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COMMISSIONING AUTHORITY

CXA OVERVIEW

ONLINE TRAINING BY KRISHNAJI PAWAR

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MODULE 6

Costs, benefits, emerging issues, and commissioning challenges

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CXA OVERVIEW

In the past decade, researchers have studied Cx deployment scaling, the transition from HVAC-related gains to other system types, and the costs and advantages of Multi-Body Cx (MBCx) compared to EBCx, using more advanced analytics techniques.

Learning Objectives

- Course Overview and Introduction
- Definition and History of Building Commissioning
- Why is building commissioning needed?
- Building Commissioning Process Overview
- Professional Certification in Commissioning
- Cost and benefits of building commissioning
- Summary and Resources
- CxA Sample Exam Question

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INTRODUCTION

- How scaling of Cx deployment due to codes, standards, utility EBCx programs, and market factors affects costs and benefits.
- Is Cx still dominated by HVAC-related operational improvements? Has there been a shift towards other system types?
- What data are available on the relative costs and benefits of Multi-Boundary Construction (MBCx) compared to Energy-Based Construction (EBCx)?



FUNCTIONAL PERFORMANCE TESTING OVERVIEW



- Core part of the commissioning process, requiring complete system installation, energized, programmed, balanced, and ready for operation.
- Dynamic testing of entire systems in fully automated mode.
- Tests conducted under various conditions including high or low cooling loads, component failures, unoccupied, varying outside air temperature and moisture, fire alarms, power failures.
- Planned by the commissioning provider and performed by the entire team.
- May reveal performance issues requiring significant follow-up and coordination.

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FUNCTIONAL PERFORMANCE TESTING OVERVIEW+



- Equipment operation is performed by the contractor or equipment manufacturer, but the commissioning authority directs, witnesses, logs, and reviews test data.
- ‘O&M Manual’, ‘System O&M Manual’ and ‘System Manual for Facilities’

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OPERATION & MAINTENANCE MANUALS OVERVIEW

- Contains information for building operation, maintenance, decommissioning, and demolition.
- Prepared by contractor with input from designers, suppliers, and Cx provider.
- Draft version provided for client handover.
- Final document not available until months post-practical completion due to seasonal readings.



O&M PERSONNEL AND BUILDING USERS TRAINING

- Transfer of knowledge and skills for building operation.
- Understanding of OPR and BoD.
- Training on O&M and System O&M Manuals.
- Commissioning provider reviews contractor's training content, materials, and instructor qualifications.
- Owner may designate Cx provider participation in training sessions or other methods.



COMMISSIONING COST IN BUILDING CONSTRUCTION





- Commissioning Authority services can cost between 0.5% and 1.5% of total construction costs.
- NASFA recommends budgeting 1.25 to 2.25% of total construction costs for Commissioning Authority services.
- U.S. General Administration Services' commissioning practice costs 0.5% of federal buildings and border stations.
- Complex projects like courthouses could cost 0.8–1% of the construction budget.
- Commissioning costs in India are significantly lower than US costs due to the Commissioning Authority's limited scope of work.

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RETRO-COMMISSIONING (RCX) OVERVIEW

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- A commissioning process in existing buildings to improve system performance and indoor environmental quality.
- Can resolve problems from design or construction or address issues developed during use.
- Fine-tunes and/or upgrades a building's operations and maintenance procedures to enhance overall performance.
- Aims to improve occupant comfort, identify operational and maintenance improvements, train operators, and review and enhance building documentation.
- Consists of five phases: planning, investigation, design, actual repair, and validation by commissioning authority.



ONGOING COMMISSIONING IN BUILDING MANAGEMENT

- Ongoing commissioning (OCx) is a continuation of initial commissioning processes during occupancy and O&M phase.
- It verifies that a project meets current and evolving OPR.
- OCx activities occur throughout the facility's life, some being continuous, others scheduled or unscheduled.
- To achieve objectives and identify smart solutions, facility managers must implement better technologies and a new management culture.



ONGOING COMMISSIONING IN BUILDING MANAGEMENT+

- Ongoing commissioning focuses on measured building operation data and continuous improvement.
- It contributes to a building's operation and maintenance, reducing reactive maintenance.
- Ongoing commissioning is part of proactive maintenance, identifying issues before they become bigger problems.
- It's an eight-step process that starts after the first year of operation, still considered part of the initial commissioning phase.



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