AE Celebrates its Centennial and Lands the Single Largest Grant in Penn State History!

Stories on pages 10, 11, and 15
A Message from

Dear Alumni and Friends,

I would like to start by thanking all faculty, staff, students, alumni and friends of the Department for all that they have done to make this Centennial Year a truly memorable one! Numerous activities have been held to mark 100 years of Architectural Engineering at Penn State. These are covered on the front cover and the center spread of this newsletter. During the year, I also had the opportunity to hold receptions around the country to meet alumni. Receptions were held in ten major cities and it was wonderful to meet with more than 250 alumni.

The Department continues to make significant progress on all fronts despite the economic situation. With regard to the curriculum, we have made several enhancements including: introducing an integrated project delivery (IPD)/building information modeling (BIM) dimension to the senior thesis, engaging the School of Architecture and Landscape Architecture in an integrated BIM studio, integrating collaborative working and sustainability concepts, and streamlining courses. The graduate program has also been reviewed and updated, with important changes to the Ph.D. program.

Research funding has grown considerably, with several major awards including three Department of Energy (DOE) Centers worth more than $10m and a $2m NSF grant. More recently, we successfully led the consortium awarded the $129m DOE-funded Energy Innovation Hub for Energy Efficient Buildings – see page 15 for more details! This is the largest grant in Penn State's history and gives us an excellent opportunity to make a difference in the lives of millions of people who spend about 90% of their time in buildings. Dr. James Freihaut led this initiative on behalf of the Department and we are grateful to him and other colleagues across the University who contributed to this effort.

Other notable developments include the kick-off of the Mentor Program - ably coordinated by the Student Society of Architectural Engineers (SSAE), which has been revitalized by a dynamic leadership team headed by Josh Wentz. SSAE has worked very closely with the Penn State Alumni Society of Architectural Engineers (ASAE), led by Dr. Jonathan Dougherty, in matching students to alumni. The Department is also developing a number of continuing and distance education courses to satisfy the needs of current students, alumni and others. Despite the economic situation, more than 95% of our graduates have been able to secure job placements, thanks to a proactive match-making approach managed by Professor Kevin Parfitt.

As the Department looks forward to the next 100 years, we are proud of what has been accomplished to date but are humbled by how much more remains to be done. We invite you to partner with us in whatever way you can to strengthen the Department's position as the leading AE program and to develop the next generation of high performance green buildings.

Thank you for your continued support.

Best regards,
Dr. Chimay J. Anumba
Professor and Department Head

Dear Architectural Engineering Alumni and Friends,

It is a pleasure for me to offer my heartfelt congratulations on the occasion of the Department's 100th anniversary. The Department has a very rich history with a foundation on working very closely with industry and the profession. Its graduates have become leaders in the profession while the faculty have developed outstanding educational programs and worked to advance the knowledge base and practice of the profession.

Recently, the faculty's efforts to advance the knowledge base of the profession through research have resulted in significant accomplishments:

1. Led by Dr. Jim Freihaut, the award by the Department of Energy of $129 million to establish an energy efficient hub at the Navy Shipyard in Philadelphia, supported by a $30 million commitment from the Commonwealth of Pennsylvania.
2. Led by Dr. David Riley, a $3.5 million award from the Department of Energy for a Mid-Atlantic Solar Resource and Training Center.
3. Also led by Dr. David Riley, a $5 million award from the Department of Energy for a Smart Grid Training and Application Resource Center.
4. And led by Dr. Jelena Srebric, a $2 million award from the National Science Foundation for Creating Opportunities for Adaptation Based on PULSE (Population in Urban Landscape for Sustainable Built Environment).

These research efforts will provide outstanding opportunities to work with other universities and with industry and provide excellent educational experiences for students while advancing knowledge and applications in areas related to energy.

The department's continued rapid advancement results from its having a firm foundation in the education of future professionals and advancing professional knowledge and practice. These attributes will continue to provide a strong basis for further advances in education and research far into the future.

Again, thank you so much for all of your support and assistance in building the Department to its current level of excellence and for providing support as we continue in the future.

Sincerely yours,

David N. Wormley
Dean, College of Engineering
Outstanding Engineering Alumni Award

The Department of Architectural Engineering is pleased to announce that Karen Sweeney ’80, vice president diversity and inclusion with Turner Construction Company in Baltimore, MD, has been named a 2010 Outstanding Engineering Alumna of the College of Engineering. This is the highest honor conferred by the College of Engineering to its alumni.

Karen Sweeney joined Turner Construction Company in 1980 as a field engineer in the Pittsburgh Business Unit and then as assistant superintendent on a 45 story office tower, progressing to estimating engineer in the business unit before transferring to the San Diego Business Unit in 1985 as an MEP coordination engineer on a complex $60 million hospital renovation and addition in Escondido, CA. Sweeney transferred to the Washington, D.C. Business Unit in 1989 and worked in the estimating and purchasing departments on bid and cost guarantee projects in the Mid-Atlantic region. In 1990, she became a project engineer for the American Medical Laboratory Project in Chantilly, VA. She was promoted to project manager in the Special Projects Division (SPD) in 1993, specializing in tenant fit-out and renovation work for law firms and hospitals, and in 1994, was promoted to senior project manager. In 1995, Sweeney became manager of SPD and was promoted to vice president in July 1998, where she led teams for projects with the Navy under NAVFAC, as well as private projects for law firms and small ground-up projects. Sweeney was promoted to vice president and general manager of the Cleveland, OH Business Unit in 2000, where she led numerous projects with the Cleveland Clinic, Metro Health Medical Center, and Cuyahoga Community College, until March 2005, when she joined the Maryland Business Unit as vice president and general manager. In February of 2009, she was named vice president diversity and inclusion reporting directly to the President and CEO of Turner.

Outside of her successful business activities, Sweeney has maintained an active leadership role in a variety of professional organizations and affiliations. In addition, she has a long-standing friendship with Penn State and the AE Department and has served on several -University, -College and -Departmental Advisory Boards as well as the AE Senior Thesis Jury. She is currently chair of AE’s Industrial and Professional Advisory Council (IPAC).

Karen Sweeney’s background is broad and comprehensive. Her senior management skills and diversified experience have contributed to the success and growth of the Turner Construction Company. She is an excellent role model and mentor for the many Architectural Engineering students with whom she regularly interacts.

The faculty and staff of the Department of Architectural Engineering congratulate Karen Sweeney on the prestigious honor of being named a 2010 Outstanding Engineering Alumnae.
Alumni News

Centennial Fellows continued

Timothy Carr, CFM, LEED® AP, vice president Raleigh program management, Heery International, P.C.
Charlie Carter, P.E., S.E., vice president and chief structural engineer, American Institute of Steel Construction, Inc. (AISC)
Christopher Cerino, P.E., head, structural design group, STV, Inc.
Cindy Cogil, principal, SmithGroup
Robert Davis, Ph.D., FIESNA, director, marketing & technical services, Liteline
Larry Degelman, P.E. professor emeritus of architecture, Texas A&M University
Helen Diemer, FIALD, IESNA, owner and design principal The Lighting Practice
Jonathan Dougherty, Ph.D., corporate knowledge center manager, James G. Davis Construction Corporation
Lori Sullivan Ehret (Miller), director of marketing and sales, Turner Construction Company

Donald Farinelli, president, Farinelli Construction Inc.
Philip Foreman, president and CEO, Foreman Group
Hope Furrer, owner, Hope Furrer Associates, Inc.
Louis F. Geschwindner, Ph.D., P.E., emeritus professor, Penn State–Architectural Engineering
William Glassmeyer, P.E., master professional and vice president, Transystems Corporation – Consultants
Robert Grottenthaler, vice president, Barton-Malow Company
Michael Harrison, senior vice president, Hines
David Kaneda, PE, AIA, LEED® AP, principal, Integrated Design Associates, Inc. (IDeAs)

Luke Leung, associate partner in building services/sustainable engineering, Skidmore, Owings and Merrill (SOM)
Roberta Levy Liss, executive director, Rand Construction
Robert A. Marino, PE, LEED-AP, president, Mueller Associates, Inc.
Mark Konchar, corporate vice president, Balfour Beatty Construction
Steve Maruszewski, deputy associate vice president for the Penn State Office of the Physical Plant
Edward V. McNeill, senior vice president operations, Turner Construction Company

William Moyer, executive vice president, James G. Davis Construction Corporation
John O’Keefe, division president mid-atlantic region, Clark Construction Group
Scott Radecic, senior principal and board member, Populous
Jay Ruby, president and CEO, Ruby & Associates, PC
Robert Salmon, senior vice president, Holder Construction Company
Raymond Sowers, executive vice president and partner, ONCORE Construction, LLC
Russell Sykes, senior vice president, managing director, SmithGroup
Linda Tolland, program director, Port Authority of NY and NJ
Jeffrey Turconi executive vice president, P.J. Dick Corporation
John Ulmer, manager of software development, Google Sketch-up
Clarence Waters, Ph.D., P.E., associate professor of architectural engineering, University of Nebraska – Lincoln
Joseph Zaharewicz, vice president of design, Elliptipar, Div. of SRS Design, Inc.

