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BEYOND SMART CITIES



B E Y O N D
S M A R T C I T I E S

COMMISSIONING CERTIFIED TECHNICIAN

CXCT OVERVIEW

ONLINE TRAINING BY KRISHNAJI PAWAR

LEED AP(BD+C),GSAS CGP,GCP,ISO 14001

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MODULE
01

Introduction and Course Outline

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BRIEF ABOUT ME

Krishnaji PAWAR

CEO & FOUNDER

Krishnaji Pawar is founder and CEO of Beyond Smart Cities. Before being named CEO in January 2020, Krishnaji held leadership roles at Beyond Smart Cities in both Sustainability ,Energy & Environmental Consultancy.

Specialized in developing sustainable design strategies for Green Building Certification Systems (LEED, GSAS, etc.), Energy & Water Conservation, Commissioning, Environmental Impact Assessment & Environmental Management Systems.

Currently responsible for 3,787 million square feet Green Building /Energy modeling Consulting since January 2008 in UAE, India and Qatar.





COMMISSIONING CERTIFIED TECHNICIAN - CXCT OVERVIEW

The National Environmental Balancing Bureau (NEBB) is a non-profit organization that supports building system commissioning, a systematic process that ensures the design, installation, and testing of building systems to meet owner requirements. The NEBB Commissioning Certified Technician (CxCT) designation recognizes an individual's expertise in the commissioning process, working alongside engineers, contractors, and building owners.

Learning Objectives

- **Course Overview and Introduction**
- **Definition & History of Commissioning**
- **Why is building commissioning needed?**
- **Basics of field TAB verification, HVAC systems, and controls**
- **CP roles, responsibilities, and professional qualifications**
- **Cost and benefits of System Commissioning**
- **Working knowledge of procedural standards**
- **Summary and Resources**
- **CxCT Exam Sample Question**



INTRODUCTION

- NEBB is a non-profit organization that supports building system commissioning.
- Commissioning involves design, installation, and testing of building systems to meet owner's requirements.
- CxCTs work alongside engineers, contractors, and building owners to facilitate the commissioning process.
- Responsibilities include pre-commissioning activities, installation support, functional testing, reporting, and ongoing training and development.
- To become a CxCT, candidates must meet educational and experience requirements, and pass an examination.
- CxCTs contribute to energy efficiency, occupant comfort, and regulatory compliance.
- Their expertise is crucial in achieving high-performance buildings in the evolving built environment.

NEBB COMMISSIONING CERTIFIED TECHNICIAN (CXCT) OVERVIEW

Understanding Commissioning

- NEBB promotes and supports building system commissioning, which involves validating and verifying mechanical and electrical systems.
- Commissioning involves design review, installation verification, functional testing, and documentation.

Role of the CxCT

- The NEBB Commissioning Certified Technician (CxCT) is recognized for their expertise in the commissioning process.
- CxCTs work alongside engineers, contractors, and building owners to facilitate the commissioning process.



EFFICIENT BUILDING PERFORMANCE IMPORTANCE

- Changes in people's expectations and business environment necessitate efficient building performance.
- The built environment protects health from environmental issues like heat, air pollution, rain, and noise.
- Buildings should not become pollution sources and health hazards.
- Decreased resources like water and energy, and increasing costs of their usage, necessitate better performance.



EFFICIENT BUILDING PERFORMANCE IMPORTANCE+

- Investors expect higher returns on investments, leading to improved building valuation and management models.
- The complexity and automation of building technology necessitates the start-up of individual components and total system operation.
- Major green building certification systems now require HVAC system commissioning, but proper system performance should be a basic requirement for new construction and refurbishment projects.



NEBB COMMISSIONING CERTIFIED TECHNICIAN (CXCT) ROLE AND RESPONSIBILITIES

Role of the CxCT

- The NEBB Commissioning Certified Technician (CxCT) is recognized for their expertise in the commissioning process.
- CxCTs work alongside engineers, contractors, and building owners to facilitate the commissioning process.

