# The Commissioning Process for Delivering Quality Constructed Projects

**Detailed Topic Agenda: Online Courses**

### Day 1

<table>
<thead>
<tr>
<th>Topic #</th>
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<tr>
<td>1</td>
<td>Introduction and Course Orientation</td>
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</table>
| 2       | Overview of the Commissioning Process (CxP)  
  - What is the ASHRAE Guideline 0 commissioning process?  
  - Current best practice  
  - What is a quality delivery process?  
  - Benefits of the commissioning process  
  - What occurs in each phase of project delivery? |
| 3       | Pre-Design Phase Commissioning Tasks (Part 1)  
  - Developing the owner’s project requirements (OPR)  
  - Owner’s workshop: preparation and participants, nominal group technique, procedures and results |
| 4       | The Owner’s Project Requirements Workshop  
  - Executing an OPR workshop  
  - Determining which questions to ask – project success criteria  
  - Group activity: OPR workshop in action (continues on Day 2) |

### Day 2

| 4       | The Owner’s Project Requirements Workshop continued |
| 5       | Developing the OPR Document  
  - Review of key OPR concepts  
  - Typical information required to develop needs  
  - Steps in document creation  
  - Group Activity: discussion of example document |
| 6       | Pre-Design Phase Commissioning Tasks (Part 2)  
  - Planning the CxP effort  
  - Commissioning plan fundamentals, key milestones, structure  
  - Evaluating the benefits of pre-design phase involvement  
  - The CxP as a strategic quality plan |
| 7       | Group Workshop: Defining CxP Needs |
| 8       | CxP Activities in the Design Phase (continues on Day 3)  
  - Pre-design meetings  
  - Design checklists |
• Basis of design development
• CxP design review process
• CxPlan update

Day 3
8 CxP Activities in the Design Phase continued
9 Design Review Workshop
• Group workshop using the four steps of a CxP design review procedure
10 Commissioning Specifications
• Format options
• Types of requirements: contractor participation; maintainability; checklist implementation; shop drawings, training, and systems manual; testing and verification
• Group specifications activity
11 Commissioning Process Checklists
• Purpose, goals
• Use in all project phases
• Construction checklists: development, tracking methods, verification, statistical sampling
• Group checklist work session (continues on Day 4)

Day 4
11 Commissioning Process Checklists workshop continued
12 Systems Manual and Training
• Role of the Systems Manual in all project phases
• Structure and content
• Role of training in all phases
• Types of training; timing
13 Construction Phase CxP Tasks
• Pre-construction activities (pre-bid, workshops, partnering)
• Cx meetings and coordination, role of the CxA
• Tracking commissioning activities
• Cx schedule
• Testing
• Commissioning reports
• Benefits/issues log
14 Commissioning Process Tests
• Developing test protocols
• Confirmation of readiness
• Implementation steps
• Documentation
• Test procedure group workshop
Day 5

15 Integrating CxP with Contractor Efforts
   • Quality processes
   • Overlaps and gaps

16 Acceptance Phase, First Year of Operation, and Beyond
   • Training
   • Systems manual
   • Project CxP report(s)
   • Warranty review and seasonal testing
   • On-going commissioning

17 Electronic and Web-Based Commissioning Tools
   • Computer tools for site tracking
   • Electronic systems manuals

18 Analyzing the Benefits of Commissioning: Case Studies
   • Scope of commissioning
   • Detailed cost analysis
   • Benefits and lessons learned

19 Special Topics in the CxP
   • Review of LEED Cx process
   • Review of existing building Cx process