

Herrick Newsletter



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Upcoming Events:

July 10, 2016 Short Courses
July 11-14, 2016 Compressor, Refrigeration & Building Conferences



New Ray W. Herrick Laboratories Building, opened November 2013

2014 Purdue Conferences Held July 14 - 17



Dr. Achilles Karagiozis, Director of Building Science at Owens Corning delivering the keynote address in the opening session of the 2014 Purdue Conferences

More than 700 people from 31 countries attended the 15th International Refrigeration and Air Conditioning Conference, the 22nd International Compressor Engineering Conference and the 3rd International High Performance Buildings Conference this summer, from July 14-17. Four hundred ten papers were presented, a record high for the bi-annual conferences.

"It's a very active research field," said Eckhard Groll, the Reilly Professor of Mechanical Engineering and general conference chair.

"Sessions covered areas critical to industry, commerce, and domestic air-conditioning and refrigeration", said James Braun, the Herrick Professor of Engineering and Chair of the Refrigeration and Air Conditioning Conference.

Purdue researchers presented a paper on a concept called the liquid-flooded Ericsson power cycle. The technology is for power generation using heat from solar collectors, methane from landfills, or other processes. The technology

harnesses a type of compressor called a scroll compressor. Unlike more conventional compressors, which use a piston to increase the pressure of refrigerants, a scroll compressor uses a cylindrical pump made of two scroll-shaped halves, one rotating inside its stationary counterpart, to trap and pressurize the refrigerant. The compressors are more efficient and make less noise than conventional compressors. Profs. Braun and Groll have been working on scroll technology for about 20 years.

Additional papers detailed other concepts for generating power from low-grade heat sources; alternative heating and cooling technologies such as more efficient heat pumps for homes and commercial buildings; systems that use "heat recovery" technologies designed to harness energy ordinarily lost; solar energy systems; systems for cars and trucks; air conditioning for hybrid and electric vehicles; heat exchangers; vapor-compression-cycle enhancements; and new diagnostic systems designed to automatically detect problems in air-conditioning units.

2014 Purdue Conferences Held July 14-17 (continued)

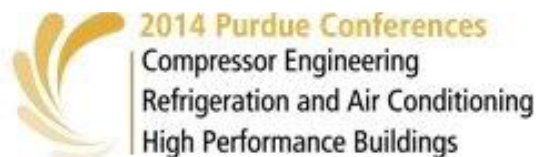
The Monday night opening reception allowed students to showcase our expanded Ray W. Herrick Laboratories through tours of the building & research areas, as well as small demonstrations of the labs at work.

On Wednesday night, the conference held its annual Steak BBQ at The Trails banquet facility. At the reception, nine students were recognized as finalists in the Best Student Paper competition, including 3rd Place in the Refrigeration & Air-Conditioning Conference to Herrick student Howard Cheung for his paper titled, "Virtual Power Consumption and Cooling Capacity Virtual Sensors for Rooftop Units". In the competitions' first ever tie in the Buildings Conference competition, in 3rd place, were Purdue students Jie Cai for his paper titled, "A Heuristic Supply Air Temperature Reset Strategy for VAV Systems Employing Variable-Capacity DX Cooling Equipment" and Jason Konstantzos, for his paper titled, "Daylight Glare Probability Measurements And Correlation With Indoor Illuminances In A Full-Scale Office With Dynamic Shading Controls". Purdue's only 1st place paper was by Amir Sadeghi in the Buildings Conference division, for his paper titled "Stochastic Model Predictive Control of Mixed-mode Buildings Based on Probabilistic Interactions of Occupants With Window Blinds".

The conference featured a wide variety of keynote & plenary talks. The Monday Keynote was presented by Achilles Karagiozis, Director of Building Science at Owens Corning, who spoke about energy efficiency and the science of green buildings. The luncheon speaker on Tuesday featured Peter Ayres, Director of Building Engineering at AECOM Technology Corp. He talked about the challenges of designing Halley VI, built for the British Antarctic Survey team (www.antarctica.ac.uk/images/halley/index.php). Other speakers included Roland Risser, Director of the Buildings Technology Office for the U.S. Department of Energy; Jack Sauls, a compressor expert from Ingersoll Rand; and Mark McLinden from the Applied Chemicals and Materials Division at the National Institute of Standards and Technology.

Many companies sponsored events at the conferences: Danfoss Inc., Emerson Climate Technologies, UT Carrier, Tecumseh, Embraco, Kawneer, Parker Hannifin, SABIC, Highly, and Lutron.

