Preliminary Technical Program

The fifth annual *CxEnergy Conference & Expo* provides more topical, in-depth educational presentations than ever for commissioning and energy management professionals. The following is a preliminary presentation lineup of speakers and topics. Check this link often for additions and the final schedule.

With Great (Emergency) Power Comes Great Responsibility: Commissioning of Hospital Emergency Power Systems

Mark Gelfo, PE, LEED Fellow, CxA, EMP, TLC Engineering for Architecture

Approved for 1 AIA LU/HSW

Much like Spider-Man, the Commissioning Authority tries to stop disaster before it happens, before someone gets hurt. But his (or her) importance is often not fully understood or not fully appreciated until it is too late… especially when it comes to commissioning Emergency Power Systems. With great (emergency) power comes great responsibility! Healthcare facilities may be able to deal with a temporary loss of utility power, but absolutely cannot tolerate a failure of the emergency power systems. Using case studies and real-world examples of lessons learned, this session will explain why and how our superhero Commissioning Agent leads the Commissioning Team - owner, engineer, contractor, and subcontractors - to ensure the hospital's emergency power systems are fully reliable to protect the health, safety and welfare of all patients, staff and visitors.

Strategies for Reducing Energy in the Built Environment at Caesars Entertainment

Rob Morris, PE, Caesars Entertainment

Approved for 1 AIA LU/HSW

Energy management in the built environment is an important matter not only for occupant comfort and cost reduction, but also as a strategy to minimize upstream greenhouse gas emissions and impacts on global climate change. This presentation highlights an approach used by Caesars Entertainment to target energy efficiency opportunities at an enterprise level. A specific area of focus will be on retro-commissioning of major heating, ventilation and air conditioning systems.

Drones in AEC and Commissioning: An introduction
Gigi Inguva, Measure, the Drone as a Service Company
Approved for 1 AIA LU/HSW

In this session we will explore the intersection between drone usage and commissioning workflows primarily for built assets. Measure, the drone-as-a-service company will present pragmatic AEC use cases of drones while helping the audience distinguish between the hype and reality of this disruptive technology. We will also touch upon the drone hardware/software and services marketplace and organizational considerations for implementing drone technologies.

Top operational and energy saving trends for data center cooling
Brad Nacke, United Technologies Corporation
Approved for 1 AIA LU/HSW

Data center operators historically focused on IT infrastructure and management systems to lower CAPEX and OPEX while meeting SLAs for scalability and time-to-market. Operators are now turning to critical infrastructure technologies to potentially extend these gains further. This presentation will highlight the advances made in critical infrastructure technologies for chillers and cooling plants, AHUs, and modular approaches to achieve significant operating and energy expense savings.

The Basics of NFPA 92, Standard for Smoke Control Systems, and Changes to Anticipate in 2018
Kelly Kidwell, PE, Jensen Hughes
Approved for 1 AIA LU/HSW

NFPA 92 applies to the design, installation, acceptance testing, operation, and ongoing periodic testing of smoke control systems. As the industry standard, it is important for designers, installers, and code enforcers to be familiar with the document, its history, and remain abreast of upcoming changes.

Electrification of Building Energy Supply for Superior Economics & Sustainability
Joseph Stagner, PE, Stanford University
Approved for 1 AIA LU/HSW

Electrification of building heating and cooling processes, coupled with clean electricity supply, is the predominant path forward to sustainable and economic building energy supply for the long term. This presentation will explain the Stanford Energy System Innovations (SESI) project and the additional enhancements Stanford is studying to complete its full transformation to an affordable and sustainable energy system in less than 10 years.

Microgrids-as-a-Service: A New Approach to Solve Today's Energy Challenges
Mark Feasel, Schneider Electric
Approved for 1 AIA LU/HSW

This session will discuss how municipal, district, institutional, commercial campus or large buildings can benefit from a "Microgrid-as-a-Service" business model to stabilize their long-term energy costs and upgrade critical energy infrastructure without upfront capital. The session will also showcase the "MaaS" model in action, with recent projects with the Montgomery County, Maryland, Public Safety Headquarters and Correctional Facility as an example of the benefits of this financing approach. The session will delve into the specific energy challenges faced by this facility, the commissioning process undertaken to deploy the microgrid and the modernization, resiliency and sustainability benefits achieved.

