

**sys-tek**  
A TWINING COMPANY

The Ultimate

Purchase Guide for buying

Existing Building Commissioning

## About sys-tek

For over 20 years, sys-tek has provided Existing Building Commissioning (EBCx) services to commercial buildings, specializing in healthcare, higher education, and mission critical facilities. Although many commissioning or engineering firms claim to have the skills required for Existing Building Commissioning, successful EBCx projects require a carefully cultivated skill set and extensive experience in the industry. At sys-tek, our EBCx projects yield an average annual energy savings of 20%, with most projects paying for themselves in under two years. Common indirect benefits of EBCx projects also include improved building occupancy, fewer tenant complaints, and greater building asset value.

Unlike commissioning services for new construction, Existing Building Commissioning (EBCx) is focused on improving the systems in existing facilities. The poor performance of existing buildings is improved through effective Existing Building Commissioning, which really is the art of making systems work at their highest achievable performance and reliability possible. This is an art as well as a science, and takes a skill set that is not easily found. We have created this purchase guide to help you identify the qualifications necessary selecting an Existing Building Commissioning firm.

At sys-tek, we have a very simple saying that all buildings do get commissioned – the only question is when and at what performance level. Meaning, regardless if the building was commissioned when constructed, the building's natural evolution will flush out the system deficiencies from not only the original design and construction, but also any upgrades done to the building over time. Through this evolution process, buildings are configured to operate as needed to make systems work at least at a tolerable level, regardless of how much energy is required to make it work. Additionally, we know from experience that all buildings will be operated to the understanding of the building operators, regardless of the design intent of the original building engineer. These principles are real and always prove to be right every time and on every project.

## Existing versus New Building Commissioning

The major difference between EBCx and new building commissioning (Cx) is the skill set required to accomplish the objective of tuning an existing building to the highest achievable performance. For new building Cx, the person or company providing the Cx services can rely on the contractors and design engineer to make the necessary adjustments to meet a performance criteria that was established by the project goals. In other words, if the Cx agent does not have the skills to make systems work, they can rely on the skill sets of others to get the building to perform at its intended efficiency. Therefore the Cx Agent is often just observing and taking notes, and may not have the skills needed to actually define the system operating efficiencies using certified testing or hands-on troubleshooting. Just because a company may have done several commissioning projects for new construction, does not mean it is qualified to provide EBCx services.



# Which would you want?

## Skill Sets Needed

For a company to be able to provide an effective EBCx program, its skill sets must include:

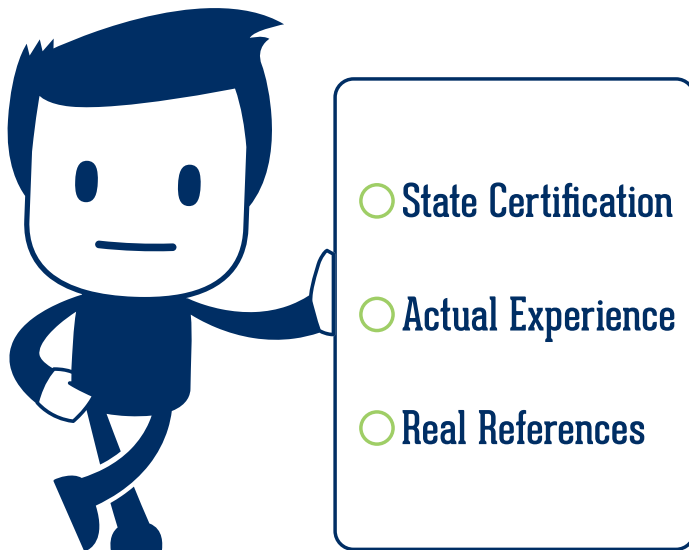
- The ability to troubleshoot control systems, including understanding how to use the necessary hand tools to trace a control circuit operation and the ability to program and configure the digital control system providing the software logic for operation.
- The ability to readout system performance, including using certified test equipment to measure performance operating data such as air volume for fans and pressure profiles for air handling and ductwork systems; measuring pump performance for flow and pressure; and troubleshooting system components such as coils, heat exchangers, control valves and operating dampers.
- The skill necessary to evaluate systems based on field testing data collected, including a strong background and fundamental knowledge of basic engineering principles for mechanical and electrical systems.
- A strong understanding of systems and how they operate. This basic principle is an absolute requirement and many times is overlooked. Without this skill, the system will be defined based on the EBCx agent's understanding. If this understanding is incorrect, then the EBCx process can actually create more problems than it solves.
- The understanding and empathy needed to fully grasp the challenges of keeping buildings online and working correctly. EBCx is the real deal; there isn't room for using engineering theories that only look good on paper. The EBCx agent has to be able to work within the parameters of what is installed and operating.
- Knowledge and understanding on how systems use energy and where improvements in efficiency can be made without compromising the operation and the facility's function.



