PRELIMINARY CONFERENCE PROGRAM

CxENERGY 2020 CONFERENCE & EXPO

APRIL 6-9, 2020

Join us for the #1 Event in Commissioning, Energy Management, and Building Technology.

San Diego, California
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– Mark Gelfo, P.E., CxA, EMP, LEED Fellow of TLC Engineering Solutions

COMMISSIONING ▪ ENERGY MANAGEMENT ▪ BUILDING TECHNOLOGY

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Preliminary Technical Program

The 7th annual *CxEnergy Conference & Expo,* April 6-9, 2020 in San Diego, 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 www.CxEnergy.com often for additions and the final schedule.

San Diego Airport's Strategic Energy Plan in Action

Cogan Semler, San Diego Airport Authority

The San Diego Airport drafted a Strategic Energy Plan in 2017 that addresses conservation and efficiency, carbon neutrality, resilience, cost containment, and regional and industry leadership. An implementation road map was created to meet the goals of reducing both airport energy use and energy cost per passenger by 20% by 2028 with 60% of energy use coming from renewable sources. Current San Diego Airport energy initiatives and projects that will be discussed include: on-site solar generation, battery energy storage, chilled water plant optimization, energy use intensity (EUI) targets for new construction, and energy monitoring and metrics

How Monitoring-Based Commissioning Changes the Cx Business Model

Darren Draper, PE, CxA, Epsten Group
Derek McGarry, PE, PointGuard

This presentation discusses how MBCx changes the business model for Cx service providers. In the context of deploying automated fault detection on a university campus to deliver Monitoring-Based Commissioning services, we will review how MBCx compares to traditional Cx or RCx approaches.

4G, 5G, Data Analytics, Digital Collaboration and the Modern Delivery of Cx Services

Jim Adams, PE, CxA, EMP, Facility Commissioning Group
Matt Adams, CxA, EMP, Facility Commissioning Group

Picking up from last year's "4G Commissioning for a 5G World" presentation, and still on a quest to discover "What Do We Do with all these Ethernet Cables?" Jim and Matt endeavor to update the current status of 4G and 5G communications evolution, attempting to separate marketing rhetoric from technical reality and review the status of the wired versus wireless conversation.

The presentation will visit the state of large millimeter wavelength licensing and MIMO technology in the U.S., and discuss how Smart Cities, the Industrial Internet of Things (IIoT) and convergence technology impact building systems and Commissioning Professionals (CxPs). The 5G build out by definition requires localization of data centers and other mission critical infrastructure creating commissioning market expansion possibilities, as well as potential costs to providers.

The presentation concludes with numerous demonstrations of current 4G Evolution technology applications used at our firm to deliver efficient, cost-competitive commissioning services, including remote interaction to depict advanced field documentation collaboration.

As the Pages Turn - A Controls Page Turn

Dave Guberud, CxA, Ring & DuChateau
Rachel Rueckert, P.E., CxA, LEED AP, Ring & DuChateau


What is the best way to verify that the owner, the designers, the mechanical contractor, the electrical contractor, the controls contractor, and the Cx provider all understand the project control submittal with its sequences and the interdependencies in the exact same way? The answer to this question is a controls page turn meeting!

Many have seen the benefit of construction phase page turns of the control submittals or other technical submittals. While the benefits of having this meeting are large, the most important is communicating in person and making sure that the team is on the same page. This is best conveyed in a face to face meeting - seeing people's eyes of truthfulness, actual buy in, understanding by all. As we complete our 'basics' or section 1 presentation, we become the facilitator to go through the submittal pages provided to hear in an organized fashion what questions are being asked and then determine the answers by our roles.

Detention Facility Commissioning

Jorge Torres Coto, PE, CxA, EMP, KITCHELL

Detention facilities are highly specialized projects with specific requirements, including a sometimes-overwhelming amount of interdisciplinary systems. This presentation will focus on the peculiarities that differentiate these systems, how they work, and what other purposes they serve in a facility of this nature. For example, the HVAC system not only serves as a comfort system, but also a zone purge system, the lighting controls have specific duties and overrides associated with different scenarios that may arise, and the plumbing systems must be controlled at each fixture not for water conservation purposes but for safety reasons.

The presentation will also discuss sampling and how it cannot be used for certain systems in detention facilities—such as secure electronics, detention, audio/video, and others—because of their criticality. Finally, the session will illustrate one of the most important tests, and the final one, the Facility Shutdown Test. This simulated power failure and reestablishment of utility power brings to light any "glitches" in any of the systems.

Conserving Energy through Building Enclosure Commissioning: What Cx Providers Need to Know

Elizabeth Cassin, LEED AP, Wiss, Janney, Elstner Associates
Fiona Aldous, Wiss, Janney, Elstner Associates


This presentation will discuss what a commissioning provider should know to undertake Building Enclosure Commissioning (BECx) with the goal to conserve energy, specifically achieving target energy consumption levels for LEED v4 and in-service energy-efficient performance.