Tunable White Lighting -- Minimize Risk During Commissioning and Satisfy Your Client
Eric Lind, Lutron Electronics Co. Inc.
Approved for 1 AIA LU/HSW

LEDs have provided many new lighting capabilities, but with that have come some challenges. This presentation will discuss how to successfully implement Tunable White lighting on a project, with a brief overview of the technology and the key applications. One such application being tunable white lighting as part of a WELL building. This presentation will educate the audience on the user interfaces needed to make immediate changes and verifications to a lighting control system in order to meet WELL building requirements. It will also cover the different types of fixtures in the market and how those interact with the control system. Finally, ensuring the project is delivered successfully requires a focus on commissioning.

Forthcoming Standard 211P for Energy Audits
Jim Kelsey, PE, LEED AP, kW Engineering, Chairman ASHRAE 211P Committee
Approved for 1 AIA LU/HSW

Standard 211P defines the procedures required to perform ASHRAE Level 1, 2, and 3 energy audits, provides a common scope of work for those audit levels for use by building owners and others, and establishes standardized industry practices and minimum reporting requirements for results.

Case Studies on the Effective Use of Energy Analytics
Claire Curtin, Lawrence Berkeley National Laboratory
Approved for 1 AIA LU/HSW

As digital controls and smart meters become commonplace in commercial buildings, facilities teams have access to overwhelming amounts of data. This data does not typically lead to insights and corrective actions unless it is analyzed and prioritized in

automated ways. Analytic software and diagnostic tools use are increasing in use to help uncover hidden operational opportunities, which is enticing for decision makers looking for short paybacks.

Case Study: Cx of South Airport APM/ITM Complex at Orlando International Airport

Bob Knoedler PE, CxA, EMP, Hanson Professional Services Inc.
James Hackenberg, PE, LEED AP, Greater Orlando Aviation Authority
Approved for 1 AIA LU/HSW


When the new South Airport Automated People Mover / Intermodal Transportation Facility Complex (SAC) at Orlando International Airport was commissioned, the massive project was certain to produce invaluable lessons and best practices in coordination. Commissioned systems include all major building envelope, mechanical (HVAC), plumbing, electrical and life safety systems. Attendees of the presentation will hear a real world example of how to approach the commissioning of a $650 million project with multiple contractors and stakeholders.

Decommissioning: What You Need to Know in the Absence of Standards

Rogeh Alnajjar, PhD, PE, CxA, Alpha Commissioning Engineers Inc.
Mina Alnajjar, LEED AP, Alpha Commissioning Engineers Inc.
Approved for 1 AIA LU/HSW


Decommissioning has been around for as long as commissioning, yet not many engineers know about the benefits we can obtain and the harmful risks we can avoid through this practice. This case study investigates the exterior and interior of a school in Atlanta, identifying risks and findings with over ten hazardous material categories that will help engineers to create a more ideal demolition. This study will include all aspects of making sure an efficient decommissioning process is performed. Finally, this presentation will create a template for engineers to use in practice since decommissioning does not yet have universal guidelines set by any national associations such as ASHRAE, ACG or AIA. Most importantly, this presentation will highlight the current and future benefits of decommissioning, one engineers can use as a reference on future projects.

Lab Retro-Cx: The Rebirth of a Research Facility

Rob Clegg, PE, RMF Engineering
Travis Campbell, CxA, RMF Engineering
Approved for 1 AIA LU/HSW


Science and research is changing and updating all the time. Laboratory needs change and every time a change is made, it can dramatically affect the operation of the adjacent labs. However, the adjacent labs are rarely tested to confirm correct operation. Changes that include additions such as new fume hoods can overburden the exhaust system which can result in code or health issues. As laboratories age, they become problematic. Sensors fall out of calibration, control devices fail and become outdated. Laboratories must be regularly tested in order to weed out these issues and

repair them. A small percentage of devices out of calibration can tip the entire system into a state where it doesn't meet the basic requirements, much less code requirements.

