



Retro-Commissioning (RCx)

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INTRODUCTION:

What is retro-commissioning?

Retro-commissioning is the application of the commissioning process to an existing facility. The objective is to optimize the performance of building systems within their current configurations.

The Commissioning Authority begins by establishing the minimum design criteria, based on the existing systems, current facility/user needs and industry benchmarks for such systems. The Authority then tests the existing systems and compares the results to the established design criteria to identify system deficiencies. With this knowledge, the facility owner can plan, design and implement solutions to remedy system performance issues.

What are the differences between commissioning, re-commissioning and retro-commissioning?

"Commissioning" generally refers to the commissioning of new facilities. As owners have recognized the benefits of commissioning, many are now applying the commissioning process to existing facilities.

"Re-commissioning" refers to the commissioning of a facility which has been previously commissioned. Re-testing the facility systems at a later date provides current system performance measurements, which are then compared to prior commissioning test results (now benchmarks). By comparing the test results from the initial and subsequent commissioning processes, the Commissioning Authority can identify problematic areas before they turn into major system malfunctions.

"Retro-commissioning" is the application of the commissioning process to an existing facility which has never been commissioned. The objective is to optimize the performance of building systems within their current configurations.

Why do facility owners/managers retro-commission their facilities?

Retro-commissioning services are customized based on the project objective. Retro-commissioning may be used to:

- Identify and resolve specific performance issues
- Adapt system functions to changing building uses
- Increase system efficiency and reduce energy consumption
- Analyze overall system performance and identify deficiencies
- Identify the causes/solutions for general system degradation



What are the benefits of retro-commissioning?

Whether new building commissioning or retro-commissioning, the objective remains the same -- to maximize the operational efficiency of facility systems. The process:

- Ensures all critical building systems are fully operating
- Lowers operating and maintenance costs
- Increases system energy efficiency
- Improves indoor air quality
- Reduces the risk of "sick building" syndrome
- Decreases occupant complaints and enhances productivity
- Provides better environmental control
- Reduces maintenance/troubleshooting issues
- Trains facility personnel in system operations
- Provides benchmarks to evaluate future system performance
- Reduces the life cycle cost of the facility

What services are included in retro-commissioning?

Retro-commissioning services are generally customized to fit specific client goals and project details. The following is a list of services available to clients through a full-service Commissioning Authority.

Discovery

Familiarization

Retro-commissioning plan

Owner review & approval

Test procedure development

Data collection & testing

Repair & Tuning

Initial repair & equipment/component tuning

Final repair & equipment/component tuning

Verification of system tuning

Renovation Planning & Budgeting

Scoping & budgeting

Prioritization

Final report/master plan

Renovation/Upgrade

Peer review

Construction observation

Post-Construction

Final verification and system tuning

Operations staff training



What is a Commissioning Authority?

The Commissioning Authority is the firm (or the individual within the firm) hired to provide building commissioning services. The Commissioning Authority is responsible for overseeing and executing the entire commissioning process.

The Commissioning Authority should be an independent third-party, knowledgeable in the design, construction and operation of engineered systems. A qualified Commissioning Authority will provide added value to the project by applying systems expertise, experience and common sense to resolve system problems.

What qualifications should I look for in a Commissioning Authority?

The Commissioning Authority should have extensive commissioning experience working with facility types and systems similar to those being commissioned. The Authority should also have experience working on projects of similar size and be able to demonstrate adequate resources (staffing) to see the project through to completion.

The Commissioning Authority's firm should have both registered professional engineers and controls technicians with extensive (20+ years) building systems experience. Test and balance contractors provide commissioning services but typically provide commissioning only on a "pass/fail" basis. The true value of the Commissioning Authority is not only to test the system, but identify problems before construction (through peer review), analyze system failures to help identify the cause, work with design/construction teams in resolving these issues and train operations/maintenance personnel on system operations and maintenance activities. These services require professionals with extensive system design knowledge and field experience.

What funding sources should I consider for retro-commissioning?

We encourage our clients to consider the following sources for funding retro-commissioning projects:

- Utility cost savings (rolled from one project to another)
- Utility company incentive programs
- Building operating budget
- Controlled maintenance funding (retro-commissioning specific)
- Controlled maintenance funding (project specific)
- Capital investment
- Building programs with a portion of the cost set aside for central plant and central systems upgrades and improvements
- Third-party investors
- Combination of the above



The Process



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