Plans are underway for the 2016 event. Mark your calendar for July 11-14, 2016, with short courses taking place Sunday, July 10, 2016. If you are interested in sponsoring events at these 2016 conferences, contact Kim Stockment, kstockme@purdue.edu.



Opening session welcome in the Loeb Theater in the Stewart Center where the conferences took place



Harry Clendenin of Emerson lecturing during the Experimental Techniques to Measure Compressor Performance and Reliability short course held on Sunday, July 13



Paper authors enjoying the morning breakfast where they meet other presenters and their session chairs

2014 Purdue Conferences Pictures



Dr. Eckhard Groll, General Conference Chair, welcoming the Conference attendees



Dr. Thomas Phoenix, ASHRAE President, talking during the opening session



People enjoying the reception on Monday evening



Attendees touring the north end of the new Ray W. Herrick Laboratories



Attendees waiting outside of the Herrick Laboratories building to begin the tour of the new facility



Emerson Climate Technologies sponsored and hosted the steak barbeque at The Trails. This year 10 companies sponsored 9 different events and the student paper competition

Industrial Advisory Committee Meeting - November 6 - 8, 2014



The IAC members, faculty, staff and students pose for a group picture in front of the Ray W. Herrick Laboratories.



Jason LeRoy



Detlev Seidel

The Industrial Advisory Committee (IAC) held its annual fall meetings on Thursday, November 6 through Saturday, November 8. The meeting began at 1:30 on Thursday in the Edward and Lucille Eisele conference room located in the new Herrick Laboratories building. After the introductions and welcome by Chairman, Terry Manon, Patricia Davies gave the State of the Laboratories Report. The Committee was encouraged by the increasing trend line for future project funding. Two new professors, David Cappelleri and Neera Jain, were introduced at the meeting. Their specific areas of research focus (robotics/mechatronics and energy systems controls, respectively) will be a great addition to the capabilities of the Labs.

Anil Bajaj, Head of Mechanical Engineering followed with an update on the School of Mechanical Engineering. Dan Hirleman also attended the meeting and was welcomed by the Committee. Dan, former Head of Purdue's School of Mechanical Engineering, and former dean of the School of Engineering at the University of California, Merced, is Purdue's new Chief Corporate and Global Partnerships officer. See website below for Dan's Purdue job announcement.

<http://www.purdue.edu/newsroom/releases/2014/Q3/hirleman-returns-to-purdue-to-lead-corporate,-global-efforts.html>.

We look forward to collaborating with Dan in his efforts to build better relationships that help support Purdue's faculty and students and our global partners.

The highlight of Friday's meeting was the Student Poster Show. It's a great experience for both the IAC Committee members and the students. The students also host the IAC members at lunch.

Three breakout sessions were held in the afternoon that focused on various topics related to industry careers for students; possible research opportunities between the university and industry; and future technology research areas. The students worked with IAC member Bob Parrin to organize the first session, which was organized as a Q & A session for a group of IAC members.

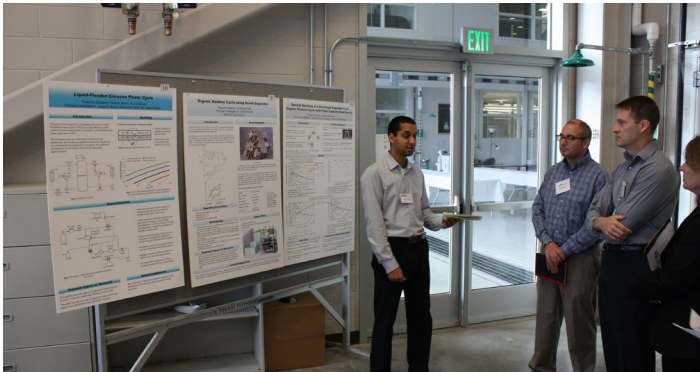
Friday evening's dinner at Jane's restaurant was combined with ME's Outstanding Mechanical Engineering Award dinner. Herrick Alumni Detlev Seidel and Jason LeRoy both received OME awards. To read about the 2014 OME Awards, see website: <https://engineering.purdue.edu/ME/People/OME/index.htm>

Before the football game on Saturday morning, brunch was hosted by Eckhard Groll and Jeff Rhoads, which was held at the Whirlpool ReNEW House. For information on where and what the ReNEW house is - standing for Retrofitted Net-Zero Energy, Water and Waste-, please read the article on page 9.

On the next page are several pictures from the IAC Student Poster Show.

