2011

INTERNATIONAL CONFERENCE FOR ENHANCED BUILDING OPERATIONS

NEW YORK CITY

OCTOBER 18-20, 2011

Welcome to the 2011 ICEBO

New York City • October 18-20, 2011

On behalf of the hosts and co-sponsors of the eleventh annual International Conference for Enhanced Building Operations, welcome! Our unique program brings together prominent international and local experts from many areas related to building commissioning, intelligent controls for energy efficiency, and enhanced building operations with ways to apply these tools to achieve related environmental and policy goals. This year's two-day conference on October 19 and 20 consists of 14 technical sessions with 71 presentations by representatives from 17 countries.

The Energy Systems Laboratory at The Texas A&M University System and all of our hosts and sponsors are committed to providing our attendees with a very useful package of information that will help them improve the performance of their building programs – something to take home and use!

ICEBO also features two pre-conference workshops on October 18 – "Continuous Commissioning®" and a workshop on "Sustainability Through Intelligent Controls—Applying an Open Interoperable Model to Building Management and Energy Efficiency." A third workshop on "Green Workforce/Building Operator Training" will be held on Friday, Oct 21st. Please take advantage of these training opportunities.

We are confident that you will profit from the experiences and technical expertise of our presenters and panelists, and, best of all, the interaction with so many energy professionals in one place.

Malcolm E. Verdict, CEM
Conference Chair
International Conference for
Enhanced Building Operations

Jeff S. Haberl, Ph.D.
Technical Director
International Conference for
Enhanced Building Operations

Contents

Welcome 2

Events 4

Planning Committee 5

Keynote Speakers 6-9

Conference Sessions 10-23

Program at a Glance 16-17

Conference Workshops 22-23

Additional Information 24

Notes 25-29

Sponsors 30

ICEBO Staff 31

Events

Technical Sessions

The technical sessions consist of 25-minute presentations. There will be a 5-minute break between papers to permit movement of conferees between sessions.

Workshops

Continuous Commissioning® workshop, sponsored by the Energy Systems Laboratory, on Tuesday, October 18, from 8:30am to 4:00pm, in Salon H.

Sustainability Through Intelligent Controls—Applying an Open Interoperable Model to Building Management and Energy Efficiency Workshop, sponsored by LonMark International and Echelon Corporation, on Tuesday, October 18, from 9:00am to 3:00pm, in Salon I.

Green Workforce/Building Operator Training, sponsored by CUNY Institute for Urban Systems, on Friday, October 21, from 8:30am to 12:00pm, in Salon F.

Reception

Sponsored by Johnson Controls International

Wednesday, October 19, 2011

5:00-7:00, Salon E and Foyer E

Planning Committee

Dr. Amad Al-Mulla
Kuwait Institute for Scientific Research

Mr. Ron Bernstein
Echelon Corporation

Mr. Michael Bobker
City University of New York Institute for Urban Systems

Mr. Joe Borowiec
New York State Energy Research and Development Authority

Dr. David Claridge
Energy Systems Laboratory, The Texas A&M University System

Mr. Barry Haaser
LonMark International

Dr. Jeff Haberl
Energy Systems Laboratory, The Texas A&M University System

Mr. Jeff Harris
Alliance to Save Energy

Dr. Volker Hartkopf
Center for Building Performance & Diagnostics,
Carnegie Mellon University

Mr. Don LaVada
New York State Energy Research and Development Authority

Mr. Peter Savio
New York State Energy Research and Development Authority

Mr. Malcolm Verdict
Energy Systems Laboratory, The Texas A&M University System

Keynote Speaker

Opening Plenary

Francis J. Murray

President and CEO, New York State Energy Research and Development Authority (NYSERDA)

Frank was appointed President and CEO on January 26, 2009. Prior to his appointment, Frank served as Senior Advisor at the international environmental consulting firm, Ecology and Environment, Inc. Frank was previously a policy advisor to the United States Secretary of Energy, assisting in the development of the Clinton Administration's national energy policy.

In the early 90's, Frank served as the New York State Commissioner of Energy and Chairman of the NYSERDA Board of Directors. He also served as Chairman of the State Energy Planning Board. In 1985, Frank was appointed Deputy Secretary to Governor Mario Cuomo for Energy and the Environment, a position he held until 1992. Frank began his work on New York State energy issues as legislative counsel and then as an energy and environmental policy advisor to Governor Hugh Carey.