Honorary AE Centennial Fellows

Glenn Bell, senior principal & CEO, Simpson Gumpertz & Heger, Inc.
William Brennan, chief operating officer, Skanska, USA
Daniel A. Cuoco, P.E., F.ASCE, president & CEO, Thornton Tomasetti
Herb Duffield, P.E., CEM, CBCP, LEED® AP
Michael Kuntz, vice president & general manager, Turner Construction
Bennett Levin, president and chief engineer, Bennett Levin, Inc.
David Mc Kamish, president, McMamish, Inc.
Pennsylvania Society of Professional Engineers/Professional Engineers in Private Practice

Víctor E. Sanvido, Ph.D., senior vice president, Southland Industries
Joel Spira, chairman and founder, Lutron Electronics, Inc.
John Tarpy, division president & CEO, Balfour Beatty
DeI Walker, executive director, Pittsburgh Builders Exchange
Raissa Wetcher, Forrester Construction Company

Alumni Receptions

Eight more AE alumni receptions were held in East Coast cities during the spring semester. AE Department Head Chimay Anumba enjoyed the opportunity to interact with the alumni. He encouraged them to reconnect with their alma mater and to participate in our centennial year celebrations.

We would like to thank our alumni hosts (listed below) who generously hosted the receptions in their areas:

Eugene Bard, president, BR+A in Boston, MA
Jonathan Dougherty, corporate knowledge center manager, James G. Davis Construction, Rockville, MD
Michael Harrison, senior vice president, Hines, Atlanta, GA
Russell Heiken, executive vice president, X-nth, Orlando, FL
Karen Sweeney, vice president of diversity and inclusion, Turner Construction Company, Baltimore, MD
Jeffrey Turconi, executive vice president, P.J. Dick Corporation, Pittsburgh, PA
Daniel Waltersdorff, president, Barton Associates, York, PA
Joel Weinstein, managing principal, Thornton-Tomasetti, New York, NY

Dr. Anumba plans to visit more cities in his on-going effort to keep the department’s connection to the AE alumni strong. If you would like to host a reception in your area/city, please contact Nancy Smith (njs@engr.psu.edu).
70’s

Walter E. Geiger ’73 joined the Washington, DC office of Leo A. Daly as design principal and vice president in July 2010.


80’s

Monica DeCesare Thomas ’85 is a principal at Apogee Engineering LLC, a lighting/electrical/systems design firm in Harrison City, PA. Responsibilities include engineer/bookkeeping/marketing. 3 employees, 1 additional part time clerical and CADD monkeys when needed! We do work in the Pitts-burgh area and also in CO, as the electrical portion of Liz Feng Gehring’s company Gehring & Assoc.

Rob Roth ’88 associate partner with Syska Hennessy Group in Rockville Centre, NY.

Mark Kanonik, P.E., LEED AP ’89 senior structural engineer with EYP Architecture and Engineering PC in Albany, NY. His project “The Rebirth of Building 53,” was the cover story for the Sept. 2010 issue of Structural Engineering and Design magazine. Kanonick was the structural engineer of record for the Building 53 project.

Andrew Pedrick ’81 leads the Practice Area of Transportation Architecture for the US Western Region of AECOM, in Los Angeles, CA, a global provider of professional technical and management support services to a broad range of markets. My work includes leadership of national and international projects for private and public clients.

90’s

Christopher Cerino, P.E. ’95 accepted new position as head of the Structural Design Group with STV, Inc. in NYC.

Karen Benner ’98 is product development manager with EYA, LLC, a real estate developer and homebuilder in Bethesda, MD. Responsibilities include development of project specifications and overseeing the architectural and MEP plan development for all communities; providing construction support via RIs, shop drawing review and permit updates. EYA specializes in urban infill townhouse communities, which often include a public and/or affordable housing component. I received LEED-AP for Homes in the fall of 2009 and serve as the EYA “resident expert” for all things green & sustainable. EYA is currently building the largest for-sale LEED-H community in the United States, Capitol Quarter. www.eya.com

F. Norman MacCord ’97 is president of F.N. MacCord Architect, Inc. and architectural firm in Secane, PA.

Brett D. Jones ’92 was one of six new members inducted into the East Stroudsburg Area School District Meritorious Hall of Fame. Jones became a structural engineer at Simpson, Gumpertz & Heger Inc. in Arlington, Mass., while earning a master’s and Ph.D. in educational psychology from the University of North Carolina at Chapel Hill. Jones is a nationally recognized leader in the education of teachers and future teachers in the design of effective classroom instruction based on current motivation, learning and memory research, and has taught at Duke University, the University of South Florida at St. Petersburg, and Virginia Tech. Jones has been honored by the American Educational Research Association, and Virginia Tech and the University of South Florida for his teaching and research.

Mark Franz ’91 is a principal for FRANZ Structural Engineering, LLC in West Chester, PA. He is responsible for all facets of business management and structural engineering including technical and management responsibility for all phases of the design process from conceptual planning through engineering design and construction administration.

Jeff Gerwing ’98 is director of operations at SmithGroup in Detroit, MI. Responsible for the staff, daily operations, and financial performance of the Detroit office of SmithGroup. I also maintain involvement as a senior lighting designer in the Lighting Design Studio. My wife Heather and I are celebrating the birth of our son, Cole, on January 10. His sisters Hayley and Alyssa adore him and love being big sisters. On a professional note, last year I was promoted to the Director of Operations position for SmithGroup’s Detroit office. I still fuel my passion for lighting design through continued project involvement.

Lilian Rodriguez Fu ’95 is a lighting designer-associate with HLB Lighting Design, Inc. in San Francisco, CA.

Douglas Fick ’93 is a project manager with BSA Life Structures in Indianapolis, IN. Responsibilities include project management, sustainability leadership on healthcare and life science projects.

Dennis Ludwig ’92, ’94g is a senior structural engineer with Rist Frost Shumway in Laconia, NH. Responsibilities include all facets of structural engineering.

Shayna Bramley ’99g passed her PE in April 2010 and her CEM in January 2010. She is now a PE, CEM, GBE, LC, LEED AP, CBCP and a the best credential of all….Mom of 3! She has also been recently hired as the national lighting education and training manager for Crestron Electronics in Rockleigh, NJ. She and her husband Jonathan Bramley (LEEDS Exchange Student ’97) continue to reside in Palm Beach, FL.

Frederick Po-Tsang Lee ’97g currently an architect at Insitu Architects & Associates in Taipei, Taiwan.

Patricia Davis ’99 is a senior electrical design engineer with MG Engineering in NYC. I obtained a P.E. in electrical engineering. Responsibilities include site surveys, budgets and full power distribution design.

00’s

Jonathan Kirk ’08 project engineer with Nitterhouse Concrete Products in Fayetteville, PA. Responsibilities include design of precast concrete structures and products.

Shane Goodman ’09 with DPR Construction in Washington, DC.

Jason Brown ’00 design solutions center manager of GE Lighting Solutions in Highland Heights, OH.

Noah Shaltes ’00 is a project manager with P.J. Dick in Pittsburgh, PA.

AE CAREER FAIR
The next AE Career Fair will be held on Oct. 19 at the Bryce Jordan Center.
Check out our Web site for further details: http://www.engr.psu.edu/ae/job_placement/career_fair/index-precareerfair.asp
Mr. Butler, a registered professional engineer in several states, is president of A & E Group, a multi-discipline, consulting engineering firm, in Wilkes-Barre, PA. Mr. Butler is president and secretary of the Penn State Worthington Scranton Alumni Society, he is also a member of the campus’ Advisory Board and the Alumni Board of the College of Engineering.

