Programs for the Kansas City Meeting (June, 2019):

Seminar 1 (Intermediate)
Sunday, June 23, 2019, 8:00 AM-9:00 PM

Commissioning and Re-Commissioning: The Process and the Practice
Sponsor: *7.9 Building Commissioning, 6.8 Geothermal Heat Pump and Energy Recovery Applications*
Room: *2104A*
Track: *Commissioning New & Existing Buildings*
Chair: *William Bradford, P.E., Member, BRPH, Orlando, FL*

Commissioning is more than just following ASHRAE Standard 202 and ASHRAE Guideline 0 and 0.2; it is about forming a team that will help each other turn over a complex system to the owner. The first portion of this program illustrates the importance of teamwork when beginning the commissioning process. The second portion includes some examples of these complex systems being commissioned, primarily geothermal heat pump systems, and compares and contrasts them to simpler systems, showing the positives and negatives of each. Lessons learned and best practices are provided.

1. **Commissioning Is a Team Effort: A Roadmap to Customer Satisfaction**
   David Meyers, AIA, Burns & McDonnell, St. Louis, MO

2. **Commissioning and Re-Commissioning Complex and Simple Geothermal Heat Pump Systems: Similarities, Differences and Critical Items**
   Michael Kuk, OPMP, CPMP and BEAP, Member, CERx Solutions LLC, Montgomery, IL

Seminar 6 (Intermediate)
Sunday, June 23, 2019, 9:45 AM-10:45 AM

Diet and Exercise for Healthy High Performing Buildings
Sponsor: *9.10 Laboratory Systems, 7.9 Building Commissioning*
Room: *2101*
Track: *Commissioning New & Existing Buildings*
Chair: *Christine Reinders-Caron, Member, Iowa State University, Ames, IA*

Buildings are complex spaces when it comes to energy monitoring and acoustic performance. This session will address monitoring energy use, remote analytics, how acoustical performance is codified and tested in the design and commissioning process with examples in high performing buildings and in critical environments.

1. **Making Smart Buildings Brilliant**

Kelsey Leslie, P.E., Member, Paladin, Inc., Lexington, KY

2. **Exercise Your Building for Healthy Performance**
   Vanessa Friedberg, P.E., Associate Member, Siemens Building Technologies, Austin, TX

3. **Keeping Your Building on a Healthy Diet**
   Morgan Hilk, Associate Member, Environmental Systems Design Inc, Chicago, IL

Seminar 9 (Intermediate)
Sunday, June 23, 2019, 11:00 AM-12:30 PM

Automated Fault Detection and Diagnostics Software for Cx, RCx and MBCx
Sponsor: *7.5 Smart Building Systems, 7.9 Building Commissioning*
Room: *2101*
Track: *Commissioning New & Existing Buildings*
Chair: *Xiaohui Zhou, Ph.D., Member, Slipstream, Madison, WI*

There have been major developments in the past few years in commercially available automated fault detection and diagnostics (AFDD) software, used for detecting sub-optimal system performance in the commercial buildings. They have been used successfully in commissioning (Cx), retro-commissioning (RCx), and monitoring-based commissioning (MBCx). These tools can pinpoint then prioritize efficiency and cost saving opportunities, track savings, easy to integrate with existing building automation systems and some provide it as a Software-as-a Service (SaaS) option. This seminar will focus on discussing the applications of AFDD software as a useful tool for Cx, RCx, and MBCx.

