

CONFERENCE PROGRAM

# CxENERGY 2023

May 2-5, 2023

Omni Fort Worth Hotel | Dallas/Fort Worth, Texas

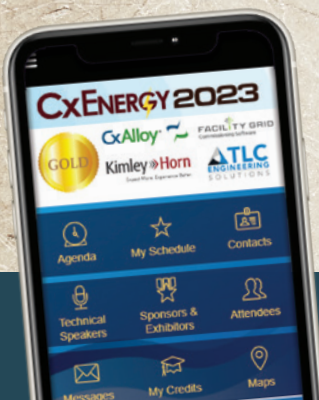


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# Welcome to CxENERGY 2023!

## PRESIDENT'S WELCOME



Troy Byers, PE, CxA  
ACG President

Dear Colleagues:

On behalf of ACG, EMA and AABC, I am excited to welcome you to CxEnergy! Our three organizations and our members continue to thrive, and we can't wait to see all the tremendous professional development and networking that we know will happen at the industry's premier event for commissioning, energy management, and testing professionals! Many thanks to our members, sponsors,


speakers, exhibitors and staff who help make this conference so special – we hope you enjoy **CxEnergy 2023** and that we see you again in the future!

Sincerely,

Troy Byers, PE, CxA, International Commissioning Engineers, ACG President

## PROGRAM AT A GLANCE

TIME	TUESDAY, MAY 2	WEDNESDAY, MAY 3
7:00 a.m. - 8:00 a.m.	Registration for CxA Workshop & EMP Seminar	
8:00 a.m. - 5:00 p.m.	Commissioning Authority (CxA) Workshop & Exam	
8:00 a.m. - 5:00 p.m.	Energy Management Professional (EMP) Seminar & Exam	
8:00 a.m. - 12:30 p.m.		CxEnergy Open Golf Tournament
8:30 a.m. - 4:30 p.m.		TAB & Cx Seminar
5:00 p.m. - 7:00 p.m.		Welcome Reception in the Expo Hall

TIME	THURSDAY, MAY 4	FRIDAY, MAY 5
7:00 a.m. - 8:00 a.m.	Registration & Breakfast	
8:00 a.m. - 8:45 a.m.	Opening Plenary Session	8:00 a.m. - 11:30 a.m. Concurrent Tech Presentations
8:45 a.m. - 9:45 a.m.	"Meet & Greet" with Sponsors & Exhibitors	11:30 a.m. - 12:30 p.m. Brown Bag Lunch
10:00 a.m. - 12:15 p.m.	Concurrent Technical Presentations	 <p>Breakfast and lunch will be provided for all pre-conference workshops and seminars.</p>
12:15 p.m. - 1:45 p.m.	Lunch in the Expo Hall	
2:00 p.m. - 5:30 p.m.	Concurrent Technical Presentations	
5:30 p.m. - 7:00 p.m.	Reception in the Expo Hall	



## CxENERGY OPEN Golf Tournament

THE GOLF CLUB AT  
FOSSIL CREEK

Sponsored by the Energy Management Association  
Wednesday, May 3rd

Meet in the lobby at 7:00 a.m. Breakfast and two drink tickets will be provided. • \$175 (individual)



The Energy Management Association cordially invites you to join us for an exciting day with the CxEnergy Open at the beautiful Golf Club at Fossil Creek on **Wednesday, May 3rd**. Contact ACG Headquarters at [info@commissioning.org](mailto:info@commissioning.org).



# PRE-CONFERENCE EDUCATIONAL & CERTIFICATION OPPORTUNITIES



## Commissioning Authority Workshop & Exam

Tuesday, May 2 – Wednesday, May 3  
8:00 a.m. – 5:00 p.m., \$950  
Ft. Worth Ballroom 1-2

This highly interactive workshop covers both new and existing building commissioning, and includes many group breakout activities where attendees will use project case studies to develop and discuss samples of key commissioning deliverables. The 4-hour, closed-book CxA exam is offered at the end of the second day to prequalified candidates.



## Energy Management Professional Seminar & Exam

Tuesday, May 2 – Wednesday, May 3  
8:00 a.m. – 5:00 p.m., \$950  
Ft. Worth Ballroom 3

This one-and-a-half day seminar helps EMP Certification candidates review the energy management process, and how it can be applied. The EMP Seminar features 12 hours of actionable instruction covering all relevant energy aspects from codes and standards and managerial planning, to monitoring project performance and persistence of savings. Instructors will walk through sample equations and scenarios with the class, with the exam being administered on the final day to approved candidates.