He is a board member and past president of the Greater Scranton YMCA Board of Directors, past president of the Anthracite Chapter of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, and has served on several township boards and other civic organizations.

He and his wife Terri have endowed a campus scholarship, The Rice-Butler Family Scholarship, which is awarded to a qualifying student each year. The couple is also a member of the campus’ Ridge View Society.

He resides in Covington Twp. with his wife, Teri and son, Justin and daughter Dena.

**Alumni Honors**

Dean L. Butler, P.E., ’72 (2CPSC) and ’77 B.A.E. was named the Penn State Worthington Scranton Alumni Society’s 2009 Alumnus of the Year at a campus reception in his honor on Feb. 16.

Sandra DiRupo ’08 is working with Turner Construction Company in Philadelphia, PA.

Alyssa Adams ’09 is a mechanical designer with McClure Company in Harrisburg, PA.

Sarah Lippai ’05 is a project engineer with Turner Construction Company in Orlando, FL.

Benjamin Basom ’01 is a lighting engineer with Brinjac Engineering in Harrisburg, PA. Responsibilities include architectural lighting design within the Lighting Design Studio, a division of the larger engineering firm.

Josh Thompson ’07 is a senior project engineer with Holder Construction Company in Washington, DC.

Hyung Seok Choi ’09g is an electrical designer with CCRD Partners in Dallas, TX. Responsibilities include design of healthcare facilities and commercial buildings, power distribution systems, interior/ exterior lighting, fire alarm, nurse call, fault current analysis, energy analysis and specialty lighting.

Brian Raff ’01 is marketing director for National Steel Bridge Alliance in Chicago, IL, a not-for-profit trade organization.

Benjamin Fichtner ’02 is a project engineer with Providence Engineering in Lancaster, PA.

Justin Herzing ’10 and Kimberly Chemosky were married on June 5. Justin is employed by Southland Industries in Sterling, VA.

Pimonmart Jan Wankanapon ’09g is on the faculty of Architecture and Urban Planning at Thammasat University in Bangkok, Thailand teaching graduate and undergraduate courses in architecture and interior architecture.

Alison Rampulla ’04 with Orndorf & Associates in Ardmore, PA.

Mike Pothering ’10 is a project engineer with Whiting-Turner Contracting Company in Baltimore MD.

**In Memoriam**

Sidney J. Myers, ’50 of Camp Hill, retired professional engineer and registered architect, passed away March 11, 2010. He was the third son of Harold and Dessie Myers of York Springs.

A veteran of WW II, he served in the Naval Air Corps prior to his college years. While at Penn State he and four brothers were simultaneously matriculated.

He had been employed with several architectural and engineering firms before beginning a partnership of Myers and Shannon, and being vice-president of Smith, Miller and Associates, both architectural and engineering firms. His most interesting employment was as the coordinator of all the professionals involved with the East Wing of the Pennsylvania State Capitol.

He was a past president of the Central PA Chapter, American Institute of Architects; Central PA Chapter Construction Specifications Institute; past commander of American Legion Post 43, Camp Hill; a past president of the Pennsylvania Society of Professional Engineers and its Harrisburg Chapter; and Fellow member and past director of the National Society of Professional Engineers. Sid received the Distinguished Service Award from the Harrisburg Junior Chamber of Commerce, the Harrisburg Chapter PSPE Engineer of the Year and the PSPE Engineer of the Year awards. He was co-recipient, with his wife Jane, of the PSPE Distinguished Service Award.

He was an active member of Trinity Evangelical Lutheran Church in Camp Hill. He had been active, for more than 30 years, with the Boy Scouts of America.

He was a member of the Commissioned Officers’ Mess, Naval Support Activity, Mechanicsburg, and life member of the Penn State Alumni Society.

He is survived by his wife, a son, daughter, three grandchildren, and two brothers.

**In Memoriam**

**00’s (continued)**

Sez Atamturktu ’06g has accepted a position as assistant professor in the Department of Civil Engineering at Clemson University in Clemson, SC.

Moore-Jarrell ’00 is a project manager with Whiting-Turner Contracting Company in Baltimore, MD. I recently managed the construction of two new Westin Hotels. My husband Brodie Jarrell (BS ’95) and I, welcomed a baby boy, Connor Jarrell on June 1, 2009.

Michelle (Mentzer) Olender ’03g is a project engineer with Thornton Tomasetti in Ft. Lauderdale, FL. Responsibilities include managing and collaborating with teams of engineers to design large-scale buildings.

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He was a member of the Commissioned Officers’ Mess, Naval Support Activity, Mechanicsburg, and life member of the Penn State Alumni Society.

He is survived by his wife, a son, daughter, three grandchildren, and two brothers.

**KEEP IN TOUCH!**

You can stay in touch with your fellow classmates by completing the Alumni Update Form online at the AE website at: www.engr/psu.edu/ae/contact/Alumni-Update-Form.asp.
Luke Leung '87, '90g, associate partner in the Building Services/Sustainable Engineering Department of Skidmore, Owings and Merrill (SOM) is currently the MEP team leader on Burj Dubai, (right) the tallest building in the world.

The architects and engineers redefined what's possible with supertall buildings in the design and engineering of the 828 M (2716') tall Burj Khalifa (formerly Burj Dubai). The tower and its surrounding neighborhood are more centralized than any other new development in Dubai. At the center of a new downtown neighborhood, Burj Khalifa's mixed-use program of an Armani hotel, luxury residential and office space increases the area's development density and provides direct connections to mass transit systems.

My role in the project as the MEP principal oversees the design from conceptual to construction administration. Given its height and extreme environment, there are multiple challenges throughout the 4 years of construction document development from inception in 2003 to 2007. The main service elevator is the world's highest and rises at 504 meters (1,654 ft), more than the height of the Taipei 101 in Taiwan (448 meters) and almost one-and-a-half times as high as the Empire State Building in New York (381 meters). Racing at 9 meters per second it also has the world's longest travelling distance for an elevator. The chilled water system utilized up to 460 psi (32.34 kg/cm$^2$) pressure to minimize transfer. The first super tall buildings that incorporated reverse stack effect monitoring and control system to measure pressure and temper reversed stack effect. The highest gravity feed fire protection system in the world utilizing the height of the building to provide required pressure for the fire protection system. Up to 800mm of creep and shrinkage has been account for in the building to allow piping movement when the building starts shrinking at its own weight after construction. The Tower collects condensate water on chilled water coils from the atmosphere which is used to cool the domestic incoming water and irrigate landscaping around the tower. The Tower incorporates numerous enhancements to the fire and life safety systems, including "lifeboat" operation for elevators which allows for them to be used for evacuation under backup power during certain situations, which decreases the total evacuation time by 45% over stairs alone.

Some of the sustainable features including the height of the tower allow year round cooler conditions at the upper part of the building. Solar panels are installed to heat 140,000 litres of water every day by its residents. The solar panels on the Burj Khalifa are expected to save the equivalent to 3,200 kilo watts per day and 690MWh of energy every year. A low-emissivity glass with one of the lowest shading coefficients available provides Burj Khalifa with enhanced thermal insulation against high ambient temperatures of Dubai and thermal comfort with improved mean radiant temperature. Central plant has an ice storage system to make ice in the night time to relieve day time peak demand and also provide emergency cooling. Site wide gray water system was utilized for irrigation, flushing usage. Since the apartments may not be occupied for much of the year, the systems are designed to be variable only when occupants are present. Including use of carbon dioxide sensors, motorized dampers and variable speed drives etc.

There are approximately 130,000 MEP penetrations the team coordinated and I accumulated a total about 6 months full time in dealing with just the emails on the MEP portion. The Penn State AE program prepared me well to work in an integrated team for the tallest building in the world.
**AE SENIOR THESIS ACTIVITIES**

The 2010 Senior Awards and Recognition Banquet was held on Apr. 30 at the Nittany Lion Inn. The Department of Architectural Engineering was very pleased to present over $110,000 in scholarships and awards to deserving AE undergraduate students. We are extremely grateful for the phenomenal generosity of our alumni and friends who support the AE Scholarship and Awards Program each year. The 2009-10 Scholarships and Awards are listed below.