Responsibilities of a CxCT

- Pre-commissioning activities include reviewing project specifications, understanding owner requirements, and developing a commissioning plan.
- Installation support includes ensuring equipment is installed per specifications.
- Functional testing includes HVAC, plumbing, and electrical systems.
- Reporting includes documenting results, noting deficiencies, and providing corrections.
- Ongoing training and development are necessary to stay updated with the latest technologies and practices.



CERTIFICATION PROCESS

- Candidates must meet specific educational and experience requirements, followed by successful examination.
- Prerequisite experience includes a background in mechanical systems, electrical systems, or a related field.
- Training includes courses on system design, testing procedures, and reporting techniques.
- Examination assesses knowledge and understanding of commissioning principles, techniques, and NEBB standards.

Importance of the CxCT in the Industry

- CxCTs contribute to energy efficiency, occupant comfort, lifecycle costs, and regulatory compliance.
- Their expertise is crucial in achieving high-performance buildings in the evolving built environment.



KEY DEFINITION & MEANING



Commissioning is a process - a systematic process of ensuring that a building performs in accordance with the design intent, contract documents, and the owner's operational needs.



Basis of Design (BOD)

A document that records the concepts, calculations, decisions, and product selections used to meet the owner's project requirements and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

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ASHRAE: American Society of Heating Refrigerating and Air-Conditioning Engineers is an international organization with a mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education.

Basis of Design (BOD):The documentation by the design team of the primary thought processes and assumptions behind design decisions that are made to meet the Owner's Project Requirements. The BOD describes the assumptions used for sizing and selection of systems (i.e. codes, standards, operating conditions, design conditions, weather data, interior environmental criteria, other pertinent design assumptions, etc.).

Building Performance Monitoring & Metric:Using tools that compile building data into a few useful metrics to help operators understand whether their building technology is working as intended.

Owner's Project Requirements (OPR)

A written document that details the functional requirements of a project, i.e., the expectations of how it will be used and operated, It also includes project goals, measurable performance criteria (e.g., energy efficiency goals), cost considerations, success criteria and relevant benchmarks, and supporting information.



B E Y O N D **S M A R T C I T I E S**

Commissioning Process (CxP): A quality-focused process for enhancing the delivery of a project includes commissioning process activities specified by the owner or required by a code or standard. The process focuses on verifying and documenting that all of the systems and assemblies under the scope of commissioning are planned, designed, installed, tested, operated, and maintained to meet the owner's project requirements.

Commissioning Final Report (CxFR): A document that records the activities and results of the commissioning process and is developed from the final commissioning plan with all of its attached appendices.

Commissioning Plan (CxPlan) : A dynamic document that outlines the organization, schedule of activities, allocation of resources, and documentation requirements of the commissioning process. The document shall be updated frequently, at least at the end of every phase, with the tasks and documents related to the coming phase.

Commissioning Provider (or Authority (CxA) or Agent): An organization or individual identified by the owner who sets up the commissioning team and leads, plans, schedules, and coordinates the activities to implement the commissioning process.

Commissioning Team (Cx Team) : Individuals and agencies who, through coordinated actions, are responsible for implementing the commissioning process.



WELCOME TO BEYOND SMART CITIES

Beyond Smart Cities is the world's 1st Green Technology Marketplace, connecting millions of Sustainability Specialists, Green Building Specialists, Energy Specialists, Commissioning Specialists, Environment Specialists, Health & Safety Specialists, Fire Safety Specialists, Climate Change Specialists & Green Products/Technology Manufacturers with independent talent around the globe.

Our mission is to build and support a global community of experts with the highest professional standards in sustainability, green building, energy, commissioning, environment, health & safety, fire safety, climate change, GHG accounting, carbon auditing, and GHG emissions management.



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THANK YOU

