FIRST BELL

TODAY'S ENGINEERING AND TECHNOLOGY NEWS PREPARED EXCLUSIVELY FOR THE ENGINEERING AND TECHNOLOGY EDUCATION COMMUNITY

In affiliation with CUSTOM BRIEFINGS

June 15, 2011

Leading the News
Higher Education
Research and Development
Workforce
Global Developments
Industry News
Engineering and Public Policy
Elementary/Secondary Education

Leading the News

Google Makes $280 Million Investment In Fund For Rooftop Solar Panels.

The Los Angeles Times (6/15, Hsu) reports, "In a move that could boost solar energy use in homes, Google Inc. is creating a $280-million fund to help finance rooftop installations." Google "said the deal with SolarCity, a solar panel installation company based in San Mateo, Calif., is the largest green investment it has ever made." The deal stipulates that SolarCity will use the fund created by Google to cover the installation and maintenance of rooftop panels.

The AP (6/15) adds that Google's "money will allow installer SolarCity to offer solar systems to homeowners for no money up front. In exchange, customers agree to pay a set price for the power produced by the panels. Google earns a return on its investment by charging SolarCity interest to use its money and reaping the benefits of federal and local renewable energy tax credits."

The Wall Street Journal (6/15, Chernova, Subscription Publication) reports that the deal is a manifestation of Google's desire for strong financial returns on low-risk projects. To date, Google has invested $680 million in renewable energy projects. According to Google's director of green business operations, Rick Needham, the company sees renewables as an investment, and not a burden. Furthermore, Needham says that investing in clean energy makes sense, since the prices of fossil fuels are constantly changing.

DOE Offers Nearly $2 Billion In Loan Guarantees For Two Solar Projects. Dow Jones Newswires (6/15, Sweet) reports that the Department of Energy announced Tuesday that it has offered almost $2 billion in conditional loan guarantees for solar power projects being developed in California by NextEra Energy Inc. and Abengoa S.A. Abengoa was offered a $1.2 billion loan guarantee to help build its 250-megawatt Mojave solar-thermal power project in San Bernardino County that is expected to be finished and generating electricity by December 2013. The agency also offered NextEra a $681.6 million loan guarantee to build the 250-megawatt Genesis solar-thermal power project on federal land in Riverside, which is expected to be operational by November 2013. Both companies have signed power purchase agreements with PG&E Corp.'s utility.

From ASEE

ASEE's eighth annual Workshop on K-12 Engineering Education presented by Dassault Systemes will be held on Saturday, June 25, 2011, in Vancouver, British Columbia, Canada, one day before the opening of the ASEE annual conference. This daylong program for teachers and engineering educators from both Canada and the United States will provide a fast-paced, interactive, results-oriented overview of engineering education for the K-12 classroom. Attendees will discover valuable best practices, new contacts for collaboration, and the latest take-away tools for effective teaching about engineering education.

To register, click on: http://teachers.egfi-k12.org/2011-workshop-registration

To view the preliminary program, click on: http://teachers.egfi-k12.org/2011-workshop-program/

Higher Education

Summer Research Program Gives Teachers Hands-On Materials Science Experience.

The Monroe (LA) News Star (6/15, Eddington) reports, "Six teachers from school districts in northern Louisiana are getting hands-on research experience with professors and students at Louisiana Tech University as part of a summer research program." The six-week program focuses on materials science, and "is funded by a $20 million grant from the National Science Foundation to the Louisiana Board of Regents' EPSCoR program, which helped to create the Louisiana Alliance for Simulation-Guided Materials Applications." Melanie Watson, external engagement and assessment coordinator for LA-SiGMA at Louisiana Tech explained, "The goal is for them to be able to take what they've learned and developed here and take that back to their classrooms and encourage their students to get excited about science." The News Star noted, "LA-SiGMA is made up of Louisiana Tech, LSU, Tulane University, University of New Orleans, Southern University, Xavier University and Grambling State University."