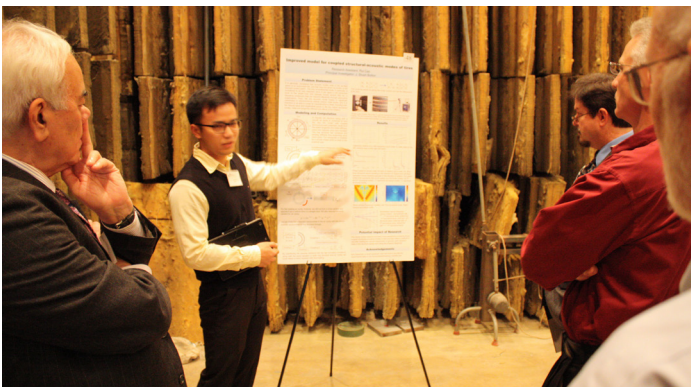
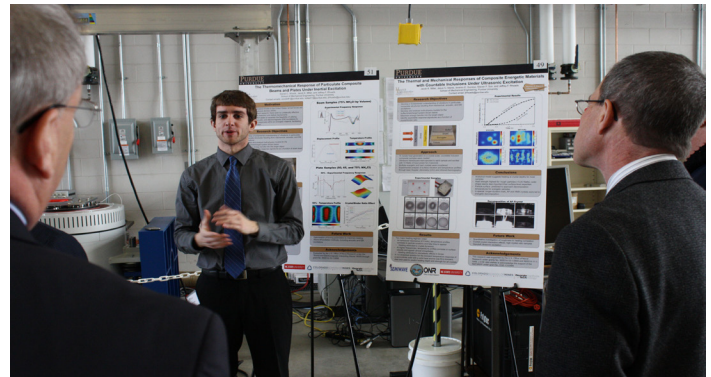
Industrial Committee Meeting - November 6 - 8, 2014 (continued)

Jie Cai (right) explains a low-cost multi-agent control approach for building energy systems. The proposed controller incorporates a distributed optimization algorithm to support a multi-agent decision making procedure for a general HVAC system.



Abhinav Krishna (left) talks about his research on a novel rotating spool expander at the heart of an Organic Rankine Cycle, which in turn is used as a heat recovery system.

Jake Miller (right) presents simulation and experimental results detailing the thermal and mechanical responses of composite energetic materials to acoustic and ultrasonic excitations. The selective, standoff heating of energetic compounds is of great interest in an explosives detection context and is the fundamental goal of this research.



Rui Cao (left) discusses his research which focuses on investigating the internal air cavity noise in rolling tires on commercial vehicles. By constructing an analytical tire model, both structural dynamics and the sound pressure distribution in the tire are studied. Measurements on the tires are also conducted to verify the theoretical predictions from the tire model.

Bonggil Jeon (right) discusses his research on the HVAC retrofit solutions for existing small- and medium-sized commercial buildings in the U.S. and how to select prototypical building types and representative cities. He also described possible HVAC retrofit options for small office buildings as a case study.



Center of High Performance Buildings Workshop

On November 7, the Ray W. Herrick Laboratories held the first Center for High Performance Buildings (CHPB) Workshop with Professor Jim Braun as the Director. This was held in conjunction with the annual Industrial Advisory Committee (IAC) meetings, so of the 30+ attendees, several were IAC members. There were 15 different companies represented and they provided feedback that will help the CHPB researchers decide what research assistance would be most beneficial to them.