## TAB & Cx Seminar

Wednesday, May 3, 2023  
8:30 a.m. – 4:30 p.m., \$250  
Ft. Worth Ballroom 6-8

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These practical, one-hour presentations will cover a broad range of topics and provide TAB professionals, Cx providers, engineers, and others with actionable information to help improve project performance.

### Project Approach as a Cx Value Proposition



**Justin Lewis**  
TBE, CxA  
Technical Air Balance SW, Inc.

### Health Care Facility Compliance 2.0



**Jeremy Johnson**  
TBE, CxA  
American Testing, Inc.

### A Tale of Two Fume Hoods



**Blake Stutts**  
TBE, CxA  
Energy Testing & Balance, Inc.

### Monitor Flow and Velocity for Successful Piping Flush



**Robert Kolnes**  
TBE, CxA  
TABITT



**Cody Shook**  
TBE, CxA  
Precision Flow Engineering

### Commissioning and Balancing Small Tonnage Rooftops Less Than 25 Tons



**Ron Ballard**  
American Testing, Inc.

### Air Density and its Effects on Building Pressure



**Jonathan Straniero**  
CxA  
BCC Management



**Paul Hoitink**  
Air Movement Services, Ltd.



**Mike Kelly**  
TBE, CxA  
American Testing, Inc.



## Welcome Reception in the Exhibit Hall

Wednesday, May 3, 2023  
5:00 p.m. – 7:00 p.m.

Enjoy complimentary cocktails and hors d'oeuvres, and network with your colleagues while interacting with the latest tools and technologies for commissioning, TAB, and energy management.

Texas Ballroom A-D

Ft. Worth Ballroom 1-4

**These Weren't the Droids We Were Looking For: Real Examples from Integrated Systems Testing (and Other Imperial Cx Projects)**

*Mark Gelfo, PE, CxA, EMP, LEED Fellow, TLC Engineering Solutions*

10:00 a.m. –  
11:00 a.m.

This session will be a fun and terrifying look at real-world examples from numerous commissioning projects, with an emphasis on issues found during integrated systems testing. Every picture has a story and a lesson learned, even if it wasn't what we were looking for when we found it.

**Test, Adjust & Balance: Lessons Learned for Engineers, Cx & Energy Providers**

*Jim Hall, PE, System Dynamics, Inc.*

There are project design and construction related challenges that are encountered during the testing, adjusting, and balancing (TAB) process. A few examples are equipment selection, system layout for testing and maintenance access, and project scheduling. This presentation offers solutions and ideas to help overcome these and other challenges that will help optimize system performance and prove that design intent has been met.

**Case Study - Renovation of ASHRAE Headquarters Building**

*Ginger Scoggins, PE, CxA, Engineered Designs, Inc.*

*Ken Gilbert, LEED AP, Automated Logic Corporation*

11:15 a.m. –  
12:15 p.m.

This presentation will show how a 1970's era building was renovated into a net-zero building. Starting with the development of the owner project requirements through the selection of the design/construction team, and finishing with the final product, including how the goals were achieved or not achieved along the way.

**Sustainability, Decarbonization and Electrification: Buzzwords or the Future of the Building Performance Industry?**

*Justin Garner, PE, TBE, CxA, Engineered Air Balance Co., Inc.*

*Derek De Jesus, CxA, ACG Education Committee Chair*

*Scott Gordon, PE, CxA, Sindoni Consulting & Management Services, Inc.*

*Tim Zacharias, Cougar USA*

Sustainability, decarbonization and electrification are appearing with increasing frequency in general and industry media. What do these terms mean in the context of our industry, and why are they important? This panel of experts will attempt to shed light on the future of the building performance industry and the role of commissioning and energy management professionals.

12:15 p.m. - 1:45 p.m. Lunch In Expo Hall - Texas Ballroom E-F

**ACG Building Systems Commissioning Guideline Spotlight: Electrical Distribution Equipment Terminology**

*Jesse Felter, SSRCx*

2:00 p.m. –  
3:00 p.m.

Defining terminology that accommodates a wide range of clients' goals while providing guidance for the commissioning provider (CxP) is often a reoccurring challenge, a challenge that the new ACG Guideline addresses. Where the construction industry appears vague or lacking in guidance for defining terminology, this presentation intends to provide several means of clarifying one such term: electrical power distribution, or electrical distribution equipment.