## Qualifications

Qualifications for EBCx agents are difficult to define, as with any profession including doctors, lawyers, architects or engineers. However, typically when you hire professionals, they have a state certification that lets you know the person or company has met stringent requirements to qualify as a “Professional.” Combining this qualification with actual experience and references gives you some assurance that the person or company is qualified to do the work.

The commissioning business does not have a nationally recognized system, nor does any state have a certification process in place. Therefore, the qualification system is left to organizations that are dependent on certified members paying dues. This is a real downfall in the system, given that these organizations can set the bar lower to increase membership and dues collected.



There are a few organizations that, over time, have proven that those who receive their qualified certifications are indeed qualified and field tested. The National Environmental Balancing Bureau (NEBB) requires that each person who is certified in Balancing and Commissioning not only passes written exams, but is also required to take field exams to verify he or she knows how to use the test instruments needed to provide certified testing. Another

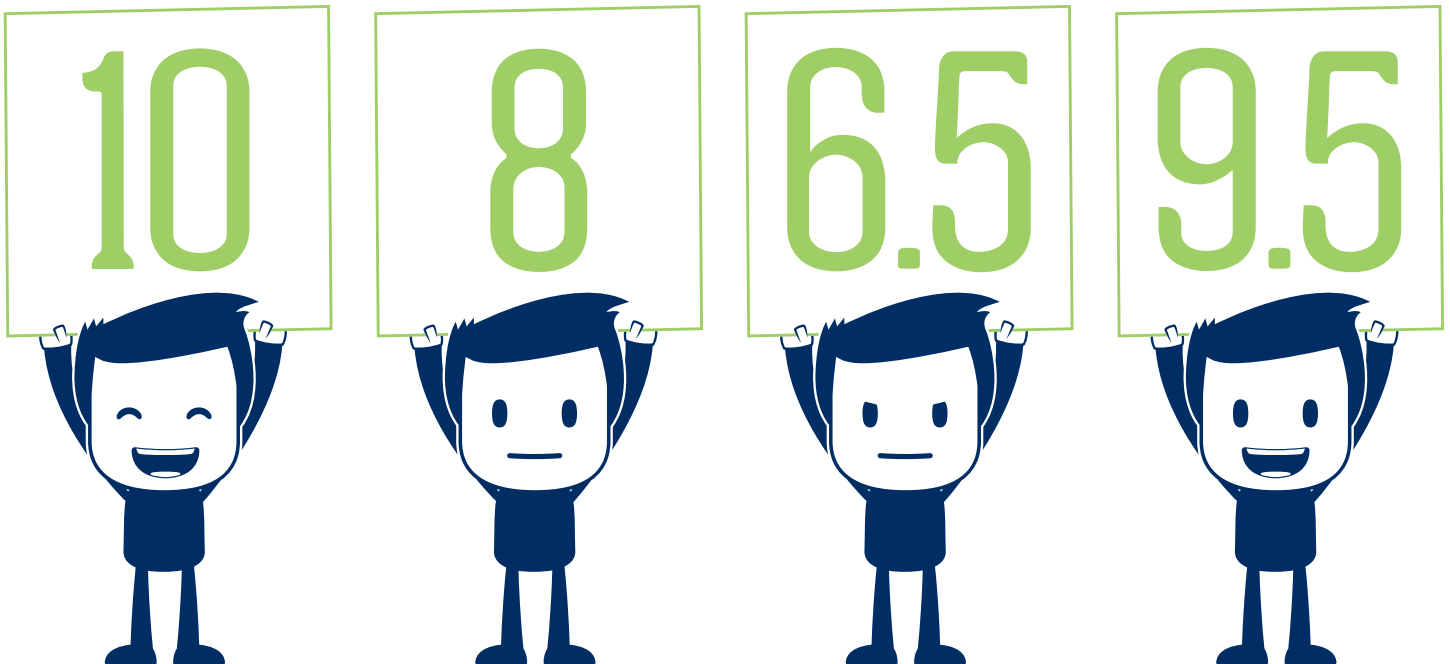
organization that has been at the

forefront of Commissioning is the Building Commissioning Association (BCA). To receive the Certification of a “Certified Commissioning Provider,” the applicant must provide verifiable records with references to validate experience before even being allowed to take the examination. BCA does not take this certification process lightly as proof by the fact that there are only 169 Certified Commissioning Providers Nationally as of May 2013.

## Experience

Actual real-life experience in Existing Building Commissioning is an absolute requirement for any company you are considering hiring. Once again, there is a huge difference between retro and new building commissioning. Therefore, experience has to be defined and should include solid examples of projects completed, results achieved, and documentation, including references. Anything less than this minimum requirement means the firm is simply not qualified.

The experience for the firms, as well as the people who will be doing the work, need to include examples on how their skill sets line up with the skill sets needed to do an EBCx project.



## Real-life questions to ask commissioning firms and agents

- List a maximum of five (5) projects for which you have provided EBCx services, describing the complete scope of work provided and documented energy savings as a result of the EBCx process. Provide the following information for each project listed:
  1. Project name, location, contract delivery method, and description
  2. Color images (photographic or machine reproductions)
  3. EBCx costs, including all fees and reimbursable expenses