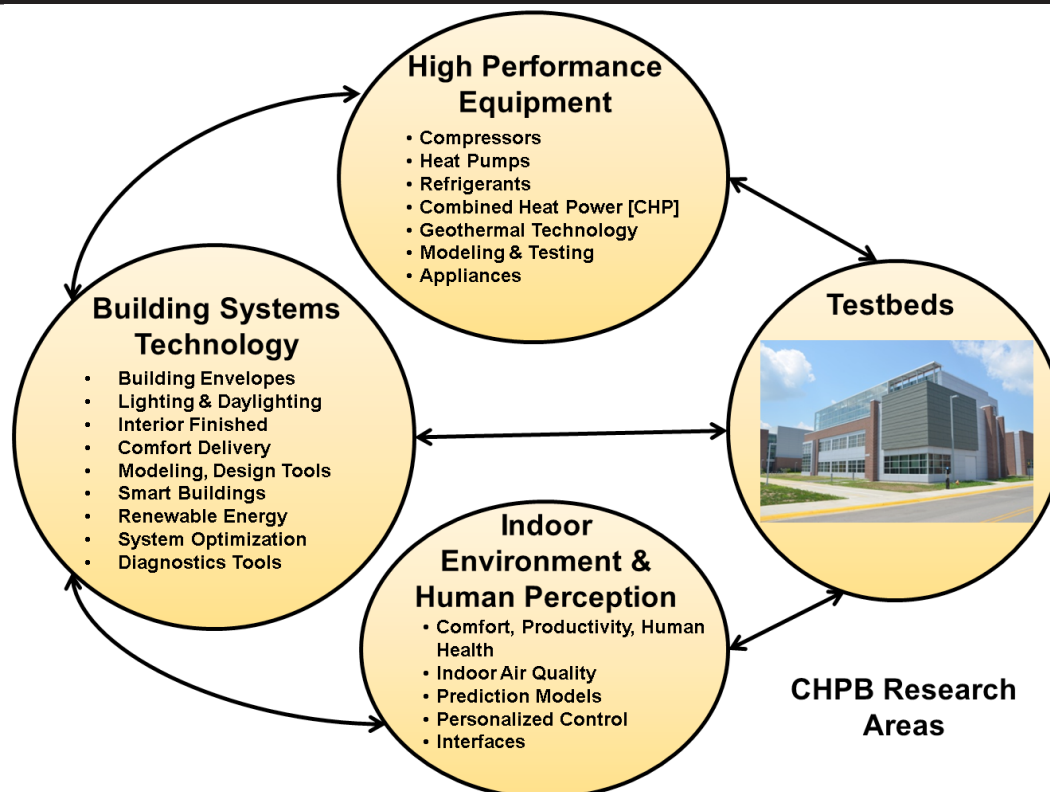
The CHPB was established in 2013 through a construction grant from the National Institute of Standards and Technology (NIST). Its mission is to partner with industry to develop, demonstrate, and evaluate new technologies and analysis tools that can enable dramatic improvements in the performance of buildings in terms of energy, environmental impact, and occupant satisfaction and productivity. The CHPB is a multi-disciplinary effort involving researchers from Mechanical, Architectural, and Electrical Engineering and Psychological Sciences.

The team has the expertise and unique facilities to consider a wide range of applications related to engineered environments that address numerous important issues in indoor environmental quality, human comfort and productivity, comfort delivery systems, building envelopes,

lighting, equipment efficiency and reliability, environmental impact, controls, automation, etc. The team can span the spectrum from fundamental research to technology development to technology evaluation to technical assistance covering the thrust areas depicted in the figure below and employing a variety of unique, state-of-the-art test beds that include:

1. Fully-instrumented living laboratory offices that have reconfigurable facades, comfort delivery, and primary equipment to allow testing for impacts of new building technologies on energy and human performance indices and to generate data needed for model validations;
2. A perception-based engineering (PBE) facility to study combined impacts of lighting, acoustics, air quality, temperature, humidity and air flow on occupant perceptions and performance in a controlled manner;
3. Laboratory-scale facilities to allow controlled testing of building envelopes, air distribution, cooling/heating equipment, heat exchangers, compressors.

The building has a LEED-Gold classification, but the primary goal in the design was to have a facility that will allow research on technologies that go well beyond LEED.



Alumni Reflections - Jason Hugenroth, Ph.D. 2006

In late 2002 my wife and I made the decision to leave good jobs so that I could start my doctoral degree in mechanical engineering at Purdue. At the time I was a Senior Product Engineer doing scroll compressor development. My wife, Tracy, was a Senior Pharmaceutical Sales Consultant. We were both on track to move into management. It was a difficult but exciting decision, made more so by the fact that we had a son that was less than a year old.

My time at Purdue couldn't have worked out better. My wife was able to obtain a temporary position with her company that later transitioned to a permanent position in Lafayette. Prof's. Braun and Groll had just received funding for a Stirling cycle refrigeration project. I was fortunate to be selected as the graduate student for the project. Prof. King was also part of the team. The project later morphed into the development of an Ericsson cycle refrigeration system using liquid-flooding of scroll compressors. Prof's Braun and Groll have since taken liquid-flooded compression research in a number of different directions with work that continues today. It is rewarding to have been a part of getting that line of research started.

I remember that the work was hard and the hours were long. I'm sure my wife felt like a single mom for a while. But, I always liked what I was doing and what I was learning.

I finished at Purdue in May of 2006. Tracy and I moved back to our home state of Louisiana, now with two kids in tow. We left behind many friends, but were glad to be close to extended family. After getting settled, I founded Inventherm, a consulting and technology development business that focuses on compressors and thermal system technology.

Inventherm started in my home with me and a computer. My only engineering software was a seat of Engineering Equation Solver (EES). We have been very successful. Inventherm now has a CNC machine shop, a test lab and many more computer resources. My prior industry experience and education from Purdue gave me the skills I needed to be successful. However, I can honestly say that I probably wouldn't be in business today had it not been for the referrals and excellent recommendations I have received from the faculty at Herrick Labs, especially

Professors Braun and Groll. They are great advisors and friends.