This session introduces the BECx process and will outline key quality-based tasks that help to achieve a durable, resilient and successful building enclosure to reduce risk and energy use. Published guidelines and standards useful in the BECx process will be presented as references for saving energy, as well as design and construction phase tasks, suggesting how BECx activities can assist with saving energy and future energy audits. Topics will be illustrated by a case study and include: the owner's project requirements, critical building science and architectural issues to address in design review and specifications, computer simulations, and performance testing. The intended audience includes commissioning providers, building owners and developers, architects, engineers, construction managers, and contractors.

Critical Facilities - Reaping the Rewards of Building Commissioning

Tony DiLeonardo, CxA, LEED AP, Wick Fisher White
Paul Shoback, Verizon Wireless

Wick Fisher White (WFW) along with Verizon Wireless (VzW) reviews the importance of commissioning and how it applies to their Network Equipment Center buildings, showing how VzW commissioning standards exceed the normal industry.

The process is vital in ensuring building mechanical, electrical, security, fire protection and fire suppression systems are operational 7 x 24 while maintaining their nationwide network of data centers. We will review their functional performance test procedures along with the method of procedure (MOP) process that the commissioning provider and construction team is involved in. Verification and monitoring provide a constant update for energy savings and maintaining a low power usage effectiveness (PUE). This interactive session will cover situational commissioning, construction, and dealing with issues in a critical environment, and the speakers will also discuss VzW's expectations of commissioning in the future.

Make OPRs Great Again

Stevan Vinci, CET, LEED Fellow, BECxP, CxA+BE, LFA, Morrison Hershfield Corporation

Owner's Project Requirements (OPRs) are often thought of as something solely related to commissioning, or to meet a LEED requirement, and are quickly forgotten after the design phase. They may be created to match the design when it's time to submit, or copied from project to project without much thought on the potential influence they have on the design and lifecycle of the project.

New requirements from cities and green building rating systems are being introduced that will impact design as increased scrutiny on performance related to resiliency, health, energy and carbon are now the driving forces of local codes.

This session will explore how OPRs can become an important tool across all project phases in achieving high-performance, low energy, low carbon projects that exceed the demands of ever-changing code requirements.

The audience will help develop an OPR as the presenters facilitate and discuss the compromises and implications of the group's decisions. The exercise explores the designer's role and how the translation of the OPR and system choices will influence the overall building design and performance.

This hands-on session will illustrate to attendees how to effectively engage themselves and their clients in the OPR process and provide them with new tools when evaluating new technologies, materials, and strategies related to achieving holistic sustainability goals for future designs/projects.

Evaluating Hybrid Distributed Energy Projects

Peter Lilienthal, Ph.D., HOMER Energy

Distributed Energy Systems can reduce energy costs and improve resilience and sustainability, and of late distributed energy technologies have improved in cost and performance and the regulatory environment has improved. As a result, on-site generation is now a financially attractive option for many facilities, depending on their location, reliability requirements, and load profiles.

Since the most attractive system is often a hybrid system that includes a combination of solar, storage, and combined heat and power (CHP), the analysis and comparison of options can be confusing. For example, demand charges already make up a large portion of many utility bill and the utility industry is moving to increase their reliance on demand charges as energy efficiency and on-site solar decrease their kWh sales. Measures to reduce demand charges are notoriously difficult to analyze, so this presentation will describe how to simplify that analysis. Results will be shown for multiple building types in locations with different solar resources, gas prices, and utility rate structures.

Health Care Emergency Power Supply Systems Commissioning: Clearing the Coordination Hurdles

Jason Perigo, CxA, SSRCx

Case studies from four different hospital commissioning projects to identify and manage obstacles when planning and implementing functionally performance testing of emergency power supply systems for new and existing Hospitals. The coordination effort to achieve successful functional testing of a large hospital emergency power supply system can be overwhelming and time consuming, but with the right planning and attention to detail commissioning of EPS and EPSS can be rewarding and the commissioning process valuable to clients.

Multi-Phased Commissioning on an International Airport in Aruba

Kelly Adighije, LEED AP, Baumann Consulting

The Queen Beatrix International Airport is Aruba's aviation gateway, serving more than 2.5 million passengers annually with non-stop service to 14 U.S. destinations and 19 other international destinations in more than 14 countries. Built in 1923, the airport has operated and been regularly updated/upgraded to meet the ever-expanding travel needs of its citizens and visitors.

The Gateway 2030 project, which began in 2018 and will last for 5 years, is the airport's first major expansion since 2000. It includes three additional contact gates, two extra bus gates, a broader selection of retail, food and beverage outlets, and much more. This project has also triggered

the upgrade of the existing facility MEP systems and the relocation of the Facility Energy Centre, the Baggage Handling System (BHS) and the procurement of a sophisticated building automation system (BMS) for the first time in this facility.

