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ASHRAE Funds Undergraduate Project on Net Zero Energy Design Toolkit

ATLANTA - A toolkit to help better understand the impacts of building construction related to net zero energy targets is being developed by undergraduate students in their senior year through an ASHRAE Undergraduate Senior Project Grant.

The grants, totaling some $65,000, are awarded by ASHRAE to colleges and universities worldwide to promote the study and teaching of HVAC&R, encouraging undergraduate students to pursue related careers. The grants are used to design and construct projects.

This year, 14 schools from around the world were awarded grants, including the University of Oregon for its proposal to develop a net zero energy design toolkit. As the top grant award winner, two students from the university are invited to present their project as part of the Student Program at the 2012 ASHRAE Winter Conference in Chicago.

As the building industry looks toward more energy efficient design, with the eventual goal of net zero energy use, additional tools are needed.
The toolkit being developed by students will help facilitate understanding of the impact of design decisions on the rising cost of energy and enhance dialogue between engineers, architects, contractors and building owners.

"The toolkit offers a three-tiered approach to investigate, evaluate and experience the impacts of building construction in achieving net zero energy targets related to design, construction and occupancy," Allison Kwok, faculty advisor and branch advisor for the University of Oregon Student Branch, said. "The approach is provided through pre-occupancy onsite investigations, post-occupancy audits of the existing building stock and through a professional workshop between local members and students."

The toolkit will include a building air tightness testing system as well as an infrared camera to detect moisture, missing or defective insulation, structural shortcomings, HVAC problem areas, sources of heating and cooling loss, plumbing blocks, roof leaves and electric issues.

The kit will be used for pre- and post-occupant audits followed by a workshop, where students will discuss their real experiences with building performance

analyses dealing with topics such as occupant comfort, system effectiveness and energy use.

Other ASHRAE grant recipients are:
* University of Nebraska - Lincoln - CO2-Based Demand Control Ventilation (DCV) of Multiple-Zones in a LEED(tm) Building
* UNC Charlotte - Advanced Cooling Technologies: Nanofluids Flow and Heat Transfer Lab
* Ryerson University - Design and Construction of a Compact Integrated Variable-Capacity Multi-Zone Air Handling Unit with HRV/ERV/Economizer for Super Energy Efficient/Net Zero Energy Houses
* Purdue University - Living Laboratory for Smart Home
* UET Lahore - Design and Fabrication of 1KW Solar Stirling Engine
* Bradley University - Design of a System for Regulating AC Capacity by Compressor Rapid Cycling
* National Tapei University University of Technology - A Performance Study on Electric Powered Vehicle Air-Conditioning System
* American University of Beirut - The Use of Shading and Condensate Drain to Improve the Efficiency of a Residential-Sized DX Split Air Conditioning System in Beirut City
* Southern Illinois University - Carbondale - PCM Solar Energy Storage Demonstrator for Air and Water Heating
* Mapua University (team 2) - Development of a Laboratory Set-Up for a Ducted Underfloor Air Distribution System
* National Chin-Yi University of Technology - Development of a Demonstrator of Thermoelectric Cooler/Heater System for Bio-medical Cold-Chain System: Design, Fabrication and Performance Testing
* University of Algarve - Development of a Hot-Wire Anemometry Multi-Channel System and an Air Velocity Sensors Calibration System
* Manipal University - Solar Liquid Desiccant Air Conditioning System

For more information on the grant program, visit www.ashrae.org/students. ASHRAE will begin accepting applications for the 2012-13 program in August 2011, with a December 2011 final deadline.

ASHRAE, founded in 1894, is an international organization of some 50,000 persons. ASHRAE fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education.