1. **How AFDD Tools Can Support Commissioning Teams**
   Nick Gayeski, Ph.D., Member, KGS Buildings, Inc, Cambridge, MA

2. **AFDD for Retro-Commissioning**
   Adam Regnier, Kinetic Buildings, Philadelphia, PA

3. **AFDD for Monitoring-Based Commissioning**
   Peter Serian, Member, CoppperTree Analytics, Surrey, BC, Canada

4. **A Commissioning Agent's Perspective on AFDD**
   Lincoln Harmer, P.E., BEMP, Member, kW Engineering, Salt Lake City, UT

Seminar 17 (Intermediate)
Sunday, June 23, 2019, 1:30 PM-3:00 PM

Next Level Challenges (Renovations, Special Systems and Acoustics)
Sponsor: *7.9 Building Commissioning, 6.6 Service Water Heating Systems , 2.6 Sound and Vibration*
Room: *2101*
Track: *Commissioning New & Existing Buildings*
Chair: *Alonzo Blalock, P.E., Member, Jacobs Engineering, Fort Worth, TX*

This seminar discusses some unique commissioning case studies, new requirements associated with acoustics and how the international community addresses some of these challenges. Systems which include domestic hot water in high rise buildings and replacement of air handlers in an ongoing operating multi-story building have challenges. This seminar looks at commissioning testing for mechanical and acoustic systems, and how the results of testing helps identify issues. This seminar provides a summary of how acoustical commissioning is codified internationally and dive into the details of how to do and document the new 189.1 Acoustical Control commissioning and inspections.

1. **Commissioning a High-Rise Hotel, Hybrid Domestic Water Heating System Prior to Occupancy**
   Norman Nelson, P.E., Life Member, Jacobs Engineering Group, Portland, OR

2. **Testing Processes for Multi-Story Building with Replacement of Ahus and Common Relief**
   Clay Wiedner, Member, Ross & Baruzinni, Inc., St. Louis, MO

3. **How to Acoustical Commission & Inspect in Accordance with ASHRAE 189.1**
   Erik Miller-Klein, P.E., Member, A3 Acoustics, LLP, Seattle, WA

4. **Acoustical Commissioning Around the World**
   Jason Swan, Member, Sandy Brown Associates, LLP, London, United Kingdom

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Seminar 30 (Intermediate)
Monday, June 24, 2019, 9:45 AM-10:45 AM

Evaluating Automated Fault Detection and Diagnostics Tools for Commissioning New and Existing Buildings
Sponsor: *7.5 Smart Building Systems, 7.9 Building Commissioning*
Room: *2104B*
Track: *Commissioning New & Existing Buildings*
Chair: *Jin Wen, Ph.D., Member, Drexel University, Philadelphia, PA*

AFDD tools are significant components during a commissioning process, especially for RCx and MBCx. Many AFDD tools exist in the market and new AFDD strategies are being developed from research activities. However, there is a lack of data, testbed, and testing method that can be used to evaluate AFDD tools. How to estimate energy and

indoor environment impacts from an AFDD process also lacks consensus. In this seminar, teams from three national laboratories will discuss their ongoing projects funded by the U.S. Department of Energy Building Technology Office, which focus on generating data and developing methods for evaluating AFDD tools.

1. **Evaluating the Performance Building Fault Detection and Diagnostics Algorithms and Tools**
   Guanjin Lin, Ph.D., Lawrence Berkeley National Laboratory, Berkeley, CA

2. **A Building Simulation Emulator with HVAC Fault Injection Capability for Testing AFDD Methods and Fault Impact Analysis**
   Vrabie Draguna, Ph.D., Member, Pacific Northwest National Laboratory, Richland, WA

3. **Fault Tests on an Occupancy Emulated Small Office Building**
   Piljae Im, Ph.D., Member, Oak Ridge National Laboratory, Oak Ridge, TN

Seminar 33 (Intermediate)
Monday, June 24, 2019, 11:00 AM-12:00 NOON

Existing Building Commissioning: The Nitty Gritty
Sponsor: *7.9 Building Commissioning*
Room: *2101*
Track: *Commissioning New & Existing Buildings*
Chair: *Tracey Whaley, P.E., Member, AECOM, Greenwood Village, CO*

The formal EBCx process includes risks and rewards we don't encounter in new construction. This session aims to deliver keys to contracting professional services, scoping, risk management, and investigation strategies for developing a successful existing building commissioning project.