Keynote Speaker

Luncheon Day One

Laurie Kerr

Senior Policy Advisor, Office of Long-Term Planning and Sustainability, New York City Mayor's Office

Laurie Kerr is the Senior Policy Advisor in the NYC Mayor's Office responsible for the development of New York City's green building and energy efficiency policies. She has been instrumental in the creation of PlaNYC, New York's influential plan for sustainable growth through 2030, including the New York City greenhouse gas reduction plan, the comprehensive policies to reduce energy efficiency in existing buildings, the greening of the city's codes and regulations, and energy-aligned lease language. She has over 15 years experience practicing architecture, and has written articles on architecture for the Wall Street Journal, Slate, and Architecture. Prior to receiving her Master's in Architecture from Harvard, Laurie earned degrees in engineering and applied physics. She was given the AIANY Public Architect Award for 2011.

Keynote Speaker

Opening Plenary Day Two

Volker Hartkopf

Director, Center for Building Performance and Diagnostics, Carnegie Mellon University

In 1975, Prof. Hartkopf co-initiated and subsequently directed the first multi-disciplinary program in Architecture, Engineering, and Planning in the USA with grants from the National Science Foundation and the building industry. In 1981, he co-founded the Center for Building Performance and Diagnostics (CBPD) at Carnegie Mellon University. Between 1981-1985, Prof. Hartkopf developed jointly with Vivian Loftness and Peter A.D. Mill, the Total Building Performance Evaluation Method at Public Works Canada while on an Executive Interchange Program. He created and directs the Advanced Building Systems Integration Consortium (ABSIC), comprising leading building industries, major foreign and U.S. governmental agencies, and Carnegie Mellon University. ABSIC is the first private-public partnership in the building industry and was recognized by the National Science Foundation in 1990 to be the first NSF I/UCRC in the building industry.

Currently, Dr. Hartkopf is the academic advisor of the Bayer EcoCommercial Building Program and serves as the chair of the think tank of best practices within the United Nations Environmental Program Sustainable Building and Climate Initiative.

Keynote Speaker

Luncheon Day Two

Morad Atif

Director General, Institute for Research in Construction, National Research Council Canada

In March 2010, Dr. Morad Atif was appointed Director General of the National Research Council Canada's Institute for Research in Construction (NRC-IRC). NRC-IRC is Canada's leading construction research and technology development agency and is the custodian of the development and delivery of the Model National Building Codes for Canada.

Dr. Atif had been Director of NRC-IRC's Indoor Environment Research Program since 1999. He joined NRC-IRC as a research officer in 1993, after spending two years as a faculty member at Texas A&M University's College of Architecture and Department of Construction Science, where he earned a Ph.D. in Architecture and Construction Science. He also holds a Masters degree in Architectural Technology from the University of California.

The chair of several international conferences and an active contributor to many committees and associations, Dr. Atif is the Canadian representative and chair of the Executive Committee of the International Energy Agency's (IEA) Energy Conservation in Buildings and Community Systems, a collaborative research partnership of 26 countries. He also serves on the Boards of Directors of the Continental Automated Building Association, the International Council on Buildings (CIB) and Communities of Tomorrow.

Dr. Atif is the author of more than 80 publications and the recipient of many awards, including two NRC Outstanding Achievement Awards, a Presidential award from the Illuminating Engineering Society of North America and two Caudill Student Research Fellowships from Texas A&M University.

Conference Sessions

Day One

Wednesday morning, October 19, 2011

7:00-5:00 Registration

7:15-7:50 Breakfast for Wednesday Conference Authors & Session Chairs, Golden Board Room

7:15-7:50 Attendee Continental Breakfast Foyer E

8:00-9:05 Opening Plenary Session, Salon E

Welcome

Mr. Malcolm Verdict
Conference Chair, Energy Systems Laboratory
Mr. Michael Bobker
CUNY Institute for Urban Systems
Dr. David Claridge
Director, Energy Systems Laboratory

Keynote Address

Mr. Francis J. Murray
President and CEO, New York State Energy Research and Development Authority

9:15-12:05 Sessions 1-4

Session 1: Advanced Commissioning Strategies-I

Salon F

Session Chair: James Watt, Energy Systems Laboratory, The Texas A&M University System

9:15-9:40 "Commissioning & Optimization of On-Site Renewable Energy Systems"
John C. Gardner, ONtility.