**The Power of RCx + MBCx: How to Sustain Energy Savings**

*Clifford Alberts, PE, AESC, Inc.*

*Susan Freed, CEM, LEED AP, County of San Diego*

In 2017 the County of San Diego published a Zero Net Energy plan, which served as a catalyst to fund a series of RCx projects, and eventually revealed the need for an MBCx program. The combined RCx projects and MBCx program have achieved significant and persistent energy savings and informed how to make monitoring a standard practice.

**Enclosure Commissioning: Maximizing Value**

*Rick Ziegler, PE, RRC & Jo Madrid, Wiss, Janney, Elstner Associates, Inc.*

*David Freisner, Hines*

3:15 p.m. –  
4:15 p.m.

Building Enclosure Commissioning (BECx) and performance testing are required and implemented on more projects than ever before. An effective BECx program can be used to verify that the owner's project requirements (OPR) have been achieved. This presentation reviews advanced BECx strategies, performance testing, LEED requirements, and critical, but often overlooked, strategies to maximizing the value of BECx.

**ESG: Environmental, Social and Corporate Governance for Independent Third-Party Cx Providers**

*Jim Magee, CxA, EMP, Facility Commissioning Group*

In less than 20 years, ESG criteria has gone from a UN corporate responsibility initiative to a \$30 trillion global network and risk management framework intended to build trust in markets through sustainability and other efforts. This introductory presentation seeks to provide a basic understanding of ESG concepts and insights into the ramifications of changing procurement parameters affecting independent third-party commissioning provider (CxP) and energy management service operations. Discussion of ESG business opportunities for CxPs and EMPs is also included.



8:45 a.m. - 9:45 a.m. Meet & Greet with Sponsors & Exhibitors - Expo Hall - Texas Ballroom E-F

Ft. Worth Ballroom 5

**Commissioning of Food Service Spaces: Overview, Challenges, and Lessons Learned**

*Brad Davis, PE, CxA, AECOM*

10:00 a.m. –  
11:00 a.m.

Whether it's a café in an office building or a full-scale restaurant, a meal is always nearby. When constructing large and complex facilities, the systems required for food service spaces are commonly overlooked. The Commissioning Process offers opportunities to overcome challenges presented in these unique spaces and help us deliver buildings with safe and functional food service facilities.

Ft. Worth Ballroom 6-8

**A Deep Dive Into IAQ Data Using Data Analytics and Machine Learning**

*Julien Stamatakis, Ph.D., Attune*

Interest in indoor air quality (IAQ) has increased substantially with COVID-19. Improved air cleaning techniques have been installed and their efficacy evaluated using IoT sensors. HVAC system design can be further evaluated using practical application of machine learning (ML) to detect anomalies. For example: ML can be applied to ensure outside air intake is adequate based on occupancy, and detect anomalies in filtration efficacy that would indicate filter issue events.

**Unifying Data from Diverse Systems and Sources to Enable Whole-Building Analytics, FDD and KPI Analysis**

*Roger Quesnel, SkyFoundry*

11:15 a.m. –  
12:15 p.m.

The challenge for the commissioning professional is that they need the data from a variety of protocols and web services. In this session, we will provide an introduction to the concept of an IDL—Independent Data Layer—and discuss the factors involved in achieving the necessary functionality to acquire and normalize data to support real-world applications.

**Commissioning HVAC Systems for Sustainable Indoor Air Quality**

*Erik Malmstrom, SafeTraces*

*Jeffrey Michael, PE, CEM, Setty & Associates*

Do the health and safety benefits of common IAQ strategies justify associated cost, energy, and carbon penalties? Do air cleaning and disinfection technologies offer better alternatives? This session will provide a framework for commissioning HVAC systems for sustainable IAQ, guidance for integrating emerging approaches and technologies with traditional commissioning services, customer case studies illustrating best practices, and ROI.

12:15 p.m. - 1:45 p.m. Lunch In Expo Hall - Texas Ballroom E-F

**Methods of Visualization Testing for Hotel Smoke Removal Systems**

*Jim Kelleher, Seneca Balance an Integra Company*

2:00 p.m. –  
3:00 p.m.

This presentation illustrates methods of conducting smoke removal visualization testing in a hotel environment: atrium, ballroom, and corridor. In this review and discussion of an actual field performance test, we explore the smoke generating equipment, effects on field of view, and the factors that helped decide which was the best solution for each scenario.