1. **Existing Building Commissioning: The Nitty Gritty**
   Tracey Jumper, Member, Jump-Start Building Commissioning LLC, Selma, TX

2. **The Value of Commissioning Study**
   Tom Poeling, P.E., Member, U.S. Engineering Company, Westminster, CO

Seminar 45 (Intermediate)
Tuesday, June 25, 2019, 9:45 AM-10:45 AM

Building Envelope Cx x4: The Value, Requirements, Case Studies and Research
Sponsor: *7.9 Building Commissioning*
Room: *2105*

Track: *Commissioning New & Existing Buildings*
Chair: *James Vallort, Fellow ASHRAE, Environmental Systems Design, Inc., Denver, CO*

The building enclosure accounts for approximately 30% of the primary energy consumed in residential and commercial buildings. How can the building envelope commissioning process improve the quality of the envelope when deadlines, budgets and training are common variables to a project? Join our three experts as they discuss the value, requirements, case studies and research of this commissioning process officially adopted under LEED v4.

1. **Building Envelope Commissioning: The Value Proposition**
   Tim Zelazny, AIA, Environmental Systems Design, Inc., Chicago, IL

2. **The Value of Becx Divided By 10: Snapshots in Reality**
   Fiona Aldous, Member, WJE, Boca Raton, FL

3. **Understanding the Value of Building Enclosure Commissioning through a Performance Metric**
   Simon Pallin, Ph.D., Associate Member, Oak Ridge National Laboratory, Oak Ridge, TN

Seminar 54 (Advanced)
Tuesday, June 25, 2019, 11:00 AM-12:30 PM

Optimal Chilled Water Plant Design and Operation: What a "Smart Valve" Can Do for You
Sponsor: *7.5 Smart Building Systems, 1.4 Control Theory and Application, 7.9 Building Commissioning*
Room: *2104B*
Track: *Systems & Equipment in the Built Environment*
Chair: *Scott Hackel, Slipstream, Madison, WI*

Pressure independent control valves (PICV) have been used in optimizing chilled water plant design and operations. New "smart valves" added more sensing and metering capability as well as intelligent control and cloud connectivity on top of the PICVs, making them more "smart." However, many engineers still struggle in understanding when and how to use them properly in design and operation. This seminar will objectively discuss the applications for PICV and smart valves.

1. **What Is a Smart Valve?**
   Jon Hildebrand, BELIMO Aircontrols (USA), Inc., Danbury, CT

2. **Smart Valves for Full System Optimization**
   Jeff Creighton, Flow Energy, Woodlinville, WA

3. **Practical Applications for Pressure Independent and Smart Control Valves**
   Steve Taylor, P.E., Fellow ASHRAE, Taylor Engineering, Alameda, CA

Seminar 61 (Intermediate)
Wednesday, June 26, 2019, 8:00 AM-9:30 AM

PIC Valve Technologies, Applications, and Commissioning
Sponsor: *7.9 Building Commissioning, 6.1 Hydronic and Steam Equipment and Systems*
Room: *2104A*
Track: *Commissioning New & Existing Buildings*
Chair: *Roger Lautz, P.E., Member, Affiliated Engineers, Inc., Madison, WI*

We are at the advent of a movement in the hydronics industry with the introduction of Pressure Independent Control Valves similar to VAV boxes of the 80s. There are different technologies available in the market; each with benefits that need to be understood to be applied properly. This program will educate the attendees about the proper application of PIC valves as well as what testing, balancing, and commissioning is required to assure the performance is achieved for the life of the system.

1. **An Overview of PICVs**
   Roger Lautz, P.E., HFDP, Member, Affiliated Engineers, Inc., Madison, WI

2. **Flow Metering Style Picvs**
   Robert Walker, BELIMO Aircontrols (USA), Inc., Danbury, CT

3. **Balanced Pressure Globe Style Picvs**
   Edwin Hipolito, Danfoss, Balitmore, MD

4. **Cartridge Style Picvs**
   Jerry Martin, Griswold, Madison, WI

5. **Pressure Regulator Style Picv**
   Brent Waluzak, Siemens, Tampa Bay, FL
