

# Commissioning Procedures >>

## achieving operational EXCELLENCE

### CONCEPTUAL PHASE

It is important to select the Commissioning Agent (CA) while a project is in the conceptual phase. This knowledgeable consultant, solely representing the owner's interests, contributes insights on the suitability of design choices and associated construction costs.

### DESIGN PHASE

The CA participates in design team meetings, per the owner's request, to review preliminary and final designs. Areas examined include energy efficiency, controllability, ease of maintenance, reliability, and suitability of system components. Interaction between the CA and designer ensures that the design intent of each building system is clearly understood and documented.

The commissioning plan, which outlines the documentation requirements for all participants in the commissioning process, includes the system functional tests for the project. Installation and functional checklists for individual pieces of equipment are prepared as soon as the final equipment selection is made.

### CONSTRUCTION PHASE

Construction progress is observed during site visits by the CA. The installation and functional checklists are refined by the CA, in coordination with the appropriate contractors. The air and hydronic test and balance procedures are reviewed by the CA and spot-checked for compliance to the specifications.

### ACCEPTANCE PHASE

The CA verifies that the installation and functional checklists for each system are complete and then conducts functional performance tests. In addition to function-to-function demonstrations of individual system's performance, seasonal commissioning tests are performed. Performance of a component of a system is accepted when it meets specific design parameters under actual load.

The completed building is transformed from its static construction state to its dynamic operating state, under the control of facility personnel, during the Acceptance Phase. The CA ensures that all necessary documentation is delivered to the owner and that operators are properly trained. The maintenance staff is included in the commissioning process as well as trained in conventional classes.

Documentation includes: as-built plans and specifications with all addenda and approved change orders; planned vs. actual project schedules; planned vs. actual functional performance test procedures; operation and maintenance; lubrication and maintenance schedule; manufacturers' specifications and test data; contractors' and governmental inspectors' certification statements; warranties and guarantees; and test and balance reports.

### EVALUATION PHASE

The CA develops a standard method for facility personnel to record tenant requests for service and document actual performance—for comparison with predicted performance. After the facility has operated long enough for realistic projections of performance (generally one year or longer), the CA evaluates the building's performance. This analysis is intended to assess the project in specific terms—comparing the actual vs. predicted performance and operating costs, and identifying any variation outside acceptable limits. The CA also determines if ongoing operation and maintenance procedures are being followed.