9:45-10:10 "Continuous Control in Buildings with Bond Graphs"
Wim Zeiler, Eindhoven University of Technology.

10:10-10:40 Coffee Break

10:40-11:05 "Operation Prognostics and Operation Diagnostics—Technologies for Enhanced Operations and Controls"
Oliver Baumann,
Ebert & Baumann Consulting Engineers.

11:10-11:35 "Initial Commissioning of a Water-to-Water GHP System in KIER"
Jiyoung Kim, Jea Chul Jang, Eun Chul Kang, Ki Chang Chang, Euy Joon Lee, Korea Institute of Energy Research, Yongchan Kim, Korea University.

11:40-12:05 "Theoretical Minimum Energy Use of a Building HVAC System"
Oleksandr Tanskyi, Energy Systems Laboratory.

Conference Sessions

Day One

Session 2: IAQ Commissioning Best Practices

Salon G

Session Chair: Joseph Martinez, Energy Systems Laboratory, The Texas A&M University System

9:15-9:40 "Indoor Conditions Study and Impact on the Energy Consumption for a Large Commercial Building"
Tiberiu Catalina, Technical University of Civil Engineering of Bucharest.

9:45-10:10 "V&A Medieval & Renaissance Galleries: A Passive Approach to Humidity Control"
Andrew Lerpiniere, Ove Arup & Partners Ltd.

10:10-10:40 Coffee Break

10:40-11:05 "CO2 - Based Demand-Controlled Ventilation Control Strategies for Multi-Zone HVAC Systems"
Nabil Nassif, Ph.D., North Carolina AT&T State University.

11:10-11:35 "Airflow Characteristics of Direct-Type Kitchen Hood Systems in High-Rise Apartment Buildings"
Myungsig Park, Innovations Optima, LLC.

11:40-12:05 "Improve Indoor Air Quality, Energy Consumption and Building Performance: Leveraging Technology to Improve All Three"
Duke Wiser, Dynamic Air.

Session 3: Building Optimization Using Data Analysis-I

Salon H

Session Chair: Michael Bobker, CUNY Institute for Urban Systems

9:15-9:40 "A Probability Extension of PCA to Detect and Diagnose Sensor Faults in Air Handling Units"
Zhengwei Li, Georgia Institute of Technology.

9:45-10:10 "Case Studies in Using Interval Data Energy Models for Savings Verification: Lessons from the Grocery Sector"
Joan Effinger, PECI.

10:10-10:40 Coffee Break

10:40-11:05 "Calibration of a Building Energy Model to Energy Monitoring System Data Using an Analytical Optimisation Approach"
Daniel Coakley, National University of Ireland.

11:10-11:35 "Functional Verification through Operation Diagnostics"
Ben Burgoyne, Ebert & Baumann Consulting Engineers.

11:40-12:05 "Energy-data Dashboards and Operators: Designing for Usability in New York City Schools"
Michael Bobker, CUNY Institute for Urban Systems.

Conference Sessions

Day One

Session 4: Northeast Track/Advances in the Region: Programs - Research - Practice
Salon I

Session Chair: *Mark Miller, Strategic Building Solutions*

9:15-10:30 **"Regional Utility Programs for Operational Improvement"**
Panelists:
- Sandra LaFlamme, Vermont Energy Investment Corp.
- Amit Kulkarni, National Grid
- Eric Sermakekian, Northeast Utilities (Connecticut)
- David Pospisil, Consolidated Edison of NY

10:30-11:00 Coffee Break

Session 4: Northeast Track *(continued)*

Session Chair: *ClaraRose Voigt, NYSERDA*

11:00-11:50 **"NYS State and NYC Programming for Operational Improvement"**
Panelists:
- ClaraRose Voigt, NYSERDA
- Ellen Ryan, Mike Dipple, NYC Department of Citywide Administrative Services

12:05 - 1:30 Luncheon, Salon E
Guest Speaker:
Ms. Laurie Kerr
Office of Long-Term Planning and Sustainability, New York City Mayor's Office

Conference Sessions

Day One

Wednesday afternoon, October 19, 2011

1:45-5:00 Sessions 5-8

Session 5: Advanced Commissioning Strategies-II
Salon F

Session Chair: *Joseph Martinez, Energy Systems Laboratory, The Texas A&M University System*

1:45-2:10 **"Automated Performance Management"**
Kirk Drees, Johnson Controls, Inc.