Research and Development

Fourteen Universities Make US Patent List For 2010.

The Chronicle of Higher Education (6/14) reports in its "Ticker" blog, "Fourteen universities, including one in China-Tsinghua University-were among the 300 organizations that earned the most US patents in 2010, according to the latest compilation by the Intellectual Property Owners Association. " At the front of the overall list, with 5,866 new patents, was IBM. "The University of California system, as usual, topped the list of universities; it won 349 patents in 2010 and was ranked 83rd over all."

Researchers Model Human Behavior To Develop Better Computerized Cars.

Popular Science (6/14, Dillow) reports MIT researchers are "modeling human driving behavior to create algorithms that can help computerized cars predict what human drivers are going to do next." Anticipating human behavior could be of significant importance to computerized cars in a transition period where the road is shared by human and computer drivers. The computerized intelligent transportation system (ITS) designed by the researchers first uses sensors to determine if another vehicle is accelerating or decelerating, then "assesses other factors (is it an intersection or an onramp?) and other data about where human drivers tend to accelerate or slow down" in order to anticipate where the vehicle could go next. Then, the ITS determines "the areas in which the two vehicles could theoretically collide (this is termed the 'capture set'), decides what it thinks the other car is going to do," and directs the vehicle "to avoid those 'capture set' areas where the risk of collision is remarkably more pronounced."

UND, NDSU Presenting UAS Proposal.

The Grand Forks Herald (6/15, Burgess) reports on a proposal for the University of North Dakota and North Dakota State University to work together on "an $11.4 million collaborative research project" called the Limited Deployment of Cooperative Aircraft Project that "could assist North Dakota in becoming a future national test site for unmanned aircraft." The goal of the project is "to create flying technology that would make it safer for unmanned aircraft systems to fly in national airspace." Funding would come from the state, "NASA, the North Dakota National Guard, the North Dakota Aeronautics Commission and a Massachusetts-based research center

called MITRE." And "UAS integration is just one piece of what the Federal Aviation Administration calls its NextGen project."

Workforce

Report Finds Lower Hiring Prospects At Small Businesses.

The New York Times (6/15, Rampell, Subscription Publication) reports that a recent report from the National Federation of Independent Business found "the worst hiring prospects in eight months" in May, with more small companies planning to delay hiring or shrink their payrolls than companies reporting plans grow their workforce. The results illustrate a contrast between the fortunes of small companies and large ones, many of which have returned to strong profits. According to the Times, "the finding provides a glimpse into the pessimism of the nation's small firms as they put together their budgets for the coming season, and depicts a more gloomy outlook than other recent (if equally lackluster) economic indicators because this one is forward-looking."

Global Developments

South Korean Company Challenging UDC Display Patents.

The Wall Street Journal (6/15, Lee) reports South Korean company Duksan Hi-Metal Co. is challenging a pair of patents held by US company Universal Display Corp. regarding materials used in the creation of organic light-emitting diode (OLED) panels, which are used in the flat-panel screens found in smartphones, televisions and computers. Duksan, which because of UDC's patents is barred from manufacturing certain phosphorescent materials used in the creation of OLED panels, claims that commercial use of the patented materials in South Korea predates UDC's patent. The challenge follows similar patents held by UDC being invalidated in Japan.

Industry News

Study Says Improved Gasoline Engine To Compete With EVs.

The Detroit News (6/15, Rogers) reports that the Boston Consulting Group released a study "Power Autos to 2020: The Era of the Electric Car?" yesterday concluding that "the electric vehicle's biggest competitor over the next 10 years" is expected to be an improved internal combustion engine. The study found that "engine technology is advancing faster than expected," and that the "improvements would add $2,000 to the sticker price -- far less than the projected $5,000 premium on a hybrid car or the $10,000 in extra cost passed onto the buyer to go all electric." As a result, "China and Europe - not the US -- will take the lead in adopting electric vehicles over the next 10 years," as buyers there "are more likely to pay the added premium."

