



المركز العالمي للتدريب والتطوير
International Centre For Training & Development



CC042 Total Building Commissioning Process



ACTVET
Abu Dhabi Centre for
Technical and Vocational
Education and Training
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Course Introduction:

Total building commissioning, a tool originally developed for HVAC systems, is being extended to all building systems: the current concept of total building commissioning. Its use is on the rise. Many major companies and government agencies now require the commissioning process on new construction and renovation projects. Owners of institutional, commercial and industrial buildings and large multi-unit residential buildings must use proven quality management tools and process systems that match their needs, meet their budgets and schedules, and reduce operating problems in new and renovated buildings or plants.

In this course you consider the primary goals of the building commissioning process: reduced building and process construction cost as well as increased quality and value. You also learn how to achieve these goals by introducing more effective planning and communication techniques that are applied from project conception through at least one year of building occupancy or process operations.

The course enhances your understanding of this important tool, by describing how the commissioning process clearly establishes the owner's project goals and reduces conflicts, construction change orders, end-of-project conflicts, punch lists, and modifications during the first year of operations. When you implement the commissioning process you ensure as a building owner that you receive high-quality building systems, effective operations and maintenance manuals, and well-trained operating staff.

The total building commissioning process must integrate with other construction delivery methods, project management by the owner, bid and build design projects, agency construction management, and design-build. It enhances the existing skills of design, construction, and operating professionals.

This course examines the relationship of commissioning to successful industrial processes and to sustainable and green building design, in addition to its primary focus on total building delivery.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- Discuss the total building commissioning process and how it differs from current procedures
- Present how total building commissioning has been applied
- Conduct planning or pre-design phase commissioning tasks in new construction
- Identify new construction and its phases such as design, construction as well as tender, construction and installation
- Review and discuss verification phase and post-acceptance phase of new construction
- Discuss retro-commissioning and its phases specifying the investigation phase, implementation phase and project hand-off and integration phase.

Who Should Attend?

This course is intended for commissioning engineers, engineering and architectural consultants, designers, project managers, owners and their representatives, developers and builders, directors of physical plants, operating and maintenance personnel and other individuals interested in smooth operations of institutional, industrial, commercial and large residential buildings.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Fees:

To be advised as per the course location. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Outline:

Day 1:

The Total Building Commissioning Process – New Construction - Defined

- Definition of commissioning
- Benefits of the total building commissioning process
- Comparison to existing process of delivering constructed projects
- Vision versus passing the baton
- Putting the total building commissioning process puzzle together
- The commissioning process team
- Commissioning process versus commissioning, verifying and validating
- Commissioning process versus contractor's commissioning

The Total Building Commissioning Process – Contracting Options

- Commissioning authority as owner's representative
- Commissioning authority as contractor's representative
- Responsibility for specifications
- Contractor as the commissioning agent
- Consultant as the commissioning agent

Developing the Owner's Project Requirements in New Construction

- Needs assessment
- LEED Standards

Day 2:

Planning (Or Pre-Design) Phase Commissioning Tasks in New Construction

- Hiring a commissioning provider using Request for Qualification (RFQ) and or Request for Proposal (RFP) process
- RFQ/RFP Exercise
- Objectives
- How to set up and evaluate

New Construction - Design Phase

- Review of design intent
- Writing commissioning specifications
- Scope
- Roles and responsibilities
- Scheduling
- Listing of tests, methods and processes
- Holdbacks
- Developing a commissioning plan
- Refreshments and Networking

New Construction – Construction Phase

- Scope meetings to finalize plan
- Relation to schedule
- Clarifying contractor's responsibilities including testing agencies and manufacturers
- Clarifying definitions and steps: start-up vs. testing vs. verification
- Schedule off site commissioning tests as necessary
- To inspect or not to inspect
- Perform pre-test checklists and start up equipment as available to ensure readiness for functional testing during acceptance
- Sample form review
- Owner's familiarization and training

Day 3:

Tender/Construction/Installation Phase - New Construction

- Respond to bidders questions
- Evaluate bid documents

- Participate in pre-construction meeting and or partnering session
- New Construction – Construction Phase
- Scope meetings to finalize plan
- Relation to schedule
- Clarifying contractors' responsibilities, including testing agencies and manufacturers
- Clarifying definitions and steps: start-up vs. testing vs. verification
- Schedule off site commissioning tests as necessary
- To inspect or not to inspect
- Perform pre-test checklists and start up equipment as available to ensure readiness for functional testing during acceptance
- Sample form review
- Owner's familiarization and training

Review of New Construction Steps

- Conception or pre-design phase
- Design phase
- Construction/installation phase
- Verification phase

Verification Phase New Construction

- Execute functional tests and diagnostics
- Modes of operation
- Testing whole systems
- Sample forms
- Fix deficiencies
- Retest and monitor as needed
- Operator training
- Review O&M manuals
- Building acceptance by owner

Day 4:

Post - Acceptance Phase New Construction

- Prepare and submit final report
- Perform deferred tests (if needed)
- Develop re-commissioning plan/schedule
- Case Study of Commissioning an Institutional Building

Investigation Phase Retro-Commissioning

- Perform site assessment
- Obtain or develop missing documentation
- Develop and execute diagnostic monitoring and test plans
- Analyze results
- Develop master list of deficiencies and improvements
- Recommend most cost effective improvements for implementation

Day 5:

Implementation Phase Retro-Commissioning

- Implement repairs and improvements
- Retest and monitor for results
- Fine-tune improvements as needed
- Revise estimated energy savings calculations

Project Hand-Off and Integration Phase Retro Commissioning

- Prepare and submit final report
- Perform deferred tests (if needed)
- Develop re-commissioning plan/schedule
- Commissioning As A Quality Assurance Process
Presentation of commissioning as a systematic verification process to attain quality and efficiency in functional performance. The ASHRAE Commissioning guidelines 0-2005 and CSA Standards related with Healthcare facilities will be presented and specific commissioning procedures and test forms will be discussed.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Coffee / Tea / Snacks
10:20 - 12:20	Second Session
12:20 - 13:30	Lunch Break & Prayer Break
13:30 - 15:00	Last Session