2:15-2:40 **"Bridging the Gap Between Commissioning Measures and Large Scale Retrofits in Existing Buildings"**
John Bynum, Alaina Jones, David E. Claridge, Energy Systems Laboratory

2:40-3:10 Coffee Break

3:10-3:35 **"A Systematic Methodology to Underpin the CC® Process Using Calibrated BES Models"**
Gearóid White, Marcus Keane, Paul Raftery, Daniel Coakley, Informatics Research Unit for Sustainable Engineering.

3:40-4:05 **"The Role of Incentives in Building Controls Marketplace"**
Cory Vanderpool, EnOcean Alliance.

4:10-4:35 **"The Sustainable Building-Accelerator"**
W.H. Maassen, BREEAM International Assessor, Royal-Haskoning – Division: Building Services & Structures.

Session 6: High Performance/Net Zero Buildings
Salon G

Session Chair: Volker Hartkopf, Carnegie Mellon University

1:45-2:10 **"Global Energy, Environmental Trends and Challenges: The Need for Best Building Practices"**
Volker Hartkopf, Dr. Ing, Center for Building Performance and Diagnostics (CBPD), Carnegie Mellon University.

2:15-2:40 **"Charting a Path to Net Zero Energy: Public-Private Sector Perspectives of the Commercial Buildings Consortium"**
Jeffrey Harris, Alliance to Save Energy.

2:40-3:10 **Coffee Break**

3:10-3:35 **"A Tale of Two Buildings: Achieving Energy Efficiency"**
Scott Rouse, Energy @ Work.

3:40-4:05 **"Testing and Evaluation of a Power Factor Correction for Power-Savings Potential"**
Ahmad Alotaibi,
Kuwait Institute for Scientific Research.

4:10-4:35 **"Impacts of Some Building Design Parameters on Heat Pump Applications"**
Banu Erdim, Gulten Manioglu, Istanbul Technical University.

4:40-5:05 **"A New Web-based Detailed Weather Data System Providing Global Energy Support for Precision Energy Modeling Analyses and Tracking"**
John Keller, Charles Khuen, Weather Analytics, Inc.

Session 7: Building Optimization Using Data Analysis-II
Salon H

Session Chair: Juan-Carlos Baltazar, Energy Systems Laboratory, The Texas A&M University System

1:45-2:10 **"Energy Savings and Persistence from Energy Saving Performance Contract in an Army Base"**
Hyojin Kim, Energy Systems Laboratory.

2:15-2:40 **"A Toolkit for Building Energy Consumption Data Quality Assurance/Quality Control"**
Juan Carlos Baltazar, Ph.D., Energy Systems Laboratory.

2:40-3:10 **Coffee Break**

3:10-3:35 **"Heat Balance Analysis to Validate the Heat Dissipation Rate of a Man-Made Lake as a Heat Rejection"**
Li Song, Ph.D., Tony Hayes, Micah Dawson, Building Energy Efficiency Lab, University of Oklahoma.

3:40-4:05 **"Feasibility Study of Developing a Virtual Chilled Water Flow Meter at Air Handling Unit Level"**
Li Song, Ph.D., Atul Swamy, Gyujin Shim, Building Energy Efficiency Lab, University of Oklahoma.

4:10-4:35 **"Database Supported Bacnet Data Acquisition System for Building Energy Diagnostics"**
Zhengwei Li, Godfried Augenbroe, Georgia Institute of Technology.

4:40-5:05 **"Cooling Energy Demand Evaluation by Means of Regression Models Obtained From Dynamic Simulations"**
Tiberiu Catalina, Joseph Virgone, Technical University of Civil Engineering of Bucharest.

