



**Descripción de Cursos de los que participamos:
ASHRAE, CHICAGO, ENERO 21-25, 2012**

2011 Solar Decathlon:

Lessons for Net Zero Residential Structures

Track: High Performance Buildings

Room: Salons 4/5

Sponsor: 06.07 Solar Energy Utilization, 02.08 Building Environmental Impacts and Sustainability

Chair: Janice K. Means, P.E., Member, Lawrence Technological University, Southfield, MI

Representative teams from the 20 international entries in the 2011 Solar Decathlon present the design, construction and performance of their high performance residential building entries. Students present their experience in the competition, their employment of computerized energy analysis and automation systems, integrated new solar (and other) technologies and techniques to maximize utilization of small living spaces while minimizing their impact on the environment. ASHRAE is one of the sponsors of the U.S. Department of Energy's 5th Solar Decathlon, which was first held in the fall of 2002 and then biennially in Washington, DC., beginning in 2005.

1. University of Tennessee's Living Light House – the Design and Analysis of a Net Zero Energy Home for the 2011 Solar Decathlon

Steven E. Coley, Student Member, University of Tennessee, Knoxville, TN

2. Team China's Y Container 2011 Solar Decathlon House

Lei Yong, Tongji University, Shanghai, China

3. Chip: A Californian Net-Zero Energy House

Fei Yang, California Institute of Technology, Los Angeles, CA

4. Ohio State Solar Decathlon Encore House: Design, Implementation, and Performance of an Integrated Solar Thermal Hot Air System with Desiccant Dehumidification and Phase Change Material Thermal Storage

Matthew O'Kelly, Student Member, Ohio State University, Columbus, OH

Has Your TRAINING Left the Station?

Track: Installation, Operation & Maintenance of HVAC Systems

Room: Wabash

Sponsor: 07.03 Operations and Maintenance Management

Chair: Thursten D. Simonsen, P.E., Member, Johnson Controls Inc., Austin, TX

As the industry moves toward green high performance buildings, HVAC equipment and systems are becoming more specialized and customized. Core operating knowledge incubated by design engineers during the design and build processes must be organized, documented, and transferred to the building owner, operation and maintenance staff to ensure systems will be understood, and



operated as designed. This seminar provides guidance about how to bring the O&M staff on-board, provides initial and on-going training to maintain high performing systems throughout the building life cycle, and how the Federal Buildings Personnel Training Act may impact some of these processes.

1. Lessons Learned: A Facility Manager's Perspective on Training and Commissioning
Steven Pataki, Member, Toronto Cricket Skating and Curling Club, Toronto, ON, Canada
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How Regulations and Policies are Promoting Sustainable Energy Use and High-Performance Buildings around the World

*Track: Energy Efficiency –
New Technologies and Applications*

Room: Monroe

*Sponsor: 06.07 Solar Energy Utilization,
ASHRAE Associate Alliance Society*

Chair: Marija S. Todorovic, Ph.D., University Of Belgrade, Belgrade, Serbia

Sustainable energy use based on the inextricable linkage of energy efficiency and renewable (solar and other RES) implementation, as well as the thermal and electrical energy are to be covered. Session goal is to answer the question “How regulations and policies, at the governmental and municipal level, can promote sustainable energy use and high performance buildings around the world. Is buildings sector (urban and rural) strategic energy planning worldwide appropriate or should it be more “offensive” concerning the current technologies and RES technical potential status, demonstration and commercialization, as well as successful decades of RES systems reliable operation, particularly in buildings sectors. Special attention will be drawn to the high IEQ-HVAC (high indoor environment-HVAC) buildings and their further “greening to approach NZEB” dependence on the further commercialization and implementation of RES technologies and RES integrated approach (from modeling through end designs and construction to the operational optimization via BEMS). Not less important are complex energy systems of the combined RES based central utilities energy generation and buildings distributed pure RES or hybrid (fossil and RES based) co-generation. Solar and other RES natural and technical potentials, locally available, are mainly in all world regions well determined and consequently many Governments Strategic Energy Plans are predicting important target - percentage growth of RES utilization in building sector and total.