Designers Of iPhone Interface Behind Energy Management Startup.

Christopher Mims writes in his blog at Technology Review (6/14) about Nest Labs, "a super stealth-mode" startup "creating a home energy management system" that could be accessed from a smartphone or computer. What sets Nest Labs apart from the smattering of other companies pursuing the same idea, Mims writes, is that the founders of Nest Labs also "helped invent the iPhone's distinctive interface." Mims notes that the company appears to have some high profile backers, such as Kleiner, Perkins, and cites a GreentechMedia source who said the company "already has a 'very high' valuation after its initial round of fundraising." Mims sees this as a reasonable possibility. "If anyone can rescue home energy management from energy geeks and utility companies by making it as sexy, appealing and ubiquitous as Steve Jobs's little dream machine," he writes, "it's these guys."

BMW Investing In Own Carbon Fiber Factory.

Bloomberg News (6/15, Reiter) reports BMW is investing $100 million to build "its own carbon fiber factory" in order "to secure supply of the lightweight material and lower expenses by refining the production process." In entering the commodity business, BMW is looking to the low-weight material as one of its primary avenues for meeting higher efficiency standards in the future. Bloomberg notes, "BMW has partnered with SGL Carbon SE (SGL), the only Europe- based producer of the material, to build the plant, prompting VW to buy 9.9

percent of SGL to ensure its own access." VW and other carmakers have similar plans for carbon fiber. "The capacity to produce carbon fiber isn't that big, so manufacturers are looking to secure access," said Robert Outram, of Frost & Sullivan. "There are not many people who do it well. It's a long-term strategy play."

Company Says Exoskeletal Arms Could Have Uses Beyond Vehicle Assembly.

The Los Angeles Times (6/15, Rodriguez, Times) reports on "slender, futuristic-looking limbs that can be controlled by a finger," which are replacing the older and heavier robotic arms at a Ford assembly plant in Louisville, Kentucky. The zeroG exoskeletal arms - "just a quarter of the size, weight and price of the machines they are replacing - have already helped reduce injuries and may allow Ford to speed up assembly," the Times notes, and the automaker is considering additional purchases. Equipois Inc., the company that makes the arms, "sees the same technology helping sculptors, surgeons and dentists work longer without getting tired."

LightSquared To Differ With GPS Firms On Ability To Reduce Interference.

The Wall Street Journal (6/15, Schatz, Subscription Publication) reports that the report on tests of LightSquared technology will show that it interfered with GPS receivers. LightSquared is expected to argue that there is a technical solution to the problem, while GPS firms are expected to oppose that conclusion. Any resolution will be worked out by the Federal Communications Commission. The story notes that both the Defense Department and Federal Aviation Administration are concerned because of their growing use of GPS. It adds that GM's OnStar has requested that FCC demand further tests. LightSquared has argued that filters may resolve the problem of interference.

Bloomberg News (6/15, Trudell, Shields) reports, "GM wants more testing of ways to mitigate LightSquared's interference of OnStar's global-positioning system." In earlier testing, "LightSquared signals disrupted GM's OnStar and GPS devices used by the Defense Department in 46 tests," according to the FAA's Deane Bunce.

Engineering and Public Policy

President Obama Calls For More Engineers.

Computerworld (6/15, Thibodeau) reports, "President Barack Obama is making a push to train 10,000 new American engineers a year, primarily with the help of the private sector." The President said, "We've made incredible progress on education, helping students to finance their college educations, but we still don't have enough engineers." Unemployment among engineers is low, around 4.5%, according to the IEEE-USA. "To boost engineering enrollments, Obama said private sector companies will promote science, technology, engineering and math education, offer students incentives to finish degrees, and help universities fund their programs. The participating companies intend to double their internship hiring."

FDA Issues Draft Nanotechnology Guidance.

