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CCM TRAINING PROGRAM
ONLINE PROFESSIONAL COURSES LED BY THE WORLD'S TOP SPECIALISTS
ONLINE TRAINING BY KRISHNAJI PAWAR
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MODULE 02-A

Overview of CxA Process

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INTRODUCTION AND OVERVIEW

- Modern structures are composed of advanced, interdependent, and integrated building systems, including visible exterior glazing and cladding, concealed internal pipes, wires, ducts, and cables.
- These systems must function reliably for a building to serve its intended purpose.
- The electrical system includes normal power, emergency power, lighting, daylighting controls, distribution equipment, renewable energy, and low voltage safety, security, and communications subsystems.
- The complexity of building systems has increased in recent years due to manufacturers launching innovative products, architects designing smart buildings, regulators imposing strict safety and sustainability requirements, and increased demands from owners and investors for efficiency, flexibility, resiliency, and profitability.



CERTIFIED COMMISSIONING MANAGER - CCM TRAINING OVERVIEW

Practical knowledge on the skills, strategies, communication, and documentation protocols essential to applying the commissioning process to "real-world" projects will be covered in this CCM Commissioning Workshop in addition to the commissioning process as described in the Commissioning Guideline, ASHRAE Guideline 0, and ASHRAE Standard 202.

Learning Objectives

- Overview of the CxA Process
- Why Commission Building Systems?
- The Program for Optimal Quality Assurance
- The definition of commissioning
- The advantages of commissioning
- When Does Commissioning Start?
- Which Projects Should Be Commissioned?
- Which Systems Should Be Commissioned?
- Can We Afford It?
- Elements of Commissioning
- Who is a Commissioning Authority?
- Emerging Technology's Effect on the Commissioning Process
- Commissioning Team (Cx Team)
- Independent Third- Party Commissioning
- Financial Benefits of Commissioning

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INTRODUCTION

- Building system commissioning can lead to safe, healthy, and comfortable facilities that operate correctly and efficiently.
- Across all business sectors and facility types, owners and managers have embraced building system commissioning for a variety of reasons.
- Effective building system commissioning generates significant value for the owner and offers benefits to occupants, managers, and operations and maintenance (O&M) staff.
- For building system commissioning to be successful, the commissioning provider (CxP) must skillfully lead a talented, focused, and collaborative commissioning team (Cx Team) throughout the entire commissioning process.
- Beyond Smart Cities advocates for the direct owner engagement of an independent third-party CxP at the start of a project to deliver the comprehensive building systems commissioning process.

WHY COMMISSION BUILDING SYSTEMS?

- The complexity of building systems has increased as a result of several developments.
- Stricter energy conservation regulations.
- The need for safer work environments necessitates advancements in office equipment and indoor air quality.
- Advanced phonic, image, video, and data communications technologies, as well as rapidly transforming research and teaching methodologies.



COMMON BENEFITS OF COMPREHENSIVE BUILDING SYSTEMS OR WHOLE BUILDING COMMISSIONING

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- Improved project designs
- Fewer change orders and additional claims
- Minimal negative impact from design changes
- Fewer Deficiencies at Substantial Completion:
- Well-managed start-up procedures
- Fewer project delays
- Shorter building turnover period
- Less Post-Occupancy Corrective Work
- Complete and useful building documentation
- More knowledgeable Operations and Maintenance (O&M) staff
- Enhanced Operations and Maintenance (O&M) Program
- Value-added construction quality
- More resilient building systems
- Better Indoor Environmental Quality (IEQ)
- Sustainable high-performance infrastructure
- Lower energy expenses:
- Fewer greenhouse gas emissions
- Compliance with Jurisdictional Requirements:





THE PROGRAM FOR OPTIMAL QUALITY ASSURANCE



The commissioning process ensures the highest quality and operational dependability of a facility, ensuring optimal operations and sustainability. It starts with predesign, intensifies during design, peaks during construction, and ends with ongoing monitoring and trend-logging, ensuring all systems work properly.

If properly developed and implemented, commissioning is the best quality assurance program for all project phases.

- It helps develop and document facility project requirements.
- It helps the design professional document the basis of design, select optimal design solutions and their CO usability, and prepare construction documents for a commissioned building.
- It helps prime contractors, subcontractors, and vendors choose and install components and systems to meet commissionability requirements.
- All commissioning tests required by the owner's project specifications to validate facility performance
- It helps the owner train and provide documentation to ensure system sustainability.

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THE DEFINITION OF COMMISSIONING

- “The Commissioning Process is a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria.” ASHRAE Guideline 0
- “…a systematic, documented, and collaborative process including inspection, testing, and training.”
- “…conducted to confirm that a building and its component system meet the requirements of the occupants and conform to the design intent.”
- “…a quality assurance procedure applied to building construction throughout the entire project…”



BENEFITS OF COMMISSIONING

- Construction Efficiency
- Energy Efficiency
- Overcoming Technical Risks of Innovation
- Improved Indoor Environmental Quality (IEQ)
- Occupant Productivity
- Reduced Liability Claims
    - Design
    - IAQ



ADVANTAGES FOR THE OWNER





- All building systems will work properly.
- During design and construction, flaws found before occupancy will be fixed.
- Before accepting the project as complete and optimizing the result, the system's operating efficiency will be determined.
- Resource consumption; annual minimum utility costs Indirectly, efficient operating systems reduce system wear and equipment replacement.
- Operations staff will receive extensive new system operation documentation.
- The new documentation will greatly improve the facility's sustainable operation and maintenance.
- Better documentation throughout the project will pay off in later years when occupancy changes require modifications.
- Design consultants will not have to guess the design's origins because it will all be documented.

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ADVANTAGES FOR DESIGN PROFESSIONALS



- Commissioning refines design principles. The commissioning authority directly incorporates operating engineer experience into design, influencing many details. The commissioning authority's review refines construction specifications, making propeller equipment and components essential for system reliability easier to choose.
- Commissioning-focused reviews reduce design errors. This, along with rigorous functional performance testing of components and systems during construction, eliminates most design professional post-construction challenges.
- Design professionals won't lose money fixing unnecessary design or construction issues.
- As the design professional gains experience through commissioning, their qualifications and reputation will improve.

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ADDED VALUE FOR THE CONTRACTOR



- Commissioning testing begins about one-third of the way through construction and continues regularly, requiring more scheduling and coordination. Better scheduling and coordination reduce trade conflicts for installation positions, making installations more efficient.
- Contractors emphasize quality control. Commissioning disciplines simplify and speed up construction issues. Thus, the project is more likely to finish on time and under budget.
- The commissioning process almost eliminates contractor post-construction adjustments.
- Spending time on unnecessary design or construction issues won't hurt contractors' profits.
- As contractors gain knowledge through commissioning, their qualifications and reputation will improve.

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