**Using CO<sub>2</sub> Sensors for Indoor Air Quality and Energy Savings**

*Darryl DeAngelis, LEED AP, EBTRON*

For over 30 years, carbon dioxide (CO<sub>2</sub>) has been used as an indoor air quality (IAQ) metric, and an energy saving strategy using demand control ventilation (DCV). Even so, it is often misunderstood and misapplied for IAQ and DCV in compliance with ASHRAE Standard 62.1. This presentation will address recent publications and facts about using CO<sub>2</sub> related to ventilation.

**The Benefits of MBCx from Day 0**

*Matt Herbster, Kite Pharma*

*Dotty Hage, MelRok*

3:15 p.m. –  
4:15 p.m.

An ongoing MBCx program was implemented on a newly commissioned pharmaceutical facility where 85 anomalies were discovered, including chiller leaks, SOO, and TAB anomalies. These findings were surprising given that the facility was newly commissioned. We believe that ongoing MBCx is not only important in the warranty phase, but equally important during the commissioning phase prior to turnover.

**Commissioning Process for Federal Facilities: Case Studies of Varying Expectations**

*John W. Thompson, PE, CxA, RS&H*

Perceptions and expectations of the Total Building Commissioning process from the perspective of all stakeholders shall be presented and discussed. The purpose is to illustrate that there are varying levels of agreement on "What Commissioning is and is Not." The presenter will illustrate that LEED Commissioning does not establish the final boundaries and benefits for the overall Cx process.



**ASHRAE New Existing Building Commissioning Standard 230 + Case Study***H. Jay Enck, CxGBS*

ASHRAE Standard 230 "Commissioning Process Existing Buildings and Systems" (EBCx), is written in code language. This presentation will cover minimum EBCx requirements applicable to an existing NASA building built in 1953, illustrating typical deliverables required by Standard 230 with insights on common issues that are typical in EBCx projects.

4:30 p.m. –  
5:30 p.m.

**Energy Auditing/Retro-Commissioning Projects: Why Some Exceed Expectations and Some Do Not!***Al LaPera, CxA, EMP, LEED AP, Kimley-Horn*

Why do some energy management projects fail to achieve their goals, while others exceed them? This session will address common pitfalls and best practices! Careful analysis, communication, and planning prior to execution greatly enhances the odds of successfully attaining objectives relating to being a healthy building for occupants and an energy efficient building for its ownership (and society). We will also dive into why some ECMs fail to achieve their goals compared to others.

5:30 p.m. - 7:00 p.m. Reception in Expo Hall - Texas Ballroom E-F

**FRIDAY, MAY 5** *Program schedule and session listings are accurate as of April 7, 2023.*

7:00 a.m. Registration Open | 7:00 a.m. - 8:00 a.m. Breakfast

**Commissioning – An Owner's Perspective***John Schaub, PE, Rock Island Arsenal*

Commissioning is intended to uncover faults through checklist(s) and operational test(s) of the system. Low bid selection typically provides the minimal service. Should owners be satisfied with that level of performance? Rock Island Arsenal has used Commissioning since 2014. This presentation will review the evolution of commissioning on the RIA by looking at various projects over the past eight years.

8:00 a.m. –  
9:00 a.m.

**Lighting the Fire Under Whole Building Commissioning - Integrated Testing with Fire & Life Safety Systems***David LeBlanc, PE, FSFPE, Jensen Hughes*

The new NFPA 4 outlines the requirements for integrated testing of fire protection and life safety systems, which is now being adopted as a code requirement in Building and Fire Codes across the US. Learn about the new Integrated Testing Agent, who's involved, and how it interfaces with commissioning providers. Examples of hospitals will be utilized to highlight considerations.

**Commissioning Airports: Pre and Post-Inaugural Flight!***Wade Conlan, PE, CxA &  
Jonathan Noordzy, PE, CxA, EMP  
Hanson Professional Services*

Commissioning the new South Terminal C at Orlando International Airport presented unique challenges, both before and after the inaugural flight. This session will cover methods used to functionally test the systems, including testing of a large central utility plant with minimal cooling load available. Required levels of resiliency for an airport in 24/7 operation will also be discussed.

9:15 a.m. –  
10:15 a.m.

**Fundamentals of Commissioning for Facility Engineers and Building Owners***Loren Morris, PE, CxA, EMP, TMCx Solutions, LLC  
Al LaPera, CxA, EMP, LEED AP, Kimley-Horn  
Jacob Terry, CxAlloy (Facilitator)*

This presentation will illustrate how and why commissioning is an essential component for a building. Commissioning fundamentals for initial new building Cx, to retro-Cx, to continuous, or monitor-based Cx will all be discussed, explaining how they provide both the building owner and facility manager a properly operating building, cradle to grave.