IndustryWeek (6/14, Andorka) reports, "The Food and Drug Administration (FDA) has issued its first draft of 'Guidance on Considering Whether an FDA-Regulated Product Involves Application of Nanotechnology,' a guideline that's expected to clarify for manufacturers where they can use the new technology." The draft guidance "appears to be" in response to some experts who have called "for more explicit guidelines in the nanotechnology field because it would help spur innovation and commercialization." IndustryWeek notes that while it "does not propose a definition of nanotechnology or nanomaterials, and it doesn't change the regulatory requirements for developing or marketing products," the draft guidance "does offer several 'points to consider,' which the agency says will aid it and manufacturers understand better about whether the inclusion of nanotechnology in products has potential implications for regulatory status, safety, effectiveness or public health."

Bill Would Ease Green Card Rules For Skilled Workers.

Bloomberg News (6/15, Hoffmann) reports, "Intel Corp. and Microsoft Corp. may have help in their multiyear effort to bring more high-skill workers from overseas into the US under a bill" that Rep. Zoe Lofgren (D-CA) introduced yesterday, which "would provide green cards, or permanent residence, to more foreign students who earn at least a master's degree in science or engineering at US universities. It also gives green cards to foreign entrepreneurs who start companies employing five or more US citizens." Lofgren is seeking a Republican to co-sponsor the bill. Experts said "the bill is broader than past efforts," but noted that a similar bill introduced by Rep. Jeff Flake (R-AZ) two years ago "never left the House Judiciary Committee," and that bill targeted only PhD holders.

Elementary/Secondary Education

Technology Playing Larger Role In Teaching Science.

Education Week (6/15, Quillen) reports that use of computer simulations and 3D modeling are gaining wider acceptance in school science classes, "but experts say that, for teachers, it can still be a long road from a primitive depiction of electron transfer in static electricity to a lab where high school students measure the radiation in a strontium-90 isotope sample halfway across the country." Based on participation in several programs across the US, "teachers appear willing to embrace simple models that illustrate a scientific concept on a computer screen and allow the user to adjust variables to get different results." However, "getting beyond computer models and using real-life virtual labs on the high school level is far less widespread." Experts say greater acceptance may lie with increased teacher technology training.

Students Show Off Robots At School Board Meeting.

The Berkeley (SC) Independent (6/15, Rogenmoser) reports, "Robots controlled by students and teachers...gave the Berkeley County School Board a show of mechanical motion, speech and dance moves" at a recent board meeting. BCSD Director of Career and Technical Education Ken Verburg that "there are several robotics platforms but the biggest is FIRST Robotics." He added that in general, the robots "all do the same thing, but at different grade levels and different levels of difficulty." The article profiles some of the student teams in attendance, and provides some information on the robots they designed.

Technology Outreach Programs Awarded Grants.

The Oregonian (6/15, Argus) reports on "two outstanding Hillsboro School District technology programs" that "were each awarded $20,000 grants by Intel Corporation and the Hillsboro Schools Foundation last week." The first proposed program, "Hillsboro Students: Mobilized," will seek to "use mobile devices and technology to attract a wider audience to computer science courses, integrate computational thinking into computer science courses, and model real-world projects to gain valuable skills for careers in computing-related occupations." The second program, "Scratch and learn," will "provide a mobile computer lab so students will have access to SCRATCH, a programming environment developed by a research group at the MIT Media Lab (see http://scratch.mit.edu)."

Students Engineer Wheelchair Device For Classmate.

The Yakima Herald-Republic (6/14, Janovich) reported on introductory engineering students in the Project Lead the Way program at White Swan High School, who designed and built a device that allows Shane Carey, a fellow student with cerebral palsy, to more easily transport the computer he uses to communicate. Noting the expense of specialized wheelchair parts, PLTW teacher Rob Ford said he "saw Shane's dilemma as a real-world design and welding experience for his engineering students." The students, who were awarded extra credit for their work, "brainstormed the problem, took measurements, made drawings and generated computer images, designing every aspect of the gadget."