Session 8: Northeast Track/Advances in the Region: Programs, Research, Practice
Salon I

Session Chair: Jim Freihaut, Penn State Department of Architectural Technology

1:45-2:50 **"Establishing Field Tested Integrated Design and Delivery Methodology for Retrofitting Commercial Buildings"**
Greater Philidelphia Energy Innovation Hub.
Panelists:
- Jane Snowden, IBM Research
- Timothy Wagner,
United Technologies Research Center
- Satish Narayanan,
United Technologies Research Center
-Gregg Scott,
Penn State Campus Development Office

2:50-3:20 **Coffee Break**

Session Chair: Edward Bogucz, Syracuse Center of Excellence in Environmental and Energy Systems

3:20-4:35 **"Innovations in Energy-efficient Systems for Commercial Buildings and Data Centers"**
NYS Energy Regional Innovation Cluster (ERIC).
Panelists:
- H. Ezzat Khalifa,
Environmental Quality Systems STAR Center
- Anna Dyson,
Rensselaer Polytechnic Institute
- Alan Hedge,
Cornell University
- Stephen Samouhos,
Grove School of Engineering, CCNY/MIT

Reception

5:00-7:00 **Reception - sponsored by Johnson Controls International**
Salon E and Foyer E

Program at a Glance

Tuesday, October 18	**7:00 am - 7:00 pm - Workshops and Conference Registration, Golden Board Room**			
8:30 am - 4:00 pm	Continuous Commissioning® Workshop, **Salon H**			
8:30 am - 3:00 pm	Sustainability Through Intelligent Controls-Applying An Open Interoperable Model To Building Management And Energy Efficiency, **Salon I**			
Wednesday, October 19	**7:00 am - 5:00 pm - Conference Registration, Promenade**			
7:15 am - 7:50 am	Breakfast for Wednesday Conference Authors & Session Chairs, **Golden Board Room** Continental Breakfast for Attendees, **Foyer E**			
8:00 am - 9:05 am	Opening Plenary Session, Francis J. Murray, NYSERDA, **Salon E**			
	Salon F	**Salon G**	**Salon H**	**Salon I**
9:15 am - 12:05 pm: Technical Sessions 1-4 *Coffee Break - Foyer*	Session 1- Advanced Commissioning Strategies-I *10:10 am - 10:40 am*	Session 2- IAQ Commissioning Best Practices *10:10 am - 10:40 am*	Session 3- Building Optimization Using Data Analysis-I *10:10 am - 10:40 am*	Session 4- Northeast Track/Advances in the Region: Programs, Research, Practice* 10:30 am - 11:00 am
12:05 pm - 1:30 pm	***Luncheon - Guest Speaker: Ms. Laurie Kerr, Office of Long-Term Planning and Sustainability, Salon E***			
	Salon F	**Salon G**	**Salon H**	**Salon I**
1:45 pm - 5:00 pm: Technical Sessions 5-8 *Coffee Break - Foyer E*	Session 5- Advanced Commissioning Strategies- II *2:40 pm - 3:10 pm*	Session 6- High Performance/Net Zero Buildings *2:40 pm - 3:10 pm*	Session 7- Building Optimized Using Data Analysis- II *2:40 pm - 3:10 pm*	Session 8- Northeast Track/Advances in the Region: Programs, Research, Practice* *2:50 pm - 3:20 pm*
5:00 pm - 7:00 pm	Reception - Sponsored by Johnson Controls International, **Salon E and Foyer E**			
Thursday, October 20	**7:00 am - 5:00 pm - Conference Registration, Promenade**			
7:30 am - 8:25 am	Breakfast for Thursday Conference Authors & Session Chairs, **Golden Board Room** Poster Session and Continental Breakfast for Attendees, **Foyer E**			
8:30 am - 9:10 am	Opening Plenary Session, Volker Hartkopf, Carnegie Mellon University, **Salon E**			
	Salon F	**Salon G**	**Salon H**	**Salon I**
9:15 am - 12:05 pm: Technical Sessions 9-12 *Coffee Break - Foyer E*	Session 9- Modeling/Energy Efficiency *10:10 am - 10:40 am*	Session 10- Building Standards/Government Programs *10:10 am - 10:40 am*	Session 11- Continuous Commissioning® *10:10 am - 10:40 am*	Session 12- Northeast Track: Existing Building Commission, Workforce Development and Training* *10:30 am - 11:00 am*
12:10 pm - 1:40 pm	***Luncheon - Guest Speaker: Dr. Morad Atif, Director General, Institute for Research in Construction, National Council Canada, Salon E***			
	Salon F	**Salon G**		
1:45 pm - 4:15 pm: Technical Sessions 13-14 *Coffee Break - Foyer E*	Session 13- Intelligent Network and Control Systems* *2:40 pm - 3:10 pm*	Session 14- International Government Building Programs *2:40 pm - 3:10 pm*	*Invitational PowerPoint Presentations	
4:15 pm - 4:45 pm	Conference Wrap-up and invitation to ICEBO 2012 in Manchester, United Kingdom, **Salon E**			
Friday, October 21	8:30 am - 12 noon - Green Workforce/Building Operator Training, **Salon F**			