**Boilers – Why Commissioning is Crucial for Proper Operation and Training***Peter Turek, CxA, EMP, CBRE/Heery  
Phil Davis, H-O-H Water Technology  
Dan Watkins, Bornquist, Inc.*

A boiler system is not overly complex, but if errors are made during the design or installation, it is the operations staff who suffer the consequences. A properly designed, installed and commissioned boiler plant will allow the end user years of proper operation. We will discuss types of systems, case studies of failures and proper operation, and required maintenance.

10:30 a.m. –  
11:30 a.m.

**Breaking Down Testing Silos***John Hitsos, PE, CxA, Jacobs*

For most projects, the three basic test programs can be categorized as factory acceptance testing, start-up, and commissioning. Unfortunately, they are often, if not always, thought of as three separate silos. Breaking down those silos, even partially, and adopting a more integrated test approach, can greatly improve your testing efficiency and offer advantages with troubleshooting and problem resolution.



### Ready to Operate: Bridging the Construction to Operations Gap

*Charles Jackson, PE, CxA, CMTA Engineering Consultants  
Alex Kozinets, PE, LEED AP, Facility Grid  
Derek De Jesus, CxA, ACG Education Committee Chair*

4:30 p.m. –  
5:30 p.m.

Today's buildings and systems are ever more complicated to meet stringent energy and sustainability criteria. The Cx process yields valuable information that can affect sustainable building operation throughout its lifecycle—assuming that this information is effectively shared with the operations team. Learn how today's Cx software can bridge the gap between construction and operations and set your team up for long-term success.

### Traditional vs “Connected” Commissioning – Experiences and Insights from the Field

*Michael Senger, PE, LEED AP, HEAPY  
Derek McGarry, PE, LEED AP, OTTO*

Connected commissioning provides new and powerful ways to add value compared to traditional commissioning. Gaining early access to BAS data and being able to execute automated functional testing scripts both saves time and improves outcomes. This presentation will compare and contrast the experiences of commissioning providers with and without the use of connected commissioning.

5:30 p.m. - 7:00 p.m. Reception in Expo Hall - Texas Ballroom E-F

### Electric Rate Structures – Importance of Analysis

*Robert Knoedler, PE, CxA, EMP & Mat Coalson,  
Hanson Professional Services*

8:00 a.m. –  
9:00 a.m.

Electric utility providers have a broad range of rates depending upon customer type and service size. With an increase in on-site generation, advances in energy storage and smart meter technology, and the increase in overall demand, utilities have become creative in their rate structures. This session will examine some of the rate structures commonly used by utility companies and various incentives with the use of sub-metering.

### Cx and Energy Professionals' Funding Opportunities and Decarbonization Basics as Influenced by the Inflation Reduction Act

*Carl Salas, PE & Tim Gilbert, PE, CxA, EMP, Salas O'Brien*

Today's concerns about carbon and greenhouse gas are at the top of the agenda for most Fortune 500 companies. As a result, Cx and energy professionals can be greatly rewarded if they understand the carbon conversation within the funding framework of his/her Cx and energy related efforts. The attendee will leave with a clear understanding of the nexus between Cx/energy efforts and greenhouse gas, as well as associated opportunities.

### Energy Performance Across Building Life Cycle

*Baskar Subbarao, PE, CxA, Zodiac*

9:15 a.m. –  
10:15 a.m.

This session will explore building energy performance during schematic design, design development, design, construction, O&M, assessment, measure, benchmark, investigation, implement improvements and hand-off. Building energy performance targets are updated during building design, construction, energy modeling, new building commissioning, measurement & verification, ongoing commissioning, energy audit, building tune-up and existing building commissioning.

### Creating an Underground Research Facility to Explore the Universe

*Darryl Boyce, P.Eng, Boyce Consulting Services*

This presentation will cover the requirements for a specialized research facility and take the audience through the design, construction, fit-up and commissioning of the 30,000 square foot facility located 6,800 feet below ground-level. The facility is located in an active nichel mine and the construction and operation have been a challenge. The presentation will explore how we dealt with these challenges.

### Efficiency Assessment for Real Estate Transactions and ESG Reporting

*Krishnan Gowri, Ph.D., BEMP, LEED AP, Fellow ASHRAE,  
Intertek*

10:30 a.m. –  
11:30 a.m.