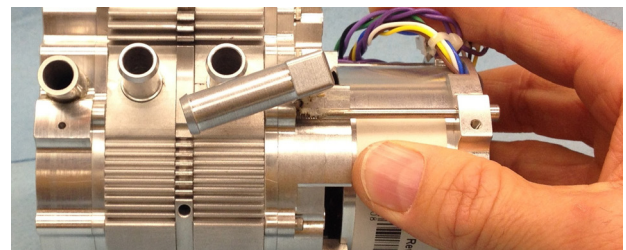
I feel fortunate to have been a student in Herrick Labs. Purdue is a special place. I'll always remember how friendly and welcoming everyone was campus wide. The faculty and staff always gave me the impression that they were as excited to have me there as I was to be there. I always look forward to seeing old friends and making new ones at the compressor, refrigeration and building conferences.



Jason and Tracy Hugenroth with children Thomas, Dolph and Sadie

Tracy and I now have three children, Thomas (13), Dolph (9) and Sadie (5). They are all doing great in school, but I'm not sure which one is going to be my engineer! In my spare time I coach track and cross country at my kids' school. In the summer we go water skiing as much as possible.

Best wishes to all Herrick Labbers. Keep up the good work.



Oil-less swing compressor developed at Inventherm for portable oxygen concentrators

New Herrick Labs Faculty - Dr. Neera Jain



Dr. Neera Jain joined the Herrick Laboratories at the beginning of the spring 2015 semester as an Assistant Professor. She received her B.S. in Mechanical Engineering from the Massachusetts Institute of Technology in 2006 and her M.S. and Ph.D. degrees in Mechanical Engineering in 2009 and 2013, respectively, from the University of Illinois at Urbana-Champaign. She is

a recipient of the Department of Energy Office of Science

Graduate Fellowship (2010), the ASME Graduate Teaching Fellowship (2011), and the Eugene and Lina Abraham Fellowship from the University of Illinois (2008). She was a visiting member of the research staff in the mechatronics group at Mitsubishi Electric Research Laboratories from 2013 to 2014 where she designed advanced control algorithms for split ductless vapor compression systems. Her research interests include dynamic modeling and optimal control design for multi-domain and multi-scale energy systems with an emphasis on distributed energy resources and energy storage. She is a member of the American Society of Mechanical Engineers (ASME) and the Institute of Electrical and Electronics Engineers (IEEE).

Fueling Diesel Efficiency - Cummins/Eaton Article -

Adapted from an article written by Emil Venere, Purdue Press

A new three-way collaboration between Purdue, Cummins Inc. and Eaton will focus on fundamentally redesigning diesel engines to improve efficiency, thereby reducing costs and emissions for the industry while providing students with valuable job experience.

"Cummins makes diesel engines, Eaton makes valve-train components, so they are two very complementary industry partners that we get to work with," said Gregory Shaver, an associate professor of mechanical engineering who is leading the work.

The researchers will focus on advanced concepts including variable valve actuation, which enables an engine's electronic brain to better control the timing of the intake and exhaust valves, more precisely routing air and exhaust gases into and out of the cylinders. Design changes also could allow an engine to automatically deactivate some of its cylinders when not needed, such as periods of engine idling, a radical advance that could significantly reduce fuel consumption and greenhouse-gas emissions, Shaver said.

"Instead of having all six cylinders running, you might only have three of them running when the engine is under lower loads such as idling and stop-and-go scenarios," he said. "Over-the-road semi trucks usually idle at least eight hours a day, and about 6 percent of fuel consumption is during that time. The engine doesn't need to be that big at the low-to-moderate loads, so temporarily shutting down some of the cylinders improves efficiency."

The variable valve actuation technology also allows an engine to heat up faster than conventional engines. This increases the exhaust-gas temperatures, which, in turn, makes for more effective operation of emission-control devices. Reducing engine-operating costs subsequently reduces shipping and product costs for a variety of industries.

Strong partnership brings high returns

The collaboration is funded with \$1.5 million from Cummins over five years and \$750,000 from Eaton over three years. Support from Cummins for engine research has included \$1 million toward Purdue's Ray W. Herrick Laboratories, which houses a portion of the research and was expanded into a new building last year.

"It's a big step for industry to make these kinds of long-term commitments," said Melba Crawford, associate dean of engineering for research. "I think this helps Purdue develop stronger relationships with companies, and it also helps the companies in their long-term strategies."

Innovations that come out of the research benefit both academia and industry.