The Evolution of Commissioning at the University of Texas at Austin

Adam Keeling, PE, University of Texas
John Bixler, PE, LEED AP, NV5
Alex Gonzales, PE, CxA, LEED AP, NV5
Approved for 1 AIA LU/HSW



An examination of the needs of an institutional client, and the gap left by the traditional new building commissioning process. The University of Texas has been working to transform the requirements of their Commissioning Providers to more robustly support their building operations and optimization while continuing to deliver quality construction projects. Changes include more involvement in the turnover process, a stronger focus on the warranty period, and bringing additional expertise to the table.

Incorporating Distributed Energy Generation Projects into Whole Building Commissioning

Thomas D. Previsch, Ph.D., PE, NorthWest Engineering Service, Inc.
Jon McLaren, CxA, NorthWest Engineering Service, Inc.
Approved for 1 AIA LU/HSW


Distributed energy and power systems, including the integration of renewable energy generation sources, cogeneration, energy storage systems and traditional backup generators, are increasing in importance, due to both decreasing costs and a renewed emphasis on resiliency and community microgrids. This presentation discusses how Owner's Project Requirements and commissioning plans can be expanded to incorporate Distributed Energy Systems.

Leading without Authority: Engaging the Project Team

Jim Magee CxA, EMP, LEED AP, Facility Commissioning Group
Approved for 1 AIA LU/HSW

Massive complexities associated with modern building construction projects leads to increasing interdependence of trades and professions to achieve success through collaboration. Project commissioning epitomizes this relentless need for teamwork coupled with consistent process application required to meet rigorous technical and schedule demands in order to realize positive outcomes. This presentation explores a variety of tried collaborative techniques learned through years of field experience. This session will be open to interaction and sharing of additional ideas and methods triggered through the conversation of what has worked for the speaker that may or may not work for the audience.

Driving to Outcomes: How Evolving Energy Performance Policies Impact the Building Process
Ryan Colker, J.D., National Institute of Building Sciences
Approved for 1 AIA LU/HSW

Across the country communities have established or are in the process of establishing energy performance and/or greenhouse gas emission goals. Achieving these goals will require a new approach to building codes and other policies. One potential approach being explored is an increased focus on project outcomes for new construction and major renovations. Outcomes rely on the achievement of actual, measured results rather than design and construction-based criteria which may or may not result in actual achievement of energy performance goals. This session will examine what current and proposed outcome-based code provisions look like (including recent guidance for cities wishing to implement such an approach from the National Institute of Building Sciences) and how commissioning providers and others focused on energy performance can assist building owners in achieving outcome-based goals.

How is Your Energy Resiliency Dependent upon Commissioning?
J. Woody Thompson, PE, CxA, CEM, LEED AP, RS&H
Approved for 1 AIA LU/HSW

The need for energy resilience at the facility level was illustrated by the devastating hurricanes that affected the Texas Gulf Coast, Houston, Florida, Puerto Rico, and multiple earthquakes in Mexico. Existing Building Commissioning is one method to determine facility energy resilience. To ensure that facility systems maintain reliability and support energy resiliency is the ultimate focus and goal to successful Existing Building Commissioning (EBCx). This presentation will convey the importance and dependence of facility Cx/EBCx as a critical, if not the most important aspect, of energy resiliency.

Testing HVAC Water Systems with Diversity
Jim Hall, PE, TBE, CxA, Systems Management & Balancing, Inc.
Approved for 1 AIA LU/HSW

There are several types of HVAC water systems that are designed with diversity, it could be a chilled water system, heat pump loop water system, heating water system or most commonly a reheat water system. When diversity exists in an HVAC water system, the testing, adjusting, and balancing (TAB) of this system requires a system review and careful consideration of the approach to the TAB process. This presentation examines the appropriate TAB approaches to HVAC water system diversity and various testing scenarios.

Catch and Don't Release: Capturing and Maintaining the Value of Data from Commissioning to Operations

Joshua Gepner, P.E., Environmental Systems Design, Inc.

