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BEYOND SMART CITIES



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S M A R T C I T I E S

COMMISSIONING CERTIFIED TECHNICIAN

CXCT REFRESHER

ONLINE TRAINING BY KRISHNAJI PAWAR

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

KNOWLEDGE IS POWER

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

BEYOND
SMART CITIES

MODULE
5L5

CP Roles, Responsibilities & Professional Qualifications

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COMMISSIONING CERTIFIED TECHNICIAN CXCT REFRESHER

The commissioning process is crucial for ensuring building systems function as intended, providing comfort, efficiency, and sustainability. The National Environmental Balancing Bureau (NEBB) offers guidelines and standards for commissioning, especially in HVAC and building automation systems.

Learning Objectives

- **Course Overview and Introduction**
- **CCxT's Technical, Communication, and Commissioning Skills - Working knowledge of Procedural Standards**
- **HVAC Systems - Why is CxA of buildings necessary?**
- **Basics of field TAB , HVAC systems - Trained on jobsite safety and PPE**
- **CxCP roles, responsibilities, & qualifications**
- **Pre-function tests include sheet checking and installation tests.**
- **Point-to-point calibrate MEP and sensor systems.**
- **Verify TAB pre-functional tests and CxT responsibilities**



INTRODUCTION

- Commissioning is a quality-oriented process that ensures the design, installation, and functional testing of building systems.
- The commissioning team comprises various stakeholders with distinct roles and responsibilities.
- Developing the Commissioning Plan: The team is responsible for creating a comprehensive plan outlining the goals, scope, schedule, resources, and methodologies for the commissioning process.
- Defining Owner Requirements: The team engages with the building owner to understand and document their operational needs and expectations.
- Design Review and Coordination: The team conducts a thorough review of design documents to ensure alignment with the commissioning plan and the owner's requirements.
- Verification and Testing: The team verifies that installations adhere to the design specifications during the construction phase.
- Documentation and Reporting: The team maintains detailed records of the commissioning process, including test results, issues encountered, and resolutions implemented.
- Training and Handover: The team facilitates training for the facility management staff on the systems' operation and maintenance.
- Post-Occupancy Evaluation: The team may conduct post-occupancy evaluations to assess the performance of the systems in real-world conditions.