"We are leveraging Greg's expertise, the talent of the Purdue students, and the Purdue facilities to make significant advancements in our technical capabilities, which will lead to improvements in our future engines and power trains," said Wayne Eckerle, Cummins' vice president of Corporate Research & Technology Integration and CTC Site Leader. "The collaboration is reducing the cost of the research to each company while also leading to co-development of future engine systems."

"Eaton and Cummins have been working together for decades on components related to the powertrain, and this partnership provides a unique opportunity to investigate future technologies using the state-of-the-art diesel engine laboratory at Purdue with Professor Shaver's research team," said David Genise, engineering director for Eaton's Valvetrain business.

For Purdue, patent costs are defrayed. "We have developed seven patents in Cummins-related work, and Cummins has picked up six, which means they have the right to use six of those seven technologies," Shaver said. "They help pay the patenting costs, and they see a return on their investment."

At any given time, the project involves at least five graduate students and two undergraduates, who gain valuable hands-on experience. "We meet with industry partners regularly, and the students present their work in front of everyone," Shaver said. "So it really is student-done-and-delivered work. It allows them to learn things they couldn't learn in the classroom."

Students' experience leads to advantageous career options and simplifies recruitment and training for the companies. "Our involvement with Purdue offers a unique opportunity to expose future engineers to real-world engineering challenges," Genise said. "I find the graduate student presentations to be lively and energizing during face-to-face progress reviews. Many of these students continue the momentum from their graduate research with careers at Eaton or Cummins."

And when hired, they can hit the ground running. "The Purdue students who have joined Cummins have been able to quickly step into their roles and make significant contributions," Eckerle said.

As Shaver put it, "It's an ideal relationship for involving students with industry."

Whirlpool Corporation, Purdue turning house into 'net-zero' home - Adapted from an article written by Emil Venere, Purdue Press.



Doctoral student Stephen Caskey (at left) works with Professor Eckhard Groll to convert a home near campus to the most efficient domicile possible - a "net-zero" structure. Purdue is working with Whirlpool Corp. on the three-year project. (Purdue University photo/Mark Simons)

Purdue University is working with Whirlpool Corporation on a three-year project to convert a home near campus to the most efficient domicile possible - a "net-zero" structure. This was the venue for the IAC Brunch this year (page 4). The house, built in the late 1920s at 545 Hayes St. in West Lafayette, is owned by the Purdue Research Foundation, which leased the structure to Whirlpool.

The home, called the ReNEWW house - for Retrofitted Net-Zero Energy, Water and Waste - will be renovated to install energy- and water-saving features and equipped with solar panels that produce both electricity and hot water. Systems in the home will harvest waste heat from appliances and "gray water" from showers and sinks.

"Net-zero energy means that over a certain time line - usually an entire year where you take an entire cooling and heating season - energy production equals energy consumption," said Eckhard Groll, the Reilly Professor of Mechanical Engineering and director of Purdue's Office of Professional Practice. "It's going to be a super-efficient home." Researchers and the company will use data collected from the home in the first year for educational purposes and to specify the retrofit measures. "So much of the net-zero energy discussion now focuses on new buildings," said Groll, who is facilitating the Purdue portion of the project. "But most homes are existing structures." The United States currently has more than 130 million existing housing units, most of which have been in existence since the 1970s.

Whirlpool engineers will come to Purdue as graduate students and live in the house for two semesters as part of the Whirlpool Engineering Rotational Leadership Development (WERLD) program. Engineers perform four six-month rotations in various groups within the company, including a potential international rotation. "At the end of that period they come to Purdue for two semesters," Groll said. "Three WERLD master's students will have the opportunity to live in the house and work on projects related to that house, so it becomes a living lab." The engineers take courses long-distance through Purdue's engineering professional education program while they conduct the six-month rotations so they can finish their master's degree during the two semesters at Purdue. I team them up with the appropriate faculty member," Groll said.

During the first year students will collect "baseline data," which includes precision measurements of the structure and how much energy and water it currently consumes. Baseline data are needed to determine how to upgrade the home by replacing the windows, insulation and appliances and how to add solar panels and other equipment. "We want to do some major renovations, including implementing thermally integrated appliances during the third year. That means if you have an air conditioner that rejects heat to the outside through a condenser coil, why don't we harvest that heat and put it into the hot-water system?" said Groll, whose research is based at Purdue's Ray W. Herrick Laboratories.

A Purdue doctoral student, Stephen Caskey, also is working on the home for his thesis but does not live there. Students from Purdue's College of Technology also are working to create a three-dimensional model of the home. Research will enable the company to accelerate the advanced development of next-generation ultra-efficient appliances. "Whirlpool Corporation appliances have achieved dramatic improvements in energy and water efficiency, while improving performance and consumer choice," said Ronald Voglewede, global sustainability lead, at Whirlpool Corporation. "The ReNEWW house will allow Whirlpool Corporation to leverage the world class resources at Purdue University in conjunction with our WERLD program to accelerate the development of the next-generation system of innovative home appliances that offer even more performance without compromise."