1. Large Scale Residential/Municipal RES Integrated Refurbishment Construction and HVAC Systems Engineering R&D Needs (CH-12-C007)

Marija S. Todorovic, Ph.D., University Of Belgrade, Belgrade, Serbia

2. Status of Renewable Energy Systems in the United States (CH-12-C008)

*Kent Peterson, P.E., Presidential/Fellow Life Member, P2S Engineering,
Inc., Long Beach, CA*

3. The Role of Solar and Other RES (Renewable Energy Sources) On the Strategic Energy Planning: Africa's Status and Views (CH-12-C009)

Essam E. Khalil, Ph.D., Fellow ASHRAE, Cairo University, Cairo, Egypt

4. Renewable Energy Sources within Urban Areas: Results from European Case Studies (CH-12-C010)

Ursula Eicker, Ph.D., University of Applied Science, Stuttgart,, Germany



Fault Detection and Energy Audits

Track: Installation, Operation & Maintenance of HVAC Systems

Room: Crystal

Chair: Steven Rosen, Member, EYP Architecture & Engineering, P.C., Boston, MA

This session will have four papers discussing methods of auditing energy analysis through traditional means and new statistical analysis vs. traditional DDC controls. Discussion of achieving high energy savings thru rated high efficiency equipment, i.e. EER 12, and the use of energy balancing methods to predict energy use utilizing energy models to determine if there is compliance with ASHRAE 90.1. A review of comparative measuring and monitoring approaches in modeling and in reality – can they possibly match up with so many variables? Are we viewing practical approaches that will address true energy savings if we can have utilities and governing authorities work together?

1. Energy Audit Analysis of Residential HVAC Systems in Austin, Texas (CH-12-C018)

Joshua Rhodes, Student Member, Brent Stephens and Michael E. Webber, University of Texas – Austin, Austin, TX

2. Using CUSUM Method to Diagnose Faults In Secondary HVAC Systems (CH-12-C019)

Zhengwei Li, Student Member, Godfried Augenbroe and Christiaan J.J. Paredis, Georgia Institute of Technology, Atlanta, GA

3. Improving the Energy Performance of a University Building through Fault Detection and Building Systems Diagnostics (CH-12-C020)

Zara Fahim, Student Member1 and Xinlei Wang2, (1)ARUP, Los Angeles, CA, (2)University of Illinois at Urbana-Champaign, Urbana, IL

4. Use of First Law Energy Balance as a Screening Tool for Building Energy Data, Part 2: Experiences on its Implementation As a Data Quality Control Tool (CH-12-C021)

Juan-Carlos Baltazar, Ph.D., Member1, David E. Claridge, Ph.D., P.E., Member2, Jing Ji, Ph.D., P.E., Associate Member3, Hiroko Masuda, Student Member3 and Song Deng, P.E.3, (1)Texas A&M University, College Station, TX, (2)Texas A&M University, College Station,, TX, (3)Energy

The Role of Fossil Fuels in Future Sustainable Buildings

Track: Energy Efficiency –

New Technologies and Applications

Room: Salons 4/5

Sponsor: 02.08 Building Environmental Impacts and Sustainability, 07.06 Building Energy Performance

Chair: David Ellis, P.E., Member, HDR Architecture Inc., Bethesda, MD

The Energy Independence and Security Act of 2007 requires DOE to issue revised Federal building energy efficiency performance standards that specify a 55% reduction in fossil fuel generated energy consumption in new and renovated federal buildings immediately and complete



elimination of fossil fuel-generated energy consumption by 2030. This seminar provides a unique format to review the EISA requirement, discusses DOE's planned implementation strategy, identifies potential pathways to achieve the goals, and describes the significant challenges related to this requirement. Speaker presentations are followed by an interactive panel discussion.

1. Implementing the EISA Fossil Fuel Reduction Requirements for Federal Buildings

Cyrus H. Nasser, Member, US Department of Energy, Washington, DC

2. Fossil Fuel Reduction Opportunities in Federal Buildings

Harvey Sachs, Ph.D., Member, ACEEE, Washington, DC

3. Challenges with Implementation of EISA Fossil Fuel Reduction Requirements

Neil P. Leslie, P.E., Member, Gas Technology Institute, Des Plaines, IL

Maximizing the Benefits of Commissioning: Incorporating Design Reviews and the Building Envelope into the Commissioning Scope