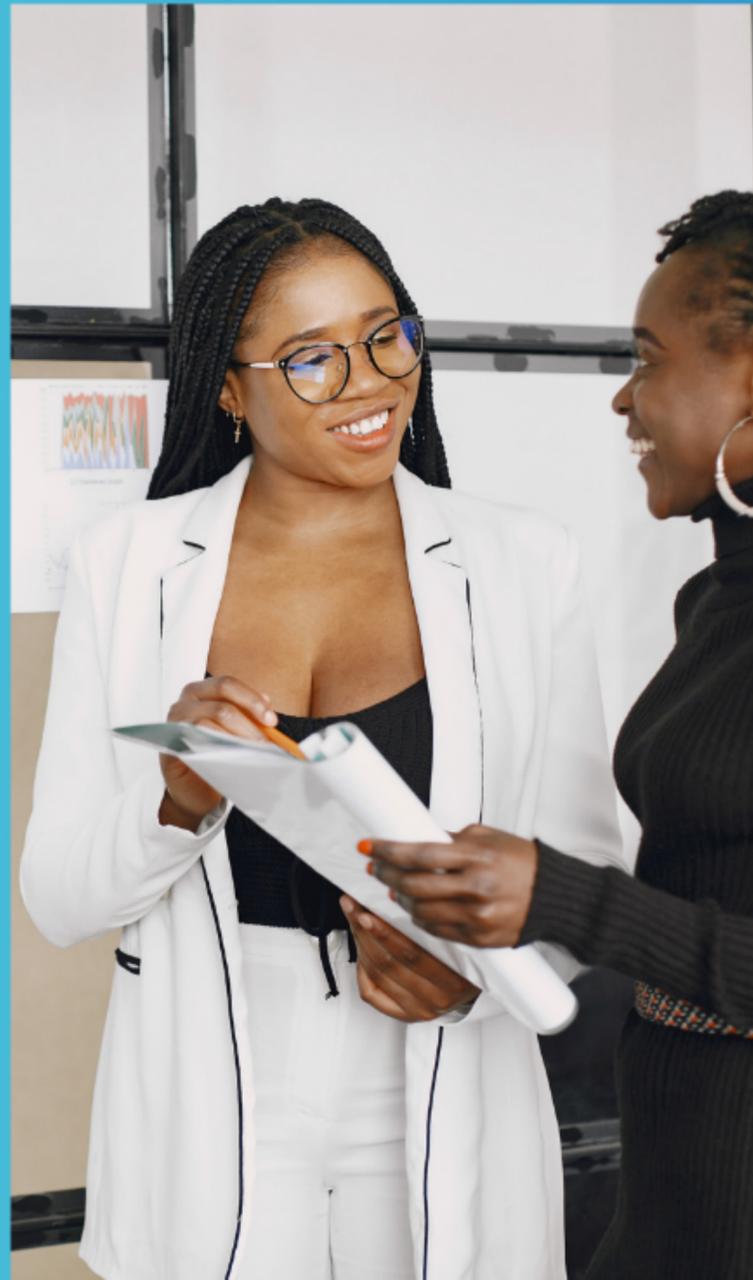
MANAGING INTERPERSONAL RELATIONSHIPS

- The commissioning process is a critical phase in project management, particularly in construction and engineering sectors.
- The commissioning team is a multidisciplinary group of professionals responsible for overseeing, managing, and executing the commissioning activities.
- The importance of interpersonal relationships in commissioning is highlighted.
- Strategies for relationship management include active listening, conflict resolution, and building trust and respect.





MENTORING AND TRAINING ON SYSTEMS AND PROCEDURES



- Mentoring is essential in commissioning, especially in projects involving new technologies and processes.
- Training programs should be structured to the specific systems and procedures used in the project.

Team Roles and Project Scope Throughout Project Phases

- Each team member has defined roles and responsibilities.
- These roles include the Commissioning Manager, Systems Engineer, and Field Technician.

COMMISSIONING PROJECT PHASES AND SCOPE

- The commissioning process typically unfolds across several project phases: design, construction, and occupancy.
- The commissioning team collaborates with the design team to establish performance criteria and review design documents.
- The construction phase ensures that systems are installed according to the specifications.
- The occupancy phase involves testing and validation of systems to confirm they operate as intended.



CONTRACTUAL ARRANGEMENTS AND RISK MITIGATION

- Scope of Work: Contracts outline specific tasks and deliverables expected from the commissioning team.
- Payment Terms: Understanding these terms is crucial for managing cash flow effectively.
- Liability and Indemnification: Contracts typically include clauses outlining the liabilities of each party and indemnification provisions to protect against losses or damages.





RISK MITIGATION STRATEGIES

- Early Identification of Risks: The team conducts thorough risk assessments during the planning phase.
- Regular Communication with Stakeholders: Regular meetings and updates facilitate proactive problem-solving.
- Contingency Planning: The team develops contingency plans that outline alternative strategies in case of unforeseen events.
- Performance Monitoring: Continuous monitoring of systems and processes during the commissioning phase allows for the early detection of issues.



BUILDING COMMISSIONING CERTIFICATION

- The National Environmental Balancing Bureau (NEBB) is a recognized organization that standardizes environmental systems in the built environment.
- NEBB certification serves as a benchmark for firms, professionals, and technicians involved in testing, adjusting, and balancing (TAB) of HVAC systems, building systems commissioning, indoor environmental quality, and performance verification.
- NEBB certification signifies a commitment to excellence and adherence to industry standards, ensuring firms and practitioners possess the necessary knowledge, skills, and experience to manage and improve environmental system performance.
- A NEBB Certified Firm meets specific standards set by NEBB in TAB, commissioning, and related services.
- To achieve certification, firms must demonstrate compliance with NEBB's rigorous quality assurance program, including technical expertise, quality control, and adherence to standards.
- For instance, a hypothetical firm, "Optimal Balance Co.", must employ at least one NEBB Certified Professional and several NEBB Certified Technicians, establish a quality management system, and document compliance with NEBB standards during all operational processes.



NEBB CERTIFICATION OVERVIEW

- NEBB Certified Professionals have undergone extensive training and assessment in the principles and practices related to environmental system performance.
- For certification, professionals must have a relevant degree or equivalent educational experience in engineering, architecture, or a related field, a minimum number of years of verifiable work experience in the field of environmental systems, and successfully pass a rigorous examination.
- NEBB Certified Technicians perform the hands-on work associated with testing, adjusting, and balancing environmental systems.
- The NEBB certification process establishes a framework for quality, accountability, and professionalism within the environmental systems industry, enhancing operational effectiveness, customer satisfaction, and contributing to the overall performance of building systems.



COMMISSIONING PROVIDER SKILLS REQUIREMENT

- Maintains unbiased problem-solving and conflict resolution approach.
- Knowledge of HVAC systems, including design, control strategies, installation, operations, and maintenance.
- Experience in HVAC controls, including current technology.
- Practical background in field construction.
- Ability to organize specific activities into a coherent commissioning plan.
- Good communication skills, documentation proficiency.
- Experience in working with multidisciplinary teams.
- Familiarity with testing and balancing.



NEBB'S CXCP CERTIFICATION PROGRAM

- Certification programs recognize a practitioner's expertise and commitment to the field.
- Certifications enhance credibility, promote industry best practices, and contribute to the quality of building commissioning processes.
- The National Environmental Balancing Bureau (NEBB) is a prominent certifying body offering the Commissioning Process Management Certification (CXCP).