**2010-2011 AE SCHOLARSHIPS / SPONSORS**

- Gladys M. Baird Memorial Scholarship
- Beaver Scholarship in Heavy Construction
- Laraine and Jack Beiter Excellence Endowment Scholarship in Architectural Engineering
- Borda & Fernsler Family Scholarship
- BR + A Consulting Engineers
- Prof. Jack Everetts and Prof. Melvin Isenberg Memorial Scholarships (sponsored by Eugene Bard)
- Cagley & Associates Scholarships
- Clark Construction Group Scholarship
- AE Class of 1975 Scholarship
- Ellerbe Becket Scholarship
- EwingCole Scholarship
- Herbert Duffield LLC Scholarship
- Prof. John Flynn Memorial Scholarship
- Foreman Architects-Engineers Scholarship
- Foreman Program & Construction Managers Inc. Scholarship
- Louis and Judy Geschwindner Endowed Scholarship
- Illumination Engineering Society - Philadelphia Section Scholarship
- McKamish Family Trustee Scholarship
- Robert J. McNamara Scholarship
- Charles A. Merica Memorial Scholarship (sponsored by Clark Construction Group)
- Professor Vincent Pass Scholarship (sponsored by Joseph & Marlene Borda)
- Melvin H. Peters Endowed Scholarship
- Pittsburgh Builders Exchange Scholarships
- James M. Pohlen Memorial Scholarship
- John R. Potter Memorial Scholarship
- Franklin Ruth Memorial Scholarship
- Ryan Biggs Assoc. Scholarship
- Simpson Gumpertz & Heger Scholarship
- SmithGroup Scholarship
- H.O. Smith Memorial Trustee Scholarship
- Professor C. Herbert Wheeler Scholarship sponsored by Joseph & Marlene Borda
- Sharron E. Williams Memorial Scholarship
- Michael J. and Virginia A. Youchak Scholarship

**2009-2010 AWARDS**

- John J. Brinjac Memorial Award - Outstanding 5 Year Performance and Record of Study in AE (sponsored by Brinjac Engineering Inc.)
- Cannon Design Outstanding Record of Study in HVAC - 5th year (sponsored by Cannon Design)
- Cannon Design Outstanding Performance in Mechanical in the 4th Year AE Class
- Lite Control Outstanding Performance in Lighting/Electrical in the 4th Year AE Class

**AE SENIORS GARNER TOP HONORS**

A panel of 40 industry professionals met to judge the top eight fifth-year thesis presentations. The following students presented their projects for the jury.

**Ronza Abousaid** completed her thesis project on the National Intrepid Center of Excellence in Bethesda, MD. A 72,000 sq.ft clinical treatment facility. Her analyses focused on the benefits of moving towards an integrated project delivery method, improving the efficiency of Building Information Modeling use within the project team, and increasing the building efficiency by designing a heat recovery system for project. Following graduation, she accepted a position at Gilbane Building Company in Washington, DC.

**Timothy Ariosto** completed his thesis project on the New Acute Care Hospital and Skilled Nursing Facility addition to the Chinese Hospital in San Francisco, CA. His thesis primarily focused on the implementation of Fluid Viscous Dampers into the lateral system of the structure in order to resist seismic forces developed during an earthquake. After graduation, he will be returning to the Architectural Engineering Department at Penn State to earn his Masters of Science degree.

**Daniel Aughenbaugh** completed his thesis project on the five-story, 380,000 sq.ft Westinghouse Nuclear Engineering Headquarters Building 1. His design focused on reducing the mechanical plant loads with a Dedicated Outdoor Air System, investigating an unconventional mechanical plant with a Hybrid Geothermal System, and investigating a conventional plant alternative with a Central Plant. Additionally, he conducted a facade redesign study and daylighting analysis to further lower the energy footprint of the facility. His future plans are to attend the University of Oregon to attain his Master’s degree.

**Jamie R. Devenger’s** thesis project focused on Sherrerd Hall, the 45,000 square foot home to Princeton University’s Department of Operations Research and Financial Engi-
neering. The central focus was the redesign of the lighting and electrical systems in five distinct spaces within the building. Modifications were made to the power distribution system, including the addition of an advanced digital lighting control system. Daylighting solutions were successfully integrated with a digital lighting control system to provide energy savings. The building enclosure was redesigned for daylighting and thermal performance purposes. Overall, the design solutions proposed would serve to improve the building performance and aesthetics. Jamie has accepted a lighting design position with Fisher Marantz Stone in New York City.

Eric Fedder focused his thesis on the Episcopal High School Centennial Gymnasium Addition and Alteration. The project is currently under construction on the private campus of Episcopal High School located in Alexandria, VA. The project consists a 60,000SF new gymnasium addition, as well as 39,000SF of renovation work to the existing athletic facilities. He examined three critical areas of the project: contract strategies and procurement, prefcast facade re-design and a building integrated photovoltaic system. Following completion of the integrated BAE/MAE program in December 2010, Eric has accepted a position with James G. Davis Construction in the Washington, DC metro area.

Pavel Likhonin thesis project focused on a three-story, 186,000 sq. ft. facility in Fort George G. Meade, MD. The Defense Media Activity building is currently under construction with a completion date set for September 2011. The DMA building has large thermal and electrical loads contributed by television studios, editing suites, and a data center. The main focus of his thesis was the reduction of yearly energy costs for the building. Several systems were analyzed for feasibility. These systems included a combined heat and power system, a thermal storage system, and a system optimization analysis, which included integration of CHP with chilled water storage, dedicating a chiller to the data center, and a study on DOAS. His future plans include working with Dewberry in Raleighh, NC.

The building used for Luke Renwick’s senior thesis was the Five Star/Five Diamond Salamander Hospitality Resort and Spa, being constructed in Middleburg, VA. The body of work involved the complete lighting redesign from schematic design to construction documents of 4 spaces/areas within the resort. Those spaces included the exterior facade and entry courtyard, the living room, wine bar, and grand ballroom. Also included in the design were two electrical engineering depth studies: a study comparing the existing static switch uninterrupted power source (UPS) and a rotary UPS system as well as a cost analysis between existing copper feeders and proposed aluminum bus duct. Finally, breadth topics were included on an architectural fireplace redesign and a mechanical heat recovery loop design. Luke currently works for Smithgroup, Inc. as a Graduate Lighting Designer in their Detroit, Michigan office.

Liam McNamara completed his senior thesis project on 300 North La Salle, a 60-story, 1.3 million sq. ft. high rise office building in Chicago, IL. After analyzing the shear wall core and alternative floor systems, it was decided that if the floor system was redesigned to act as a series of deep beam outriggers, the thickness of the shear walls could be reduced and the need for trusses may be eliminated. This redesign was performed with the intention of increasing the rentable floor space. Breadth studies also explored constructability and architectural impacts.

2010 - SENIOR THESIS AWARD WINNERS
Acuity Brands/Lithonia Lighting - 1st Place Lighting/Electrical Thesis in Memory of Mickey Woods - Jamie Devenger
Balfour Beatty - 2nd Place CM Senior Thesis - Ronza Abousaid
Barton Assoc. - 2nd Place Mechanical Thesis - Pavel Likhonin
Barton Assoc. - 2nd Place Lighting/Electrical Thesis - Luke Renwick
Barton Malow Co. - 1st Place CM Senior Thesis - Eric Fedder
Cagley & Assoc. - 1st Place Structural Thesis - Timothy Ariosto
Hope Furrer and Assoc. - 2nd Place Structural Thesis - Liam McNamara
PSPE/PEPP - Best Overall AE Senior Thesis - Eric Fedder
Simpson Gumpertz & Heger - Outstanding Senior Thesis in the Area of Sustainable Design - Jason Kukorlo
Southland Industries - Outstanding Senior Thesis in the Area of Specialty Construction - Matthew Dabroski
Transystems Corporation - 1st Place Mechanical Thesis - Daniel Aughenbaugh

Marvin J. Kudroff Memorial Lecture
The AE department was pleased to host the Marvin J. Kudroff Memorial Lecture on April 29 at the Nittany Lion Inn. Dr. Mark Konchar, ’94, ’98g vice president business acquisition at Balfour Beatty Construction in Washington, DC, served as guest speaker. Konchar spoke on “Engineering Management Challenges in a Dynamic Global Environment.”

IPAC
The AE department The Industrial and Professional Advisory Council (IPAC) meetings were held in the College of Engineering on Mar. 17-18. AE faculty and student representatives consulted at length with IPAC members. The focus of the discussions was on “Global Engineering” and also included a discussion session on Industrial Trends.