This presentation will explain how accurate commissioning records provide the knowledge base for maintaining a building and what important record keeping is required to keep the building healthy.

Demand Response. Best Practices for Multi-Division, Multi-site Program Implementation

Kevin Hamilton, NuEnergen

Approved for 1 AIA LU/HSW

Years of research have focused on the multiple benefits and challenges demand response implementation can have on single buildings and buildings owners. However, little attention has been given to the benefits and therefore best practices for multi-site, large-scale government agencies to participate in demand response programs. Fortunately, more and more multi-site operators with large-scale demand response implementation have emerged. They showcase the benefits of demand response programs now extended to larger, more specialized infrastructure. This presentation cited the demand response program administered by the City of New York for their government-owned facilities, implemented in 2013 with which the city government has provided up to 75MW of grid relief annually, expanded citywide participation to over 380 City-owned facilities and earned revenue of more than $22 Million.

Case Study Using a Variable Flow Chiller in A Central Plant

Gaylon Richardson, TBE, CxA, Engineered Air Balance Co., Inc.

Approved for 1 AIA LU/HSW

This case study covers a central plant serving chilled water to Air Handling Units in the central plant, a medical office building, and a hospital. This presentation will cover an overview of the system operation with three 1250 ton chillers and an overview of the bypass system and how to size bypass valves. Attendees will learn why the owner and engineer wanted to add a temporary chiller.

Re-Commissioning an Industrial Gas Chiller - Case Study

Melissa Bynum, North Slope Borough, Department of Capital Improvement Program Management

Walter Heins, PE, CxA, Coffman Engineers, Inc.

Approved for 1 AIA LU/HSW

This is a case study of re-starting, re-commissioning, and optimizing an industrial Gas Chiller used for drying well-head natural gas from a northern Alaska gas field. The case study validates building commissioning processes in non-building applications. The project applied building commissioning to a piece of industrial equipment. The re-commissioning led to a new OPR, an operational

hazard analysis, design review, installation verification, and testing as well as to planning, documentation, and training. During OPR development, needed upgrades were identified for which the CxA was involved as the Owner's rep during design, installation, and testing. The completed project transformed a non-performing investment into a system that exceeded previous expectations.

Understanding new air flow regulations and ASHRAE Air Flow requirements and solutions for an Effective Test & Balance and Commissioning Program

Ray Prosise, ONICON

Approved for 1 AIA LU/HSW

The important part of any HVAC commissioning or re-commissioning for new construction, renovation or energy modernization is the balance of the air flow systems for proper minimum air flow, IAQ and pressurization of the facility. The balancing of the air flow system can be cumbersome for the TAB team and time consuming with the various types of air systems and with the various technologies applied to these systems. This presentation explains new changes in regulations and ASHRAE updates affecting air flow requirements in the HVAC systems and how energy conservation measures affect them.

Integrate Operational Readiness Services with Building Commissioning

Jason McGehee, CxA, CEM, LEED AP, Argo Performance, Ltd.

Approved for 1 AIA LU/HSW

The period of time between general contractor turn over and operational readiness, there is an opportunity for commissioning firms to integrate new commissioning services that will assist the new operators with this transition. Attendees will learn methods and techniques to these integrate operational readiness services into their existing commissioning service offerings and implement them during the commissioning process. By utilizing the time between design release and building start up, the commissioning professional can lead the effort to prepare and even commission these services. The integrated offering will not only enhance a firm's revenue stream but elevate the key role and capabilities of the commissioning industry.

New York City's LL 87: Lessons Learned from the City's Mandated Energy Audit and Retrocommissioning Statute

Holly Savoia, Director of Sustainability for NYC LL87/09

Approved for 1 AIA LU/HSW

Five years ago, New York City enacted a law mandating that buildings over 50,000 gross square feet undergo periodic energy audit and retro-commissioning measures, as part of the City's Greener, Greater Buildings Plan. NYC is a pioneer in implementing an energy audit and RCx statute on this scale that also features punitive measures for building owners in non-compliance. This session will examine the data produced since its implementation, including lessons learned, efficiencies gained and a look to the future as the City has set even more ambitious goals to increase energy efficiency and reduce greenhouse gas emissions.