This presentation will cover the challenges in energy benchmarking and efficiency assessments during the due diligence phase of real estate transactions. New simplified field audit forms have been developed and integrated with property condition assessment field visits to collect the additional data required for identifying energy efficiency measures. Attendees will learn how to use energy modeling and simplified calculation techniques to identify and prioritize efficiency opportunities.

### Commissioning for Climate Change Resiliency in Health Care

*Noelle Thornton, PE, CxA & Brett Farbstein, CEM, LEED AP, CannonDesign*

Individuals and communities rely on health care facilities to remain operational during severe storms and natural disasters. The commissioning process is a valuable tool for verifying that facilities are prepared for increasingly more frequent and extreme events. This presentation will describe a disaster, emergency, and vulnerability assessment (DEVA), and review testing system performance requirements to be completed before an emergency.





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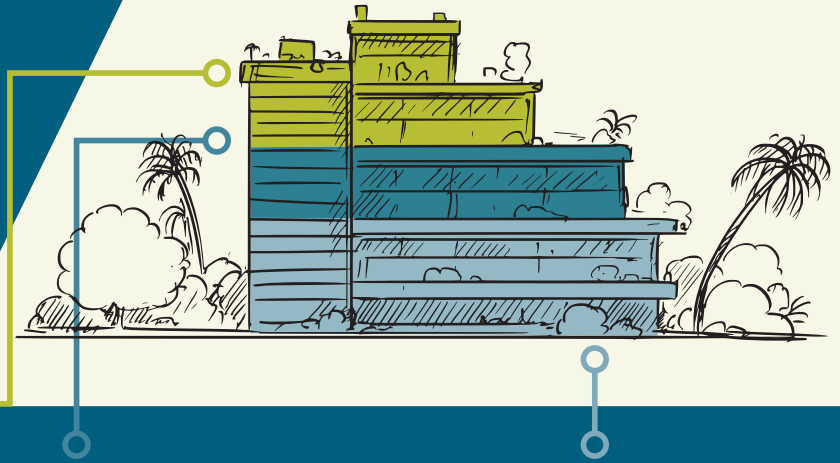
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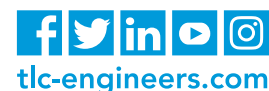
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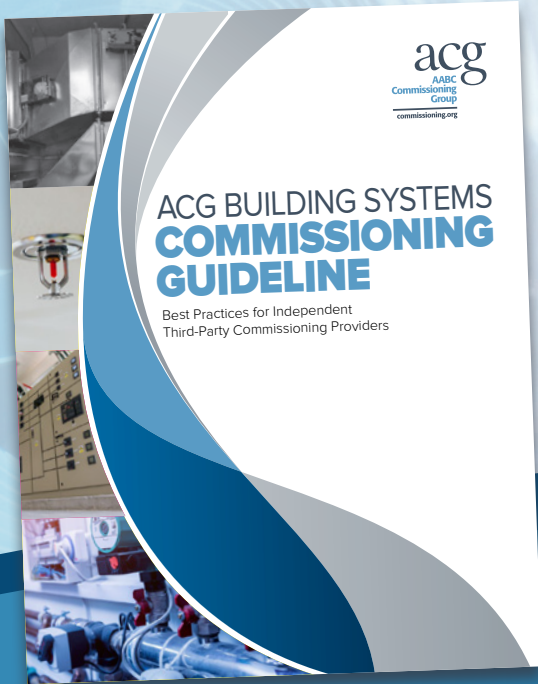
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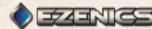
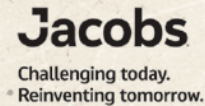
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- Spirotherm
- Tapa, LLC
- Testo North America
- The Energy Conservatory - TEC
- Tosibox, Inc.
- TSI, Inc.
- Vent Cap Systems
- Wohler USA

## SUPPORTING ORGANIZATIONS:



## MEDIA PARTNERS:



## PRESENTED BY THE LEADERS IN BUILDING PERFORMANCE



The **Associated Air Balance Council (AABC)** is dedicated to the advancement of independent, third-party testing and balancing. The association's mission is to certify highly qualified, independent test and balance agencies, and their personnel.



The **AABC Commissioning Group (ACG)** is dedicated to the advancement of independent, third-party commissioning professionals. ACG strives to promote a better understanding of the commissioning process and to educate, train, and certify qualified individuals.



The **Energy Management Association (EMA)** is dedicated to advancing the quality of energy management services for the benefit of the building owner. EMA is committed to the certification and training of Energy Management Professionals (EMPs).