AE IPAC Group: L-R seated, Susan Hakkarainen, Don Farinelli, Karen Sweeney, Roberta Levy Liss, Joe Wisnewski. Standing, Ray Sowers, Tim Carr, Michael Harrison, Russ Heiken and Herb Duffield (not pictured, Glenn Bell)
2010 marks the 100th anniversary of the program and a number of activities have taken place to celebrate this milestone.

The year-long centennial celebration began with a pizza social on Jan. 13 for all AE student society groups and faculty. This provided an excellent forum for senior faculty to provide an historic background of the department and give students the opportunity to become excited and actively involved with the centennial celebration plans. (photos left)

On Apr. 29, to officially kick-off the centennial, an ice cream social was held at the Nittany Lion Inn for all AE students, faculty and staff as well as industry members who came to campus to serve as jury members for the AE senior thesis presentations.

As part of this celebration, Dr. Mark Konchar, 1994, 1998g vice president business acquisition at Balfour Beatty Construction in Washington, DC, served as guest speaker for the Marvin J. Kudroff Memorial Lecture. (page 7)

On June 9-11, the department hosted the 6th International Conference on Innovation in Architecture, Engineering and Construction (AEC) at the Nittany Lion Inn. (photos right) The conference was held in collaboration with the Centre for Innovative and Collaborative Engineering at Loughborough University in the United Kingdom, and provided an excellent international forum for celebrating innovative research and industry developments in AEC. More than 140 delegates from 20 countries attended (photos right)

The conference featured keynote lectures by John Findlay, director, JDF Works, Ltd. (UK); Ronald McCaffer, emeritus professor Loughborough University, UK; and Michael McLaughlin '94 corporate preconstruction Leader, Southland Industries.

The middle day of the conference was an "Industry Day" which featured panel discussions on Innovation in AEC with the following panelists participating: Scott Bulera and Brian Kraus, (both of Turner Construction), Charles DeBenedittis, (Tishman Speyer), Nicolas Holt, (Skidmore, Owings & Merrill), Steve Maruszewski '82, (Penn State Office of the Physical Plant), and John Findlay (JDF-UK)

An all-year alumni reunion weekend was held on July 2-4 on campus with over 200
AE faculty, staff, students, alumni, and family members in attendance. The weekend was kicked off on Friday, with a Decades Mixer where there was an exhibit of vintage student work as well as a slide show on the history of the architectural engineering program. (top 2 right)

In addition, the department offered a two-day series of continuing education sessions on a variety of interesting and relevant AEC topics. (3rd right)

On Saturday, the department hosted a continental breakfast and picnic lunch in Foundry Park with student-hosted walking tours of campus buildings and department research laboratories. The afternoon featured behind-the-scenes tours of several new campus buildings as well as Beaver Stadium and the Bryce Jordan Center. Saturday evening included an alumni banquet at the Penn Stater Conference Center Hotel with Cirque style entertainment provided by Jennifer Drilling, ’03g and CEO of Fire N Ice Entertainment. As part of the evenings festivities, 55 AE Centennial Fellows were honored with those attending receiving their award recognition. (see page 2)

The reunion weekend wrapped up on Sunday, with several individual class events, a late afternoon barbeque picnic on campus and VIP viewing passes for the outstanding 4th Fest Celebration fireworks (bottom left).

The history of architectural engineering at Penn State is an interesting one that continues to be written. Each year a new group of students enter the program to be molded by the faculty and the outstanding academic experience offered by the Department. The Architectural Engineering Department is pleased to celebrate the outstanding growth and achievements of our first 100 years and looks forward to the challenges of the next 100 years. As it looks to that future, the Department will focus on leading the development of ‘High Performance Green Buildings’. According to AE Department Head, Dr. Chimay Anumba, ‘The AE Department at Penn State has, arguably, had more influence on building design and construction over the last 100 years than any other academic department. We are well positioned to lead the development of the next generation of intelligent, sustainable and high performance buildings’.

Our thanks to everyone who joined in the Centennial Celebration! Additional photos are available to view on-line at:

http://www.engr.psu.edu/ae/AE-Reunion/index.asp
Student Marshal

Matthew Smiddy, the top 5th year student was named the class student marshal to represent AE in the spring commencement ceremony. He graduated with an integrated B.A.E/M.A.E degree from Architectural Engineering and a Baccalaureate degree in Economics. Matt chose Dr. David Riley to serve as faculty marshal (above).

During his time at Penn State, Matt was Shreyer Honors Scholar and a member of the Phi Beta Kappa and Phi Alpha Epsilon Honor Societies and Tau Beta Pi. He has been the recipient of the Clark Construction Group Scholarship; the Borda and Fernsler Families Scholarship; the Gladys M. Baird Memorial Scholarship; the PACE Group Award for Outstanding Performance in Construction Management in the 4th Year AE Class; and the 2009 Hettema Leadership Award, as well as, being named to the Dean's List every semester since entering the AE program!

He was also a member of the Student Partnership for Achieving Construction Excellence (S:PACE) and the Engineering Career Resources Envoy. He has been an active athlete, lettering in the Men’s Varsity Swim Team, President of the Penn State Club Swim Team, and a member of the Penn State Club Water Polo Team.

Following graduation, he began work for the ExxonMobil Corporation as an Economic Analyst.

In addition to being named Student Marshal, he was awarded a Life Membership in the Penn State Alumni Association.

2010 PACE Research Seminar

The Partnership for Achieving Construction Excellence (PACE) Research Seminar was held on Apr. 21-22 at the Penn Stater Conference Center. Held each spring, the research seminar combines presentations of research results and timely industry speakers for a diverse audience of building industry professional and university students. The theme for this year’s seminar was “Creating Opportunities.” In addition, there were Penn State Research and industry presentations on timely topics such as: Energy and the Building Industry; BIM Execution Planning; Business Networking: Expanding Circles and Creating Opportunities.

The next Partnership for Achieving Construction Excellence (PACE) Round Table Meeting will be held on October 27-28. Registration details are available online at: http://www.engr.psu.edu/pace/default.aspx

Hankin Distinguished Lecture

Henry Cisneros, former secretary of Housing and Urban Development (HUD) will be keynote speaker for the Hankin Distinguished Lecture Series to be held at the Nittany Lion Inn Boardroom at 4:00 p.m. on Nov. 17. The topic of the lecture will be “The Nation’s Cities and the American Future.”

New AE Faculty and Staff Members

Dr. Robert Leicht ’05, ’09g joined the AE faculty as assistant professor on Aug. 16. He will be part of the construction option faculty and pursue his research interests in interdisciplinary collaborative efforts within AEC including project delivery processes, technologies and competencies to improve outcomes from interdisciplinary interactions. Prior to joining Penn State, Dr. Leicht was the East Coast BIM Operations Manager with DPR Construction in Falls Church, VA.

Deborah Sam joined the AE staff in Aug. as our new graduate program staff assistant. She will also coordinate the AE Career Fair.

The Center for Sustainability also has several new staff members. Dr. Susannah Barsom was named associate director of the CfS. She was formerly an adviser and instructor in the Department of Biobehavioral Health at Penn State.

Matthew Fedorko is the solar education program coordinator.

Cole Hons serves as communications and media specialist.

Welcome to Penn State!

Partings

Dr. Bohumil Kasal, Hankin Chair of Residential Building Construction will leave the University on Oct. 2, 2010. He has accepted a professorship at TU Braunschweig in the Department of Architecture, Civil Engineering and Environmental Sciences and the directorship of the Fraunhofer Wilhelm Klauditz Institute.

AE staff member Lori Smith has accepted a new position in the Penn State office of the Board of Trustees.

AE staff member Kimberly Lyle has left Penn State to be a stay-at-home mom for her young son, Nolan.

We wish them all the best in their new ventures!

Awards/Honors

Bohumil Kasal, Hankin Chair of Residential Building Construction was named an honorary visiting fellow at the University of Bristol, UK, in April 2010. Kasal will lead an international project investigating composite reinforced laminated frames subjected to seismic loads. The project uses a state-of-the-art dynamic testing laboratory at the University of Bristol.

