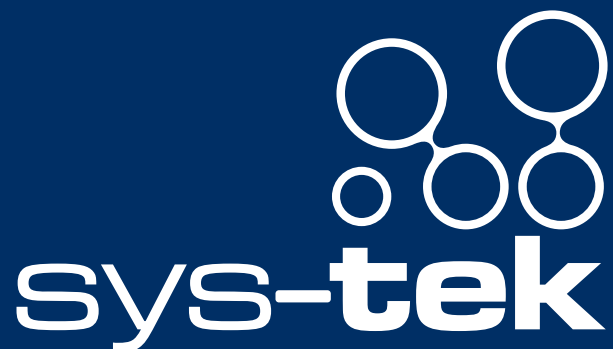


GUIDE TO HEALTH FACILITY

COMMISSIONING

(HFCx)



Engineers and Commissioning Agents

INTRODUCTION

sys-**tek** has been providing Existing Building Commissioning (EBCx) services to commercial buildings that specialize in healthcare and life sciences facilities for more than 18 years. As members of the American Society for Healthcare Engineering (ASHE), our commissioning agents are experts at identifying and diagnosing operational inefficiencies at hospitals and other Life Sciences facilities.

Many commissioning providers may claim they have the experience and skills needed for Health Facility Commissioning (HFCx) projects, but sys-**tek** has a successful track record for completing HFCx projects that result in annual energy savings of 20%. Most facilities will also see HFCx projects paying for themselves within two years from the project end date.

The benefits of HFCx extend beyond energy savings. When all systems and components of a health care facility are not functioning optimally, it affects more than energy and operational costs — it directly impacts patient comfort and care. Our HFCx projects regularly result in increased patient comfort, extended equipment life, fewer maintenance calls, and greater asset value. For more information on our HFCx services, please contact sys-**tek** at www.sys-tek.com or 816-229-9009.



What is Health Facility Commissioning?

Health Facility Commissioning is a process that ensures that each building that is part of a health facility uses sustainable building technologies and is designed in a manner that results in performance that is cost-effective and high in quality by health facility standards. Health Facility Commissioning also involves bringing all building and facility staff up-to-date on operations and maintenance procedures, which is required for successful and cost-effective ongoing facility maintenance.

A number of experts in the healthcare industry are choosing to employ design and construction practices that are sustainable in nature in an effort to support and improve fossil fuel supply, escalating volatile energy costs, and other diminishing resources that are currently impacting the industry.



Health Facility Commissioning can be applied to any healthcare facility regardless of size and cost, and can result in an improvement of daily operations, a reduction in a facility's carbon footprint, and massive annual energy savings. An additional goal of an HFCx project is to provide an environment conducive to healing and clinical practices.

Commissioning (Cx) is a process that begins with building design, and continues throughout a facility's life span. Commissioning is not just about producing a list of components that are deemed faulty with a building project, but about examining a facility and identifying opportunities for sustainability and energy savings.

The changes implemented during a Cx project may not guarantee that a healthcare facility will never again experience any problems, but will drastically reduce the number of problems a facility experiences as well as their level of severity.

Why is commissioning important in healthcare facilities?

According to the United States Environmental Protection Agency (EPA), the healthcare industry consumes 73 trillion kilowatt hours (kWh) of electricity, and adds about \$600 million per year to healthcare costs through respiratory illnesses such as asthma. Generally, health facility commissioning can result in reducing energy usage through lower hospital operational costs and a reduced carbon footprint.

Health facility commissioning can also result in improved indoor airflow and correct issues such as high humidity levels, which can contribute to improved comfort for hospital patients and a longer life for hospital equipment.

Costs and benefits of HFCx

The cost of a health facility commissioning project will vary depending on the size of a facility and its amount of systems and equipment. Sometimes it can be difficult to determine the cost of a project upfront, but in nearly all cases, an HFCx project will result in total payback within a two-year period.

General cost rules apply to all Cx projects, such as higher fees per square foot for smaller projects than larger projects. The scope of a project will also determine cost, as different health facilities will require different scopes ranging from simple to complex.

Studies have shown that Existing Building Commissioning projects can result in anywhere from 10% to 20% in annual energy savings, which can result in millions, if not billions, of savings for healthcare facilities. On average, the value of energy savings per square foot can be as much as \$0.72, whereas the value of non-energy savings per square foot can be as high as \$0.45.

Savings are generated from multiple different sources after HFCx, such as reduced energy use from heating and cooling, replacement of more energy-efficient lighting, the installation of better insulating materials, extended life of systems and equipment, and much more.



A specific case study conducted on savings following the commissioning of commercial buildings found that the average cost savings on energy alone was 15% or \$0.27/ft² per year, and that the average payback time for each project was 0.7 years, or between 0.2 and 1.7 years. When non-energy cost savings were included, the cost effectiveness of EBCx projects increased considerably.

Some healthcare facilities may view HFCx as an unnecessary luxury and extra cost. However, undergoing a commissioning project on an existing facility can potentially correct errors that may have been made during the initial design and construction phase of a building.



Real-world Healthcare Commissioning examples

Case study #1 - Hospital operating room (OR) issues

A surgical pavilion of a hospital that was only 1.5 years old was shut down due to issues with patients experiencing high infection rates post-surgery, as well as issues with frequent high humidity alarms. To correct all issues, the hospital decided to have the entire pavilion and all operating rooms undergo HFCx.

Throughout the course of the project, all ductwork was cleaned, and it was found that the temperature and humidity levels were poorly controlled and could have been the main cause behind the frequent infections. Additionally, the ORs were becoming negatively pressurized during transition from occupied to unoccupied, and it was taking 20 minutes for the room pressure sensor to regain stable pressure control.

Trends analyzed during the HFCx project showed that this event was occurring between 3 and 4 times per night in every OR, so a stepped control loop was added to have occupied mode transition to unoccupied mode in 300 cfm increments every 5 minutes. This resolution was able to rectify the problem, and prevent any further issues from happening in the surgical pavilion.

Case study #2 - Patient rooms overheating

In another case study conducted on HFCx, it was found that all patient rooms in a hospital were consistently overheating. One of the systems responsible for heating and cooling was found to have radiant heat coming on at 50°F outside air (OA), which was overheating the building and causing problems with simultaneous heating and cooling.

The scope of the project involved developing a Revised Radiant Panel Zoning Diagram. The Cx team then tested and adjusted radiant heating by building exposure, with final setpoints ranging from 45 to 35 degrees OA, when they had originally been at 50 degrees OA. This commissioning change was able to resolve the temperature problems in every patient room of the facility.

These are just a couple of examples of how HFCx can benefit hospitals, surgery centers, and other patient-care facilities. If your health care facility is experiencing increasing energy costs, frequent patient complaints regarding room temperature or humidity, or a decrease in equipment efficiency, we can almost guarantee that Health Facility Commissioning can help uncover and rectify the source of these problems.



**Contact sys-tek today
to learn how our HFCx
services can benefit
your facility.**

**816-229-9009
www.sys-tek.com**