Thursday morning, October 20, 2011

7:00-5:00 Registration

7:30-8:25 Poster Sessions and Continental Breakfast
Foyer E

7:30-8:25 Breakfast for Thursday conference authors and session chairs
Golden Board Room

8:30-9:10 Opening Plenary Session, Salon E

Plenary Speaker: Dr. Volker Hartkopf, Director, Center for Building Performance and Diagnostics, Carnegie Mellon University

9:15-12:05 Sessions 9-12

Session 9: Modeling/Energy Efficiency
Salon F

Session Chair: Jeff Haberl, Energy Systems Laboratory, The Texas A&M University System

9:15-9:40 **"Analysis Methodology for Large Organizations' Investments in Energy Retrofit of Buildings"**
Yeonsook Heo and Godfried Augenbroe, Georgia Institute of Technology, Ruchi Choudhary, University of Cambridge.

9:45-10:10 **"Design of a Personalized Lighting Control System Enabled by a Space Model"**
George Suter, Ph.D., Filip Petrushevski, Milos Sipetic, Department of Digital Architecture and Planning, Vienna University of Technology.

10:10-10:40 Coffee Break

10:40-11:05 **"State-based Modeling of Buildings and Facilities"**
M. Norbert Fisch, Dr. Ing., Claas Pinkernell, Markus Look, Stefan Plesser, Dr. Bernhard Rumpe, Aachen University.

11:10-11:35 **"Simulation as a Tool to Develop Guidelines of Envelope Design of a Typical Office Building in Egypt"**
Mina Michel Samaan, Ahmed Nabih Ahmed, Osama M.A. Farag, Magdi El-Sayed Khalil, Mansoura University, Dresden University of Technology.

Session 10: Building Standards/Government Programs
Salon G

Session Chair: Jeffrey Harris, Alliance to Save Energy

9:15-9:40 **"International Comparison of Energy Labeling and Standards for Energy Efficient and Green Buildings"**
Dr. Peter Hennicke, Shritu Shrestha, Tobias Schleicher, Wuppertal Institute for Climate, Environment and Energy.

9:45-10:10 **"Statewide Electricity and Capacity Savings and Costs from the Implementation of IECC Code in Texas: Analysis for Single-Family Residences"**
Hyojin Kim, Juan-Carlos Baltazar, Ph.D., Jeff S. Haberl, Ph.D., Energy Systems Laboratory.

10:10-10:40 Coffee Break

10:40-11:05 **"Comparative Analysis Implementing the ASHRAE 90.1, 189.1, and IECC Codes in Commercial Buildings in Texas"**
Jaya Mukhopadhyay, Juan-Carlos Baltazar, Ph.D., Hyojin Kim, Jeff S. Haberl, Ph.D., Energy Systems Laboratory.

11:10-11:35 **"Intelligent Building Control System for EPBD Certification Support"**
Karel Kabele, Department of Microenvironmental and Building Services Systems Engineering, Czech Technical University in Prague.

11:40-12:05 **"Data Warehouse Model to Support Optimized Operation and Energy Savings in Buildings"**
Paul Stack, Brian Cahill, Farhan Manzoor, Karsten Menzel, National University of Ireland – University College Cork

Session 11: Continuous Commissioning® Case Studies
Salon H

Session Chair: James Watt, Energy Systems Laboratory, The Texas A&M University System

9:15-9:40 **"Comprehensive Energy Management and Optimization Program—Alamo Colleges, San Antonio, Texas"**
Joseph T. Martinez, Energy Systems Laboratory.

9:45-10:10 **"Comprehensive Energy Management and CC® at DFW Airport"**
Larry Kramer, Dallas/Fort Worth International Airport.