Ali Memari was promoted to full professor effective July 2010. Congratulations!
Awards/Honors continued
Assoc. Prof. Jelena Srebric has been awarded a $2 million grant from the National Science Foundation. The project is titled: "EFRI-SEED Preliminary Proposal: Collaborative Proposal: Creating Opportunities for Adaptation Based on PULSE (Population in Urban Landscape for Sustainable Built Environment)." A feature story will be included in the next AE Newsletter. Congratulations!

Prof. Emeritus Louis Geschwindner was the recipient of the 2010 Graduate School Alumni Society (GSAS) Lifetime Achievement Award at a ceremony held on campus Mar. 27. The award honors graduate alumni of Penn State who have achieved exceptional success throughout the course of their profession and have demonstrated a lifetime of service and contributions to their community, as well as loyalty to the University and the Penn State Alumni Association.

Professor Bill Bahnfleth was elected to a second one-year term as vice-president of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). As vice-president, he is a member of the Executive Committee, chairs ASHRAE’s Technology Council, which oversees all of the society’s research programs, special projects, standards and technical committees. He is also a member of the ASHRAE Finance Committee.

Richard Behr, Charles and Elinor Matts professor, recently had his book titled "Architectural Glass to Resist Seismic and Extreme Climate Events" published by Woodhead Publishing Limited. The book reviews specific building techniques and test methods to enhance glazing performance during snow storms, wind storms and earthquakes. It is a resource for architects; structural, civil and architectural engineers; researchers; and those involved in designing and specifying building glazing and cladding materials.

Faculty Travel
In May, Bill Bahnfleth travelled to Antalya, Turkey, to participate in the CLIMA 2010 conference, the triennial international conference of REHVA, the Federation of European HVAC Associations. He represented ASHRAE as chair of its CLIMA 2010 Advisory Committee, which assists in the planning and promotion of the conference, and gave an invited plenary lecture entitled "Is Bigger Better: the Role of District Cooling in Sustainable Cooling." The talk emphasized the benefits of an appropriate degree of centralization of utilities in maximizing the cost-effectiveness of low-energy communities. An enjoyable diversion from the excellent conference was an excursion to some of the many Greek and Roman ruins in the vicinity of Antalya.

In June, he visited Buenos Aires, Argentina to give presentations on ultraviolet germicidal irradiation and thermal energy storage at the CATAAR 2010 conference jointly sponsored by the Argentine Association of Refrigeration and the Argentina Chapter of ASHRAE. The conference was attended by academics and professionals from throughout Central and South America. The presentations were well-received and Prof. Bahnfleth was able to experience first-hand a tango show and what it is like to eat beef at every meal.
Integrated Project Delivery/Building Information Modeling Curricula Wins AIA National Award

Considering the complexity and scale of many of today’s design projects and owners’ demands for more sustainable designs, a collaborative design process and the technology of Building Information Modeling (BIM) are becoming critical factors in the successful delivery of projects. It is important that students not only be exposed to the workflow of integrated project delivery and the technical aspects of BIM software, but also have the opportunity for hands-on experience with interdisciplinary collaboration using BIM techniques. Professional offices and contractors are increasingly expecting graduates of design and engineering schools to not only know BIM technology, but also have some understanding of its application in the design and construction process.

BIM technology is well established in many courses across the design and construction curricula at Penn State. The Penn State Departments of Architecture, Architectural Engineering, and Landscape Architecture have been recently awarded a Citation Award in the 2010 American Institute of Architects TAP IPD / BIM Award Program for their integration of Integrated Project Design (IPD) and BIM across the curricula of the three departments. The Citation Award is the highest award given in the academic division of the AIA Award program. Robert J. Holland, associate professor of architecture and architectural engineering, accepted the award on behalf of Penn State at the AIA National Convention in Miami.

Two important pieces of the Penn State IPD / BIM curricula are the AE BIM Thesis Capstone Project and the Interdisciplinary BIM Studio.

The AE BIM Thesis Capstone Project was offered for the first time this past year. Three teams of four students, one each from the four AE options, used the IPD and BIM to analyze the design and construction of the New York Times Building in order to propose modifications to the design with the goals of reducing cost, improving constructability, building performance and sustainability. The AE BIM Thesis was supported by grants from The Thornton Thomassetti Foundation and the Leonhard Center.

The Interdisciplinary BIM Studio included students from Architecture, Landscape Architecture as well as the four options of Architectural Engineering and was offered for the second time during Spring Semester 2010. Benchmarking of other universities indicates this studio is the only design studio in the United States which includes students from all of the major design and construction disciplines in an interactive BIM design environment. The Interdisciplinary BIM Studio is supported by a grant from the Raymond A. Bowers Endowment for Excellence in the Built Environment.

AE students can be found studying in three other continents this year. In the spring, one student studied in Melbourne, Australia. In the summer, 36 students maxed out the capacity of the Rome program. Seventy students initially expressed interest. One student is studying in Leeds this fall.

Additionally, this summer, Prof. Moses Ling accompanied by three students launched the inaugural two-week summer trip to China. It all began with an invitation from Dr. Victor Chen,’05g for AE students to participate in the Summer School on International Construction and Property at Tsinghua University.

For the summer of 2011, a similar trip is planned, minus the lost-in-China segment. The goal is to begin a more robust 7-week summer program in 2012. Please contact Prof. Ling mosesling@psu.edu if you wish to connect with this program.

Study Abroad Summer 2010 New Destination - China

The trip consisted of three segments: three days in Hong Kong, one day in Macau, and ten days in Beijing where the academic program was held. The truly international experience involved AE students interacting with students at Polytechnic University in Hong Kong and students from many nations at Tsinghua University (China, Hong Kong, Japan, Korea, and Australia). Perhaps the most foreign experience was the first day when the students tried to join Prof. Ling for a tour to the Great Wall. The taxi driver took the students to a wrong location to meet the bus. Having missed the bus, with Prof. Ling on it, the students were left to discover how lost a foreign student can feel. It took some ingenuity of the Korean-born student to make it through the day. Geoffrey Kim stopped in a Korean restaurant and a Korean internet café and managed to find directions and locate food.

For the summer of 2011, a similar trip is planned, minus the lost-in-China segment. The goal is to begin a more robust 7-week summer program in 2012. Please contact Prof. Ling mosesling@psu.edu if you wish to connect with this program.

AE BIM Thesis Team – (L-R) Matt Hedrick, Casey Leman, Kyle Horst, Andres Perez
Penn State AE leads research consortium awarded more than $129 million for DOE Energy Innovation Hub

The Department of Architectural Engineering is providing the technical leadership on the recently awarded Department of Energy Innovation Hub for Energy Efficient Buildings. This initiative was led on behalf of the Department by Dr. James Freihaut, who will be the technical director of the Hub. According to the Department Head, Dr. Chimay Anumba, "It is particularly appropriate that, in its Centennial Year, the Department should be playing a pivotal role in the development of the next generation of energy-efficient buildings." The funding for the Hub includes $129 million from federal sources and an additional $30 million from the Commonwealth of Pennsylvania. This is the largest ever grant in Penn State's history.

As the project proposed to DOE developed in discussions with potential state, municipal and corporate partners, it became abundantly clear how well respected the Architectural Engineering Department is throughout the building industry as well as governmental building and economic development planners. As one city planner, architect said: "This is the opportunity for Penn State Architectural Engineering to accrue the resources and cement the relationships it needs to fully actualize its already significant impact on the building industry. When practicing as an architect we hired as many Penn State AE graduates as we could."

The program seeks to transform the building industry into a virtual, vertically integrated industry that designs and delivers integrated systems having innovative, dynamically integrated and interacting subsystems. New integrated team design processes and user friendly thermal load and energy utilization simulation model tools are to be developed by interdisciplinary teams of building industry, university, and national lab partners. Building system performance requirements will drive the research and development of novel materials for energy efficient buildings, load dampening and flattening façade designs, dynamic control systems, and hybrid, on-site combined heat and power technologies. The goal is to create a systems approach to design and deployment of buildings that is similar to that utilized in product developments in the aerospace, manufacturing and transportation industries. Along with technical challenges, the program seeks to address the public policy, workforce development and education - elementary through university - issues inhibiting energy efficiency progress in building designs. These issues were addressed in transportation, aerospace, and manufacturing sectors decades ago. In many ways, due to the nature of the building industry and existing governmental policies, the challenge here is far greater than that ever encountered by the automobile or manufacturing industries, which had clear cut policy and economic competition drives pushing them to systems approaches. The Philadelphia Navy Yard (water front view left) and the partnership established with the City of Philadelphia and other Hub partners provides many buildings for demonstration and refinement of the new design processes and technologies that will lead to a transformation of the building industry.

