rubber and other industrial products from guayule prior to joining Ohio State.

**Pod Home architecture faculty recognized for their leadership**

A team of interdisciplinary students, led by Lisa Tilder and Stephen Turk, both associate professors of architecture, worked together for three years to design and construct a sustainable flexible-living “pod.” In recognition of their leadership, Tilder and Turk will receive the 2010-2011 Association of Collegiate Schools of Architecture (ACSA)/American Institute of Architects (AIA) Housing Design Education Award and the 2010-2011 ACSA Collaborative Practice Award (Honorable Mention). The ACSA/AIA Housing Design Award recognizes the importance of education in housing design to produce architects ready to be capable leaders and contributors to their communities. The ACSA Practice Award honors best practices in school-based community outreach programs. The Pod Home represents a collaboration between the Knowlton School of Architecture, the College of Engineering, and the local community. It was planned and designed with the needs of a young adult in mind – inexpensive and small (125 square feet which includes a loft, small kitchen, and bathroom). Built from readily available local materials, the experimental home features sustainable technologies and energy-conscious techniques including solar power, solar hot water heating, gray water recycling, rainwater collection, energy- and water-saving appliances, and sustainable building materials. The Pod Home is now on display at COSI’s Big Science Park as part of a series of energy and environment educational exhibits geared towards introducing visitors to the positive ways engineering and design can shape our environment.