Stephen Caskey using an Infrared camera in research to improve energy efficiency in the structure. (Purdue University photo/Mark Simons)

The basement will be finished and converted into a "living laboratory" with equipment and instrumentation necessary for appliance advanced development. Researchers will be able to use the living laboratory to test and validate new building systems and concepts. "The Whirlpool project is a living lab for the personal environment, whereas the work we're doing at Herrick focuses on the work environment, so they complement each other," Groll said.

Purdue and Whirlpool Corp. have a history of collaboration. The company has for decades worked with researchers based at Herrick to improve the energy efficiency of appliances.



Whirlpool ReNEWW House
(Purdue University photo/Mark Simons)

People News

Faculty Honors



Professor Stuart Bolton received INCE's highest honor, the Distinguished Noise Control Engineer Award. He received it at the recent National Conference of the Institute of Noise Control Engineering (INCE). This award has been given only seven times previously in the 45 year history of INCE. Professor Bolton is also the only person to have received both this award and the INCE Outstanding Educator Award.

One of the seven previous recipients, Leo Beranek, was awarded the National Medal of Science, and two others, Bill Lang and George Maling, are members of the National Academy of Engineering - so reasonably good company here!



Professor Jeff Rhoads has been selected to receive the 2014 ASME C. D. Mote Jr., Early Career Award, which is presented to an early career recipient who demonstrates research excellence in the field of vibration and acoustics by the ASME Technical Committee on Sound and Vibration.

Where are they now?



Stuart Bolton with Ziqiang Hu, who visited the Labs recently with a delegation from the Midea Group. Ziqiang also donated money to the new building project, naming part of the PBE Lab in honor of Stuart, his Ph.D. advisor.

Ziqiang Hu (Ph.D. 1992) was recently promoted at the Midea Group in China. He now has two new roles. One is Senior Vice President in charge of company technology and R&D. His main function is driving technology strategy and process. His second role is the Director of the Corporate Research Center. The main function for that is for command technology research as well as advanced research and future product. Midea Group is a privately held Chinese electrical appliance manufacturer, headquartered in Shunde, Guangdong, China. As of 2013, the firm employs approximately 135,000 people in China and overseas.

Graduations

Cao, Rui (MSME 2014). Investigation of a Fully Coupled Spinning Tire-Wheel Model. Rui is staying to pursue his Ph.D. degree.

Howard Cheung (Ph.D. 2014). "Inverse Modeling of Vapor Compression Equipment to Enable simulation of Fault Impacts". Howard is a post-doctoral research fellow, but currently working as a subcontractor for the National Renewable Energy Lab (NREL) in Golden, CO.

Fogarty, Adam (MSME 2014). "High Voltage Rear Electric Drivetrain Design for a Parallel-Through-the-Road Plug-in Hybrid Electric Vehicle". Adam is working at General Motors, Warren, MI.

Ding, Chuan (Ph.D. 2014). Thermal Efficiency and Emission Analysis of Advanced Thermodynamic Strategies in a Multi-cylinder Diesel Engine Utilizing Valve-train Flexibility. Chuan took a position with MathWorks, Inc. in Natick, MA

Jadhav, Bilwa (MSME 2014). Integration and Implementation of High-Voltage Energy Storage Sub System for a Parallel-Through-The-Road Plug-In Hybrid Electric Vehicle. Bilwa is working for Cummins. Inc. in Columbus, IN.

McMullen, Andrew (MSME 2014). Assessment of Noise Metrics for Application to Rotorcraft. Andy is working for Ford Motor Co., Dearborn, MI.

Peng, Yuan (MSME 2014). Propagation of Wind Turbine Noise Through Wakes and Turbulent Atmosphere. Yuan's employment is not known at this time.

Pietrzak, Bradley (MSME 2014). Algorithm Development and Analysis for Advanced Engine Technologies Including Piezoelectric Fuel Injection and Variable Valve Actuation. Brad is working for Ford Motor Co., Detroit, MI.

Roberts, Leighton (MSME 2014). Analysis of the Impact of Early Exhaust Valve Opening and Cylinder Deactivation on Aftertreatment Thermal Management and Efficiency for Compression Ignition Engines. Leighton took a position with Eaton Corp., Marshall, MI.

Sakamoto, Nicholas (MSME 2014). The Prediction of Airborne and Structure-Borne Noise Potential for a Tire. Nick is working for Ford Motor Co., Dearborn, MI.