As Dr. Freihaut indicates, "Making the building industry better is what AE already does by providing the best Architectural Engineers in the world. But now it has the opportunity to create the tools and technologies the industry needs to truly transform the building industry and radically improve the energy efficiency of building systems."

Additional information is available on our website: www.engr.psu.edu/ae/include/AE-DOE-Press-Release.pdf

HUB Physical Environment
Location of existing energy and research centers: DOE Mid-Atlantic Clean Energy Applications Center; DOE Northern Mid-Atlantic Solar Training Center; and the Ben Franklin Center for High Performance Buildings.
Three New DOE Energy Centers Awarded

Dr. David Riley, Director of the Penn State Center for Sustainability has initiated three new energy-related centers in 2010 through contracts with the U.S. Department of Energy.

“Our energy challenges are not limited the need for new technology,” stated Dr. David Riley, associate professor of architectural engineering and Principal investigator on the three projects. “We also face shortage of power system engineers, energy engineers and skilled workers in many energy-related fields. A common thread between each of these new centers is education and workforce development.” Riley also serves as the director of the Center for Sustainability, which is administered by the Architectural Engineering Department at Penn State.

The Solar Education and Resource Center A $2 million DOE grant will cultivate education and training programs in both solar thermal and solar photovoltaic systems at community colleges, universities, and NECA/IBEW training centers. The Solar Instructor Training Network promotes high-quality training in the installation of solar technologies. Nine regional resource and training providers support the professional development of trainers and instructors of solar photovoltaic (PV) and solar heating and cooling (SHC) technologies across the country. By engaging a broad spectrum of stakeholders, Penn State’s Northern Mid-Atlantic Solar Regional Training Center supports a comprehensive training infrastructure for sales, design, installation, commissioning, and service of both solar PV and solar heating and cooling technologies. Solar Instructor Trainings are designed to accelerate market adoption of solar technologies by ensuring that high-quality installations are standard, and to create sustainable jobs within the solar installation industry.

The Smart Grid Training and Application Resource Center (GridSTAR) A $5 million DOE grant will provide education and professional development programs in smart grid topics including smart grid power systems, energy economics, cyber security, building energy management, and distributed energy generation. The GridSTAR Center has been created to develop and deliver responsive professional and skilled workforce educational programming that is aligned with the caliber and pace of emerging smart grid investments and markets. The Center is coordinated by Penn State’s Center for Sustainability and Outreach operations and initialized at two strategic pre-existing service centers in Philadelphia and Pittsburgh. Working closely with the region’s top energy technology educators, utility officers, manufacturing executives, and workforce development agencies, the GridSTAR Center will addresses mega trends and workforce bottlenecks occurring in smart grid-related industries and develop an innovative continuing education and training delivery network.

The National Energy Leadership Corps Through funding from the DOE Building America program, Penn State is also helping to form a new research team referred to as The National Energy Leadership Corps. This team will mobilize a cadre of trained energy student leaders to provide free residential energy assessments, facilitating the education of homeowners about energy loss and energy retrofits of homes. The team will also spur energy job creation through the coalition of NECA contractors and other industry partners responding to increased demand for energy efficient products and services.

Each of these three new programs will lead to new classes and learning opportunities for Penn State students, such as a new solar PV design and construction course to be offered in Spring of 2011.

“A core mission of the Center for Sustainability is to increase opportunities for students to learn about subjects that will help prepare them for careers in fields critical to sustainability goals,” explained Riley. “These new centers will do that, and hopefully create valuable new programs for Penn State and the Architectural Engineering Department.

Department Receives ASHRAE Grant

The department has received a $5,000 Undergraduate Senior Project Grant for a project titled “Controlled Exposure Experimentation Reactors and Ambient Response Facility for Student Experiments/Demonstrations.” The grant will fund controller hardware, mass flowmeters, proportional valves and some of the supplies needed to enhance IEC lab ultraviolet germicidal irradiation (UVGI) experimental apparatus in the basement of Engineering Unit B for instructional use of the apparatus. Initially, three courses, AE 310 Introduction to HVAC, AE 457 HVAC Controls, and AE 552 Indoor Air Quality, will make use of the equipment. 5th year mechanical systems AE students, David Blum, Geoffrey Kim, Trien Van Lam, and John Scavelli, are assisting with the design, fabrication and control software development for these facilities. Further details about the project will be added to the AE website and published in the Spring Newsletter. If interested in supporting these facilities or potentially donating equipment items, materials and supplies to aid the effort, please contact Paul Kremer, pakarc@engr.psu.edu, 814-863-3242 to discuss project needs further.
Green Roof Model

In the past ten years around fifteen former AE students participated in a project on the green roof thermal performance assessment led by Dr. Jelena Srebric. More recently, we have been working on a model of green roof that would accurately capture thermal fluxes for different climates. This model is much needed if a new generation of building materials is to be adopted in design practice. Without reliable assessment of thermal performance, a building designer cannot provide an accurate assessment of the return on investment. One of the main benefits of installing green roofs is that evapotranspiration from soil and plants can significantly reduce thermal loads during the peak solar radiation. One of frequently asked questions was why bothering to work with plants, if the same cooling effect can be achieved with just a soil material that would have the same effect, but less maintenance. We have shown that plants are really important because a roof with plants reduced heat fluxes by 20-50% when compared to a roof that had only bare soil. This was due to the plant transpiration and shading of the roof surface. Even more importantly, we have shown that plants are really smart in their water management strategy. Namely, plant transpiration rates are much lower when there is a little water in the soil compared to the same plants under same environmental conditions, but water saturated soil.

Our work on green roofs has several publications, and the most recent one co-authored by Tabares- Velasco and Srebric “The Role of Plants in the Reduction of heat Flux through Green Roofs: Laboratory Experiment,” published in ASHRAE Transactions was honored with three different ASHRAE awards for the same paper: (1) the Crosby Field Award, (2) the Willis H. Carrier Award, and (3) a Poster Presentation Award. In addition, the National Science Foundation (NSF) has selected this green roof project as one of ten projects to be featured in U.S. high schools to promote students’ interest in science and engineering. NSF has produced a video that talks about the green roofs and AE’s project. The video is short and fun to watch: www.nsf.gov/news/special_reports/greenrevolution

Building Failures from Snow Related Collapses

In February 2010, North America experienced a series of record setting severe winter storms causing events ranging from flooding to landslides to large snowfalls. A classic nor’ester hit the east coast Mid-Atlantic region on February 5th and 6th and then was followed by two more storms in February before many could fully recover from the first one. Weather forecasters and media outlets compared the first February snow event to the infamous Knickerbocker Storm of January, 1922 which received its name as a result of causing the collapse of the Knickerbocker Theatre in Washington, D.C., killing almost 100 people.

Snow depths from the February 5-6 storm ranged from 8 inches in fringe areas to almost 40 inches in the worst hit areas. Although all three February storms recorded high snow depth numbers for parts of the region, in many cases, snow density was not extreme. As a result many areas did not exceed the ASCE or IBC recommended roof design loads. Nevertheless, the storm was not without a number of high-profile building collapses including three large private hangars at the Dulles Jet Center in Virginia, the Rostraver Gardens ice arena outside of Pittsburgh, the Blacksburg, Virginia High School Gymnasium, and a Smithsonian Institute warehouse in Maryland among others.

In response to the collapse of several significant buildings, Associate Professor M. Kevin Parfitt, P.E. was contacted by disaster response contractors and representatives of national insurance agencies to assist in damage assessment and collapse investigations. This request led him to the Dulles Jet Center (DJC) where three 40,000 sq. ft. long-span hangars collapsed on top of a large number of private jets which were housed in the facility. A number of nationally recognized structural engineering and forensics firms that recruit Penn State AE students were also involved in various aspects of the DJC collapse study. Penn State alumni spotted at the site included Amy Graver (BAE/MAE 2003) of Simpson Gumpertz Heger (SGH), Glen Rentschler (BSCE 1969), Paul Parfitt (BAE/MAE 2007), Nicole Lucas (BAE/MAE 2009), all from Wiss Janney Elstner (WJE).