10:10-10:40 Coffee Break

10:40-11:05 **"Comprehensive Energy Efficiency in City of Austin Facilities"**
Dennis Lilley, Austin Energy.

11:10-11:35 **"Application of CC® at a Corporate Headquarters Facility in Dallas, TX"**
Ken Meline, John Kimla, Command Commissioning, LLC.

11:40-12:05 **"Systems Commissioning and Continuous Commissioning® for Tripler Army Medical Center"**
Fred Schroeder, HHS Associates.

Session 12: Northeast Track: Existing Building Commissioning,
Salon I

Session Chair: Joseph Borowiec, NYSERDA

Conference Sessions

Day Two

9:15-9:35 **"Guidelines for Existing Building Commissioning"**
Mark Miller, Building Commissioning Association.

9:40-10:00 **"An Approach to Facilities Operational Improvement"**
Om Taneja, US-General Services Administration, Region 2.

10:05-10:25 **"Monitoring-based Commissioning - a technology-driven approach"**
Steve Pascone, Mach Technologies,
Bill O'Connor, EnerNoc

10:30-11:00 Coffee Break

Session 12: Northeast Track: Workforce Development and Training *(continued)*

Session Chair: Kimberly Lenihan, NYSERDA

11:00-11:20 **"The Role of the Operating Engineers' Union"**
Howard Styles, International Union of Operating Engineers Local 94.

11:25-11:45 **"Drivers of Commercial Building Operator Skills"**
Jeffrey Domianski, CushmanWakefield.

11:50-12:10 **"The Universities' Role and Response"**
Amanda Daly, City University of New York.

12:10-1:40 Luncheon, Salon E

Guest Speaker: Dr. Morad Atif, Director General, Institute for Research in Construction, National Research Council Canada

Thursday afternoon, October 20, 2011

1:45-4:15 Sessions 13-14

Session 13: Intelligent Network and Control Systems
Salon F

Session Chair: Ron Bernstein, Echelon Corporation

1:45-2:10 **"SmartGrid & Smart Building Convergence—How Will Buildings Respond in a Demand Response Event?"**
Jeremy J. Roberts, Technical Director, LonMark International.

2:15-2:40 **"Open Control Networking Systems for Smarter Building Operations—Fundamentals of System Architecture and Design"**
Mike Gibson, Senior Engineer,
Echelon Corporation.

2:40-3:10 Coffee Break

Conference Sessions

Day Two

3:10-3:35 **"LonMark Open Solutions: An Industry Update—New Products, Solutions, Educational Programs, Standards, and how They Affect the Future of Building"**
Ron Bernstein, Executive Director Emeritus, LonMark International.

3:40-4:40 **"Energy Efficiency through Intelligent Control System: Implementation Strategies, Case Studies, Industry Best Practices for Smart Building Design and Specification—Developing Standards Based on Open Specifications for Building Automation Systems"**
Panelists:
- Jeremy J. Roberts
Technical Director, LonMark International
- Mike Gibson
Senior Engineer, Echelon Corporation
- Dr. Ahmad Al-Mulla Ph.D.
Kuwait Institute for Scientific Research

Session 14: International Government Building Programs
Salon G

Session Chair: Malcolm Verdict, Energy Systems Laboratory, The Texas A&M University System

1:45-2:10 **"Demand Side Management for Schools and Governmental Buildings in the State of Kuwait"**
A. Al-Mulla, Ph.D., A. ElSherbini, A. Al-Otaibi, H. Ishaqali, Kuwait Institute for Scientific Research.

2:15-2:40 **"MEW Efforts in Reducing Electricity and Water Consumption in Government and Private Sectors in Kuwait"**
Iqbal Al-Tayar, Ministry of Electricity & Water, Kuwait.

2:40-3:10 Coffee Break

3:10-3:35 **"Building Energy Certification System: Application to a Building in Lisbon and Paths to a Future Enhanced Scheme"**
Pedro Nunes and Guilherme Carrilho da Graça, University of Lisbon, Maria Lerer, NaturalWorks.