Sobecki, Brandon (MSME 2014). Development of Sound Quality Metrics for Gear Rattle in Diesel Engines. Brandon took a position with Faurecia, an automotive company in Columbus, IN.

Sundaram, Vaidyanadan (MSME 2014). Measurement of the Responses of Polyurethane and Confor™ Foams and the Development of a System Identification Technique to Estimate Polyurethane Foam Parameters from Experimental Impulse Responses. Vaidy is working for Cummins Inc., Columbus, IN.

Tayal, Prateek (MSME 2014). Light Off Temperature Based Approach to Determine Diesel Oxidation Catalyst Effectiveness Level and the Corresponding Outlet NO and NO₂ Characteristics. Prateek's employment plans are not determined yet.

People News (continued)

Upathumchard, Ulaee (MSME 2014). Waste Heat Recovery Options in a Large Gas-Turbine Combined Power Plant. Ulaee is working for the Electricity Generating Authority of Thailand.

Yuill, David (Ph.D. 2014). Development of Methodologies for Evaluating Performance of Fault Detection and Diagnostics Protocols Applied to Unitary Air-Conditioning Equipment. David is a faculty member at the University of Nebraska-Lincoln.

Zhou, Keqin (MSME 2014). NO and NO₂ Modeling for Diesel Oxidation Catalyst at Different Thermal Aging Levels. Keqin is working for Praxair, Inc., Burr Ridge, IL.

Student Honors

In September, at the National Conference of the Institute of Noise Control Engineering in Fort Lauderdale, FL, three Herrick students were recognized for their achievements:

Bao Tong, a PhD student, working with Professor Kai Ming Li, was named a winner of the Student Paper competition. Bao presented his research on sound propagation from aircraft in flight.

Yangfan Liu, a PhD student, working with Professors Patricia Davies and Stuart Bolton, was also named a winner of the Student Paper competition. He spoke about the visualization of high frequency sound fields.

Daniel Woods, a Ph.D. student, working with Professor Jeff Rhoads, was the winner of the Classic Paper competition, for his presentation of a Leo Beranek paper on modeling reverberation in rooms.

Daniel Woods and Jacob Miller, both Ph.D. students working with Professor Jeff Rhoads, earned First Place in the Student Paper Competition at the 26th Conference on Mechanical Vibration and Noise held in conjunction with IDETC/CIE 2014: The 2014 ASME International Design Engineering Technical Conferences.

Nikhil Bajaj, a Ph.D. student working with Prof. George Chiu, was one of the this year's recipients of the Magoon Award. The honor recognizes outstanding teaching assistants and instructors through the Estus H. and Vashti L. Magoon award. The selection is made by both faculty and students to recognize those students who were exemplary in their work as teaching assistants or instructors.

Births



Yong-thung Cho (MSME 2002, Ph.D. 2006) and his wife Ji Sun Lee welcomed a son born on August 5, 2014. Won Gyu Cho weighed 6.9 pounds, is strong, and eating a lot!



Taewook Yoo (MSME 2003; Ph.D., 2008) and his wife, Youngmi Kim were doubly blessed with twin boys on November 4, 2014. Kai Yoo weighed 6.5 lbs and Keunu Yoo weighed 7.3 lbs.

Engagements and Weddings



Brandon Sobecki (recent MSME graduate) and Ashley Kahn were married at the Century Center in South Bend, IN on Saturday, November 8, 2014.



Andy Hjortland (current Ph.D. student) and Nicole Davis (current Ph.D. student in School of Science) were wed on Sunday, October 12, 2014 in Madison, WI.



Nikhil Bajaj (current Ph.D. student) and Andrea Pluckebaum were married on August 2, 2014.

Leona Schmidt-Speicher (current German visiting scholar) and Philip Weber got engaged on August 15th, 2014. A wedding date has not been determined.



Ray W. Herrick Laboratories
177 S. Russell Street
West Lafayette, IN 47907-2099
USA

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News about You and Address Changes

We are always interested in hearing your news, like weddings, births, and job promotions, and we want to be kept up-to-date on current addresses. Please send notes to Donna Cackley or to the e-mail address below. Don't hesitate to let us know of other alums that have moved or changed jobs. Photos are always welcomed and encouraged.

Ray W. Herrick Laboratories
School of Mechanical Engineering
Purdue University
177 S. Russell Street
West Lafayette, IN 47907-2099
1-765-494-2132 (phone)
1-765-494-0787 (fax)
e-mail: rhlab@ecn.purdue.edu
<https://engineering.purdue.edu/Herrick/>



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