Owner and Engineer's Success with a Monitor Based Approach
Jane Guyer, PE, ETC Group
Greg Schlegel, PE, CxA, LEED AP, ETC Group
Sarah Boll, State of Utah
Approved for 1 AIA LU/HSW



The University of Utah implemented a laboratory controls upgrade at the Henry Eyring Chemistry Building inspired by the U.S. Department of Energy's Better Building Challenge. This case study outlines how the monitoring system was set up and utilized throughout the process. The owner's perspective focuses on the process of resolving issues to establish a safe laboratory environment and gain energy savings.

Disrupting the Market for Large Scale Energy Efficiency Projects through "Energy Efficiency as a Service"
Bruce Schlein, Citi
Bob Hinkle, Metrus Energy, Inc.
Approved for 1 AIA LU/HSW


A 2009 McKinsey & Company report cited a potential $520 billion marketplace to retrofit building systems such as lighting, HVAC and windows. Problem is, this order of magnitude requires capital-market and institutional investor participation. This presentation examines "efficiency as a service" a flexible, market-proven solution that turns kilowatts into "negawatts" (units of saved energy) by financing 100% of the project cost and monetizing the energy savings. This presentation examines a real life example of this financing method and demonstrates its vast potential the energy retrofit marketplace.

A NFPA 70B & 70E Overview: Eliminate the Risk of Electrical Hazards & Avoid Expensive Shutdowns
Bhanu Srilla, Grace Engineered Products, Inc.
Approved for 1 AIA LU/HSW

Facility shutdowns due to electrical equipment failures and catastrophic accidents that result due to improper maintenance cost organizations in millions of dollars in lost revenues, inventory and other injury related worker compensations. This session will focus on the importance of electrical safety and maintenance programs, OSHA requirements and definitions for CFRs 1910.147 & 303 and 305 and guidance of NFPA 70E and 70B standards on electrical safety and recommended practice for electrical equipment maintenance. Topics of discussion will include, Risk Control Hierarchy, various methods to eliminate the risk or to mitigate at acceptable levels using safety-by-design engineering controls, technologies and trends in predictive maintenance tools and the use of remote monitoring tools to proactively monitor the equipment condition that improves overall system reliability and avoid shutdowns.

Leveraging DOE Tools and Small Business Program to Deliver Enhanced Energy Data Services
Josh Wentz, Lucid
Approved for 1 AIA LU/HSW

The free BenchmarkMyBuilding service draws data from DOE's Building Performance Database (BPD) and EPA's ENERGY STAR Target Finder to present statistically meaningful benchmarks. This sessions provides service providers and building owners a tutorial on to quickly engage with this valuable energy benchmark data. Attendees will also learn, how through energy benchmarking, an organization can establish energy reduction targets, identify savings opportunities and stay on budget throughout the year.

Fundamentals of Test & Balance for Engineers, Cx & Energy Providers
Brian Venn, TBE, CxA, Mechanical Testing, Inc.
Approved for 1 AIA LU/HSW

This practical, information-packed session explains many of the key test and balance issues—from precise specifications, to duct leakage testing, to pump- and fan-curve considerations—that if properly addressed in cooperation with an independent TAB firm can ensure that any project goes smoothly

Cover your BAS: Simple Steps to Address Cybersecurity Concerns in Your Building Automation Systems
Pook-Ping Yao, Optigo Networks
Approved for 1 AIA LU/HSW

BACnet systems are shockingly vulnerable. Are your systems secure? Have you ever thought about what an intruder could access if they unplugged a smart device and connected to the network with a laptop? Only six million commercial buildings in the US are believed to be secure. Every single one has exposed building controllers, security cameras and access control systems that an entry level hacker can hack into. This presentation will cover common vulnerabilities in BACnet systems and provide common sense approaches to ensure your Building Automation System (BAS) deployments don't leave a building network open to attack.

Presented by:

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We hope to see you in Las Vegas!