3:40-4:05 **"Evaluation of the Heating & Cooling Energy Demand of a Case Residential Building by Comparing The National Calculation Methodology of Turkey and EnergyPlus through Thermal Capacity Calculations"**
Merve Atmaca,
Istanbul Technical University, Turkey

Conference Wrap-up

4:15-4:45 **Conference Wrap-up and Invitation to ICEBO 2012 in Manchester, United Kingdom, Salon E**
Mr. Malcolm Verdict, Energy Systems Laboratory, The Texas A&M University System
Mr. Roy Stewart, Centre for Construction Innovation Northwest, Manchester, United Kingdom

CONTINUOUS COMMISSIONING® WORKSHOP
Salon H

Tuesday, October 18, 2011 8:30 am – 4:00pm
The one-day Continuous Commissioning® Workshop presents techniques practiced daily by the engineers at the Energy Systems Laboratory. These techniques are proven to save significant dollars from the existing Continuous Commissioning® buildings at Texas A&M University, airports, school districts, hospitals, and many commercial and government facilities. Now is your chance to learn state-of-the-art, hands-on knowledge from these experts.

Instructors are Dr. David Claridge and Mr. James Watt, Director and Associate Director respectively of the Energy Systems Laboratory. They are responsible for leading the Lab's Continuous Commissioning® effort and have extensive experience in technology transfer and workshops.

The topics included for instruction are:

- Introduction to the Continuous Commissioning® Process
- Fundamentals for Continuous Commissioning®
- Tools and Equipment
- Ensuring Optimum Building Performance
- Typical Continuous Commissioning® Measures
- Financing Options
- Measurement & Verification for Continuous Commissioning®
- Case Studies of Continuous Commissioning®

SUSTAINABILITY THROUGH INTELLIGENT CONTROLS—APPLYING AN OPEN INTEROPERABLE MODEL TO BUILDING MANAGEMENT AND ENERGY EFFICIENCY
Salon I

Tuesday, October 18, 8:30am – 3:00pm
Intelligent control systems are vital to any sustainable facility project. Intelligent networked controls systems enable devices to share information with each other, with a host monitoring system, and with other higher-level enterprise applications. Discussion will cover:

- Introduction to Energy Efficiency Through Intelligent Controls
- Elements of an Open Controls Platform
- Introducing LON (Local Operating Networks)

- Specification Development Requirements
- The Changing Contractor World
- Introducing the Two-Tier BMS Spec
- Use Case Examples
- Tools, Resources and References

The instructor is Mr. Ron Bernstein, Executive Director Emeritus for LonMark International.

GREEN WORKFORCE/BUILDING OPERATOR TRAINING
Salon F

Friday, October 21, 8:30am – noon
This workshop presents current best practices in training of incumbent building engineering staff for new energy management and "green building" responsibilities. Significant skills enhancement for middle level and senior building operators is necessary to meet today's energy goals. Developing and delivering appropriate training programs is key to unlocking in-house operational opportunities and maintaining persistent energy reductions. The workshop will provide an opportunity for discussion and exchange of ideas on training programs needs. Topics include:

Working with clients to define needs and goals

- Skill areas that commonly need improvement
- Effective instructional techniques
- Practice-Based Exercises
- Moving from knowledge to behavior
- Evaluation methods
- Certifications

The lead instructor and moderator is Mr. Michael Bobker, M.Sc., C.E.M., Director of the Building Performance Lab at the CUNY Institute for Urban Systems. Mr. Bobker will be joined by Mr. Volkert Braren, NYC Department of Education, Division of School Facilities and Mr. Patrick Dail, School of Professional Studies, City University of New York. Mr. Braren and Mr. Dail have developed and operate one of the largest building operator training programs in the country.

Additional Information

Continuing Education & Professional Development

The ICEBO and the workshops meet the criteria for continuing education and professional development hours required by many state professional engineering boards. Check with Christina Chea at the registration desk for details or information.

Proceedings

One flash drive of the 2011 Proceedings is included in the conference registration fee. Additional copies may be purchased at the Conference Registration Desk, or from the Energy Systems Laboratory, 979.847.8950.

Homepage

http://icebo.tamu.edu

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POSTSCRIPT

The ICEBO brings together an international group of practitioners, policy makers and researchers who routinely improve the health and comfort and minimize the energy consumption, operating costs and environmental impacts of buildings. ICEBO 2011 is the leading forum for timely exchanges among individuals interested in the continuous improvement and maintenance of buildings, design, their energy usage and environmental impact.

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