  4. Detailed description of services provided for the project
  5. Name and contact information of project manager (the individual responsible to the owner for the overall success of the project)
- References (for each project listed above, identify the following):
  6. The owner's name and representative who served as the day-to-day liaison during the design and construction phases of the project, including telephone number
  7. Contractor's name and representative who served as the day-to-day liaison during the pre-construction and/or construction phase of the project, including telephone number
  8. Length of respondent's business relationship with the owner
- Describe your experience in performing design phase reviews of construction documents to ensure that systems can be properly balanced.
- Describe in detail your quality assurance program, explaining the methods used and how the firm maintains quality control. Provide specific examples of how these techniques or procedures were used for any combination of three (3) projects listed above.

## Real-life questions to ask commissioning firms and agents [cont.]

- Describe the way in which your firm develops and maintains work schedules to coordinate with project schedules. For any combination of three (3) projects listed in above, provide examples of how these techniques were used.
- Describe your firm's service support philosophy, how it is carried out, and how success in keeping this philosophy is measured.
- Describe your approach for obtaining records for the building and the process needed to define scope of work for the EBCx process. Provide specific examples on how these methods were used on past projects described above.
- Describe your experience with energy-efficient control strategy optimization, including direct experience in monitoring and analyzing system operation using energy management control system trending and stand-alone data logging equipment.
- Describe how your firm develops test methods for the EBCx process and how they are repeatable. Give an example on how your methods were used in one of the projects listed with this submittal.



- Describe your experience in the operation and troubleshooting of HVAC, life safety, and building automation systems. Describe your experience with testing and balancing of these systems. Describe test methods and test equipment used. Give specific examples on how this was used in the EBCx process and how it benefited the client.
- Describe your experience in functional performance testing of equipment and systems through all operating sequences.
- What do you perceive are the critical issues for providing EBCx for our facility, particularly for renovation projects within existing facilities?



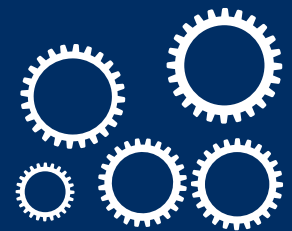
Visit our resource library at  
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Contact sys-tek for more information about our Existing Building Commissioning services and a FREE assessment

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