This session will cover the commissioning process across the entire expansion, the existing facility upgrade plus the associated BMS integration, through a blend of remote platform-based commissioning software, and traditional boots-on-the-ground means to ensure planning for the integration with facilities management and operations to manage the assets after construction.

Signal to Noise Ratio: Can You Hear (See) Me Now?

Wayne A. Dunn, PE, E.W. Dunn

This session describes technical advances and challenges for commissioning modern security systems, how they are evolving, and what can be stated in an OPR as reasonable goals for a given risk-managed investment.

Today's security systems promise wireless communications, visual recognition and audio acuity sensed by motion, heat, vibration or some other trigger. For example, engineering defines the relationship between signal power and quality, and noise power and quality, typically expressed in decibels. This calculation may include range, power, amplitude and frequency. To get that signal and react to it, how much/what kind of "noise" information is necessary, and how much will we tolerate? What is an acceptable type and level of signal — how should we solicit or respond to solicitations that ask for it: How do we plan for security, and develop Owners' Project Requirements (OPR) that result in accurate design and construction specifications for the safety of building occupants?

Even Utilitarian Buildings Can Be High Performance Buildings

Cathleen Crabb, AIS, City of San Antonio TCI, Vertical Division
Mike W. Lackey PE, LEED AP, CxA, LCCx, LLC

The City of San Antonio has embarked on a voluntary program, above and beyond building code requirements, to assure the performance of even the most utilitarian of city structures. As part of the recent capital program, the city's TCI Vertical Division required air barrier envelope testing on a series of five pre-engineered metal buildings on two separate campuses as a means to ensure that each building performed as well as a conventional structure.

As a result the buildings have far exceeded minimum air barrier air leakage requirements, and the pre-engineered metal structures are performing better than an ASHRAE "Average Building," which is a tighter than the IECC 2015 Code Standard. In fact, the buildings are performing nearly at ASHRAE "Tight Building" Standard. This high performance is attributed to the effective application of building enclosure commissioning and air barrier testing on pre-engineer buildings, and the airtightness will provide significant energy savings well into the future.

Commissioning in Energy Codes

Reid Hart, P.E., Pacific NW National Labs

ASHRAE Standard 90.1—Energy Standard for Buildings Except Low-Rise Residential Buildings—was recently overhauled to clarify commissioning requirements for the 2019 edition. An important expansion of typical commissioning work is review of the design for compliance with 90.1 requirements.

The boundaries between a full commissioning project and items required in 90.1 will be explained the approach, requirements, and informative material included will also be reviewed, along with the cost-effectiveness summary used to support the committee approval. In addition, comparisons to the current version of the International Energy Efficiency Code will be made.

Don't Shoot the Messenger: DE Measurement May Be Telling a Larger Story

Barry Dunham, P.E., ONICON Incorporated

While few would question a $5 calculator if its number differed from expectation, there is an automatic suspicion of high-end measurement tools when values don't add up on a project site. If the installation and applications are good, when measurements don't align with the plan, it does not necessarily mean the meters are wrong; there very well may be other factors at play. What is the price of ignoring this data?

We will use case studies and lessons learned for a "Don't Shoot the Messenger" presentation to explore why and how accuracy matters; how issues are identified and how meters can predict loss and potential maintenance; what to look for when the numbers don't match (analog scaling, pipe size, installation location and details); and how serial communication helps to alleviate discrepancies between BAS and TAB.

Energy Efficiency Programs - Utility Incentives

Jonathan Becker, ICF

Retro-commissioning and Monitoring-Based Commissioning programs are designed to encourage building operators and building owners to identify energy savings opportunities and optimize energy usage through a systematic process within existing buildings. Services performed are traditionally focused on large, more sophisticated customers, such as universities, hospitals and organizations with dedicated facilities staff and a full energy efficiency budget. However, with the right training, energy efficiency professionals will be able to expand their scope of customers by learning how to provide the proper customer support for businesses of all sizes. This session explores what it takes for a retro-commissioning program to capture, engage and retain a diverse audience by exploring the customer and trade ally relationships, speaking the customer's language, and providing multiple pathways to solutions.

California Energy Codes & Standards Roundtable: Where We Are, Where We're Going, and How We Can Get There
Speakers TBD

Building Energy Efficiency Standards have been integral to California's energy efficiency success, weathering massive change over the past 30-40 years—dramatic population increases, shifting load profiles due to building use and technology innovation, and the rise of renewable generation sources. The legacy approach to code development faces new marketplace challenges, as more renewable generation deploys, EV use increases and building professionals demand future-proof codes to keep up with swiftly evolving technology. This session offers a highly interactive roundtable, bringing together attendees and a range of building professional stakeholders to explore the challenges and opportunities in future California energy code development.

Fundamentals of Test & Balance for Engineers, Cx & Energy Providers
Speaker TBD

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.

All technical sessions of CxEnergy 2020 will be submitted to AIA under LU/HSW category.