Track: Installation, Operation & Maintenance of HVAC Systems

Room: Wabash

Sponsor: 07.09 Building Commissioning

Chair: Gerald J. Kettler, P.E., Life Member, AIR Engineering and Testing, Carrollton, TX

Functional performance testing and post-occupancy evaluation of HVAC systems are commonly thought of tasks in the commissioning process. However, commissioning is most beneficial when it is begun early in the design process, and if it includes other building systems beyond HVAC. This seminar covers design phase commissioning and commissioning of the building envelope. Design phase commissioning tasks are discussed, as are suggestions for realizing maximum benefits from commissioning design reviews. The seminar also reviews envelope commissioning, the unfortunate state of the envelope quality if envelope commissioning is not done, and the resulting impact on HVAC operation.

1. Strategies for a Meaningful Commissioning Design Review

Thomas Anderson, Member, Cx Associates, Burlington, VT

2. Air Barrier Design and Commissioning: Details for Success

Meghan McDermott, Member, Southern Energy Management, Morrisville, NC



Integrated Design Energy Retrofits

Track: Integrated Design

Room: Wabash

Sponsor: 07.01 Integrated Building Design

Chair: Gregory Dobbs, Ph.D., Member, Pennsylvania State University, Philadelphia, PA

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Commercial, institutional and large multi-family building account for about 25% of primary U.S. energy. The average energy use for all existing buildings has essentially remained flat since the early 1980s at about 88,000 Btu/ft² (277.4 kW/m²). Furthermore, 98% of all buildings are less than 100,000 ft² (9,290 m²) with the distribution heavily weighted to buildings between 25,000 and 50,000 ft² (4,645 and 2,323 m²). These conference papers define the problem facing adoption of deep energy retrofits, the multifaceted plan of attack to transform a fragmented market and the modeling, technology and integrated design approach to deliver results.

1. The Current State of Energy Retrofits for Small and Medium Buildings (CH-12-C043)

Timothy C. Wagner, Ph.D., Member, UTRC, E Hartford, CT

2. Retrofit Energy Efficiency Modeling, Assessments, and Integrated Technologies: Seeking Solutions for Small and Medium Sized Buildings (CH-12-C044)

Richard Sweetser, Member, Exergy Partners Corp., Herndon, VA

3. Advancing from the Current State of Energy Retrofits to the Future Indoor Air Quality in Green Building Programs: Are They Really Serious About It?

Track: High Performance Buildings

Room: Monroe

Sponsor: Environmental Health Committee, SSPC 62.1

Chair: Hal Levin, Fellow ASHRAE, Building Ecology Research Group, Santa Cruz, CA

For the last several years, green buildings have been taking the building community by storm. Green buildings are intended to save energy, improve indoor air quality, and limit a range of environmental impacts, and there has been much debate about how successful they are in achieving these noble goals. In particular, how green buildings address indoor air quality is sometimes ASHRAE_ChicagoProgram.indd 52 12/29/2011 10:20:54 PM viewed with skepticism, in part based on concerns that energy efficiency is driving the green train. Everyone agrees that buildings need to change, both inside the building and out, and a balanced, thoughtful and honest approach is needed to get the job done.

1. How Green Building Programs Deal with IAQ

Andrew K. Persily, Ph.D., National Institute of Standards and Technology, Gaithersburg, MD

2. Getting IAQ into the Design and Construction Process

Hoy R. Bohanon, P.E., Member, Working Buildings, Winston-Salem, NC

3. Why Green Building Rating Systems Are Almost Always Wrong about IAQ

Hal Levin, Fellow ASHRAE, Building Ecology Research Group, Santa Cruz, CA



Update on the Energy Targets for Commercial Buildings

Track: Energy Efficiency – New Technologies and Applications

Room: Salons 4/5

Sponsor: Commercial Buildings Energy Targets Ad Hoc

Chair: Don Brandt, Member, Trane Co, Phoenix, AZ

This forum provides ASHRAE members with an update on the accomplishments of the Ad Hoc Committee Report on Commercial Buildings Energy Targets to Technology Council. It addresses a definition of gross square feet in commercial buildings for the purposes of calculating an EUI, a research plan to develop the EUI and to establish the maximum technologically achievable energy efficiency using energy modeling, and a draft of the federal legislation to establish a national set of EUI using energy modeling. This forum requests comments, input, complaints, etc.