PURPOSE AND SCOPE OF NEBB'S CXCP



- The certification aims to establish a benchmark for professionals involved in the commissioning process.
- Eligibility criteria include experience, education, and training in engineering, architecture, or related fields.
- The certification involves passing a rigorous examination that assesses knowledge in various areas.

BENEFITS OF CXCP CERTIFICATION



- Professional Recognition: Achieving the CXCP certification signifies a commitment to excellence and professionalism in the field of building commissioning.
- Improved Project Outcomes: Professionals with CXCP certification can effectively manage commissioning projects, leading to improved project outcomes.
- Networking Opportunities: Certification opens doors to networking opportunities within the commissioning community.

NEBB CXCT CERTIFICATION OVERVIEW

- The National Environmental Balancing Bureau (NEBB) is a key organization in ensuring the quality and performance of building systems.
- The Certified Commissioning Technician (CXCT) certification is a professional credential for individuals working in the commissioning of building systems.
- Commissioning refers to the systematic process of ensuring all components of a building function together as intended.
- The CXCT certification serves multiple objectives: standardization, professional recognition, quality assurance, efficiency, and sustainability.
- Eligibility and requirements include a minimum number of years of relevant work experience, completion of a NEBB-approved training program, and familiarity with building systems and commissioning processes.



NEBB CXCT CERTIFICATION +



- The certification process includes training, examination, field experience, and periodic renewal.
- Key areas of knowledge include fundamentals of commissioning, building systems, testing and verification, and troubleshooting.
- Practical applications of CXCT certification include pre-functional testing, functional performance testing, documentation and reporting, and post-occupancy evaluation.
- The NEBB CXCT certification is a cornerstone of professional practice in the commissioning field, emphasizing the importance of skilled technicians in optimizing building performance and efficiency.

NEBB CxCT PRE-REQS



Candidacy Prerequisites

Applicants for the CxCT certification must meet the education and experience prerequisite requirements in one of the categories listed in the chart below.

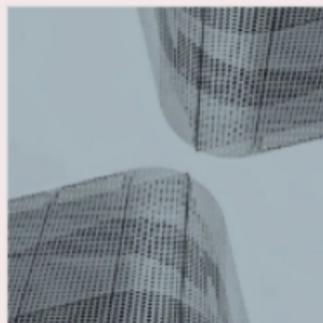
Category A	Category B
Associate Degree from an accredited community college, trade school training, or equivalent military training	High School Diploma or equivalent
AND THE FOLLOWING	AND (PICK ONE OF THE OPTIONS BELOW)
<ul style="list-style-type: none">→ Minimum one year field experience in applicable discipline→ A completed alternative training course in applicable discipline	<p>Option 1</p> <ul style="list-style-type: none">→ Minimum two years of field experience in applicable discipline→ A completed alternative training course in applicable discipline <hr/> <p>Option 2</p> <ul style="list-style-type: none">→ Hold NEBB TAB CT certification→ A completed alternative training course in applicable discipline

Alternative training course. Alternative training courses must relate to the credential for which you are applying. Examples of alternative training courses include:

- Discipline-specific NEBB home study course
- NEBB hands-on training course
- Discipline-specific NEBB training seminar
- Trade school: Technical college or apprenticeship
- Other industry-related training seminars (must be submitted for approval)

BENEFITS OF HIRING AN CXCP

- Reduced Maintenance Costs: CxCP identifies and addresses system issues early, preventing costly repairs and downtime.
- Increased Property Value: CxCP ensures optimal building operation, increasing property value, especially beneficial for future property sales or leases.



NEBB Certification Program & Requirements

Establish authority and expertise with NEBB's globally renowned certification programs. Join a...





**COMMISSIONING
CERTIFIED
PROFESSIONAL
CXCP EXAM
QUESTION BANK**

*On-demand Learning Courses and Exam
Question Banks*





CxCP Certification Benefits for Building Commissioning Professionals

- Enhances building performance.
- Ensures cost efficiency.
- Improves indoor environmental quality.
- Ensures regulatory compliance.
- Fosters project coordination.
- Promotes sustainable practices.
- Crucial for high-performing buildings.
- Growing importance of commissioning and CxCP certification in construction.





Benefits of the Commissioning Certified Professional (CxCP) Exam Question Bank.

- Assessment of knowledge before final exam.
- Access to over 900+ questions in 10 mock exams.
- Understanding reasoning behind each question and answer.
- Simulation exams cover CxCP Procedural Standards and CxCP Technical exam practice exam Knowledge Domains.
- Familiarization with building commissioning and terminology.
- High chances of passing exam on first attempt.
- Direct contact with course provider for further explanations.
- CxCP Exam Flash Cards: Over 188+ key terms.
- CxCP_Engineering and HVAC design Equations.





NEBB'S CXCP EXAM QUESTION BANK



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THANK YOU