Professor Parfitt was also called upon to assess damage at the 170 foot clear span glued-laminated (glu-lam) arches of the Rostraver Gardens ice rink in Belle Vernon, Pennsylvania which has been reported to be the 4th largest arena space in Pennsylvania (above). Using a page out of his Building Failures and Forensic Techniques Class (AE 537), Parfitt reviewed the collapse mechanism of the 34 inch deep arches, researched historic snow loads from the 1960’s and reported on standard practice in the design and construction of long-span glu-lam timber arches of the era. Parfitt determined a number of items played a role in the collapse including snow that drifted from the windward to the leeward side of the arch, a design condition that was not commonly employed at the time of the original construction but is now a requirement of modern codes and standards.
RENEW Crew 2009 project Roatán, Honduras
This past May, Jeff Lackey, Andy Mackey, and Lee Cunningham, engineering students from the Renewable Energy for Central America (RECA) program at Penn State’s Center for Sustainability, returned to Roatán, Honduras, with three goals in mind. The RENEW Crew was eager to provide lessons on energy management at the Sandy Bay Alternative School, to check on the performance of the 2.5-kW grid-tied solar photovoltaic (PV) system that they had installed there in March 2009, and to implement a new site assessment tool to evaluate need and feasibility at eight potential sites. After they analyzed their data, the team decided the next project, to design and build a 2.5 kW ground-mounted solar PV system for a community-built and -owned well that provides water for the 2,500 residents near Flowers Bay, Roatán.

Water wells like this, run in conjunction with the local government, or patrénato and are the only source of water for most residents. Each user pays a monthly fee for personal water consumption and system operations. Currently, all electrical power on the island is produced by large diesel generators that cost over $0.30/kWh. This non-renewable, unsustainable, and unreliable source of electricity is causing community debt.

RENEW Crew’s first project, the Alternative School’s PV system, earned them an “Outstanding Commitment Award” from the Clinton Global Initiative University for their efforts to solve a real-world problem. The University of Kansas will use this model for their project in Belize. These projects cultivate global citizenship through culturally immersive, hands-on experiences that educate both students and communities in renewable energy and energy efficiency.

http://sites.google.com/site/psureca/ or contact: jsimpson@engr.psu.edu.

In the Classroom
Fifth year architectural engineering students at Penn State got a chance to work side by side with skilled masons, in a special demonstration by the International Masonry Institute (IMI) and the International Union of Bricklayers and Allied Craftworkers (BAC). At the invitation of Professor Ali M. Memari, the IMI/BAC team gave 25 students an opportunity to build a brick wall and to learn more about the benefits of quality training and craftsmanship.

Peter P. Spinella, AIA, IMI Central Pennsylvania Director of Market Development and Technical Services, discussed sustainability and timeless beauty of brick. BAC officials Tony Mirarchi and Tom Smith showed students how to lay mud and butter bricks, along with some techniques used in quality masonry construction.

The International Masonry Institute offers quality training for craftworkers, professional education for masonry contractors and free technical assistance to the design and construction communities. IMI is a strategic alliance between the International Union of Bricklayers and Allied Craftworkers (BAC) and their signatory contractors to promote quality masonry construction. Team IMI consists of architects, engineers, construction managers, skilled craftworkers and instructors, offering what no other group can: expertise in training, craftsmanship, design, installation, and marketing.
AE of the Year

The 2010 Architectural Engineer of the Year Competition, formally known as Mr. AE was a huge success. This year we had five competitors, Paul Hallowell, Zach Heilman, Tyler Meek, Michael Payne, and Diab Shetayh. The competition included a formal dress entrance with an escort, on the job wear, a question and answer session, a choreographed group dance, individual talents, and finally a second question and answer session for the finalists. The three guest judges for this year were AE Department Head Chimay Anumba, AE Practitioner John Bechtel, and Assoc. Prof. Moses Ling. The contestants displayed a wide range of talents ranging from a comical skit to a pair of guitar performances. In honor of the AE departments centennial celebration we asked our three finalists to answer the question: “Where would you like to see the AE department go during the next hundred years?”. This year’s champion, Diab Shetayh replied with a moving answer, first expressing his pride for being a part of the Penn State AE program, and ending with comments on how he hopes we will someday have a new building for the AE department to call home.

AE of the Year was produced by S:PACE with help from ASHRAE, IES, SEA, and SSAE. All proceeds from the competition benefitted the Sharron Williams Scholarship fund.

Student Honor

On April 1st, at the Nittany Lion Inn, Maral Amini, a Ph.D. candidate and Glunt Fellow in the Department of Civil and Environmental Engineering, Class of 2010, was awarded a $750 scholarship for the best graduate student poster at CERS 2010, the 7th Annual College of Engineering Research Symposium, organized by the Engineering Graduate Student Council (EGSC) with the support of the College of Engineering. CERS is a platform for all students at Penn State to showcase their research work to peers, faculty and industry.

Maral’s poster presents a methodology for reliability assessment of roof sheathing panels in low-rise structures for predicted wind pressure distributions. Low-rise buildings encompass the majority of the residential structures in the United States. Predominantly, this category of structures is constructed with dimension lumber. Investigations after natural disasters report that during high intensity wind pressures, low-rise buildings with wood-frame construction are at immense risks of damage with damage initiated from the roofs. The developed methodology can be used as a tool to evaluate roof sheathing performance subjected to wind load.

During the symposium, posters are evaluated by students, faculty and representatives from industry. Students give a 15-minute presentation after which there is a 5-minute Q & A session.

Maral has a B. S. Degree in Civil Engineering from University of Massachusetts in Amherst and MEng degree in Architectural Engineering from Penn State. Prior to joining our program, she worked for the Massachusetts Highway Department as a structural engineer on the I-90 and I-93 tunnel project following the ceiling collapse at the Central Artery in Boston. Maral’s research and doctoral thesis address the effects of wind on residential low-rise structures (advisor Dr. Bohumil Kasal, Hankin Chair). Maral started her appointment in the Department of Civil Engineering at Penn State in August 2007. Ms. Amini’s winning poster will be posted on the CERS website in the near future at http://cers.engr.psu.edu/.

Washington DC 2010

For the first time, the entire 3rd year class went on the Washington DC Trip. The two buses leaped frog down I-70 towards Washington early on the morning of March 19th. The first group stopped at the Washington County Hospital renovation and expansion project in Hagerstown, MD. The tour was hosted by Gilbane Company. The second bus headed for 1000 Connecticut Avenue, a Clark construction site with foundation work underway in very tight conditions. Lunch was graciously provided by Clark Construction after the site visit. It was difficult to miss two Fullington buses and 100 students in hard hats having lunch on the lawn of Farragut Square. The afternoon tour included the huge Washington Headquarter project in Alexandria and the Sidwell Friends School in Northwest Washington.

Alex Kosis ’09 of SGH made a special presentation at Sidwell School. Clark Construction hosted a reception at Clyde’s Restaurant providing a relaxed environment for the students to interact with many Clark-employees/AE-alumni. The Saturday morning tour to the newly renovated USGBC headquarters was arranged by Davis Construction. Students took part in a tour and presentations by USGBC and Davis staff. They came away very motivated and excited regarding the sustainability movement. The luncheon hosted by Davis was held at the Crystal City Sports Pub. Students again had an opportunity to interact with AE Alums. The trip also included free time in Old Town Alexandria, a night-time tour of the monuments, Sunday service at Washington Cathedral followed by a lunch/shopping stop in Georgetown.

Special thanks go to three construction companies Clark Construction Company, James G. Davis Construction Company, and Gilbane Company for the financial support and investment of staff time without which the DC trip would be no more beneficial than a ride on a tour bus. The visits to the various sites provided eye opening experiences relating to construction as well as all design disciplines. What better opportunities exist to view and discuss the engineering designs than during the construction phase.

To the AE alumni who participated on these projects and gave your time for the students, our sincere gratitude. Any alum interested in participating in the 2011 DC trip, please contact Prof. Moses Ling mosesling@psu.edu.
# ALUMNI UPDATE —Let us hear from you!

Have a message you want to share: fill out this form, or complete the Alumni Update Form on-line at the AE website at [www.engr.psu.edu/ae/contact/Alumni-Update-Form.asp](http://www.engr.psu.edu/ae/contact/Alumni-Update-Form.asp).

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| Additional Comments (may be published in the next newsletter if applicable) | |
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Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.