Beyond Installation: The Critical Role of Building Commissioning

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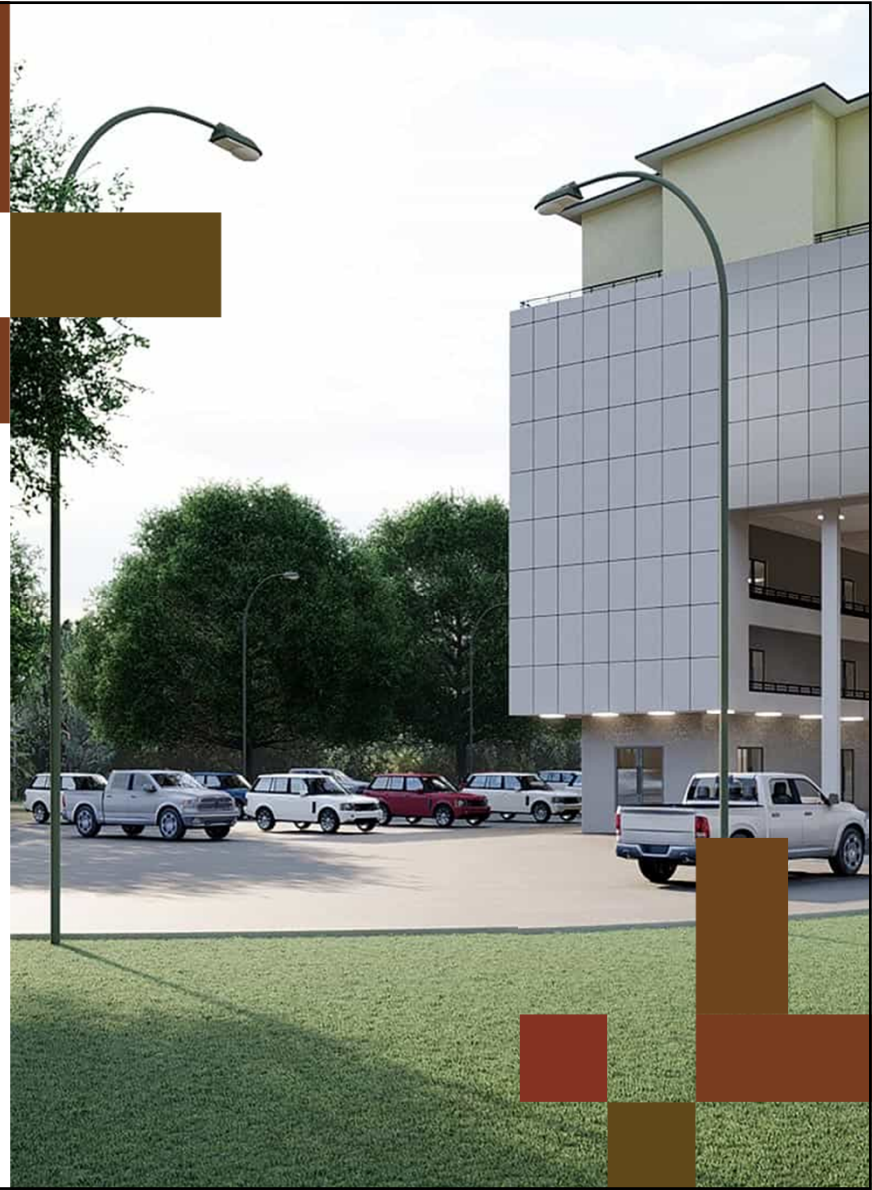


Today's Agenda

Outline of key topics in building commissioning

01 Explain what commissioning means

Define commissioning clearly to establish a foundation for the rest of the discussion.

02 Identify commissioning goals

Discuss the key objectives that commissioning aims to achieve in building projects.

03 Highlight the primary benefits of commissioning

Describe the main advantages, such as improved building performance and energy efficiency.

04 Explore drivers behind commissioning projects

Examine factors that motivate commissioning, including regulations and performance requirements.

05 Present the four leading types of commissioning

Introduce and briefly describe the main categories of commissioning used in the industry.

06 Outline the building commissioning process

Walk through the step-by-step process involved in commissioning a building for clarity.

What is Commissioning?

Understanding the quality-driven process and key building systems involved

01

Verify building and systems meet design requirements

Commissioning is a quality-driven process ensuring that a building and its systems are planned, installed, inspected, tested, and operated as designed.

02

Identify key building systems for commissioning

Important systems include mechanical (HVAC, ductwork, ventilation), electrical (power distribution, lighting controls), plumbing (domestic heating water), communication and alarm systems, protective (fire/smoke protection), and the building envelope (walls, roof, windows, doors).

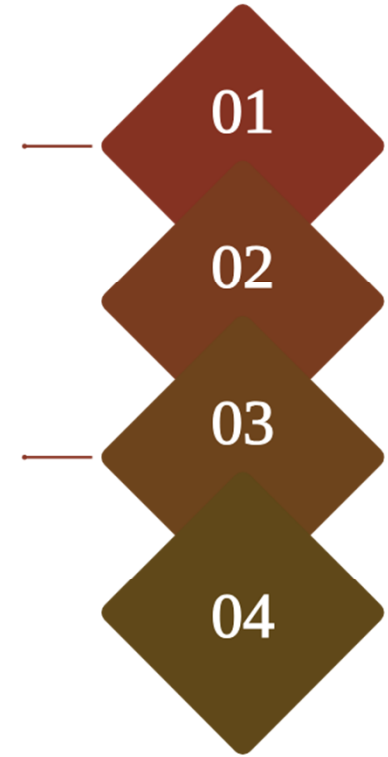
03

Achieve full integration and optimization of facility components

The goal of commissioning is to fully integrate all components into a fully functional and optimized facility, ensuring efficient operation and performance.

Commissioning as a Holistic Process

Step-by-step phases from installation to ongoing operations



Verify correct installation and operation

Check each component against design requirements to ensure proper setup and function.

Coordinate components into functional systems

Integrate individual components and optimize for unified operation within the building.

Document performance standards and decisions

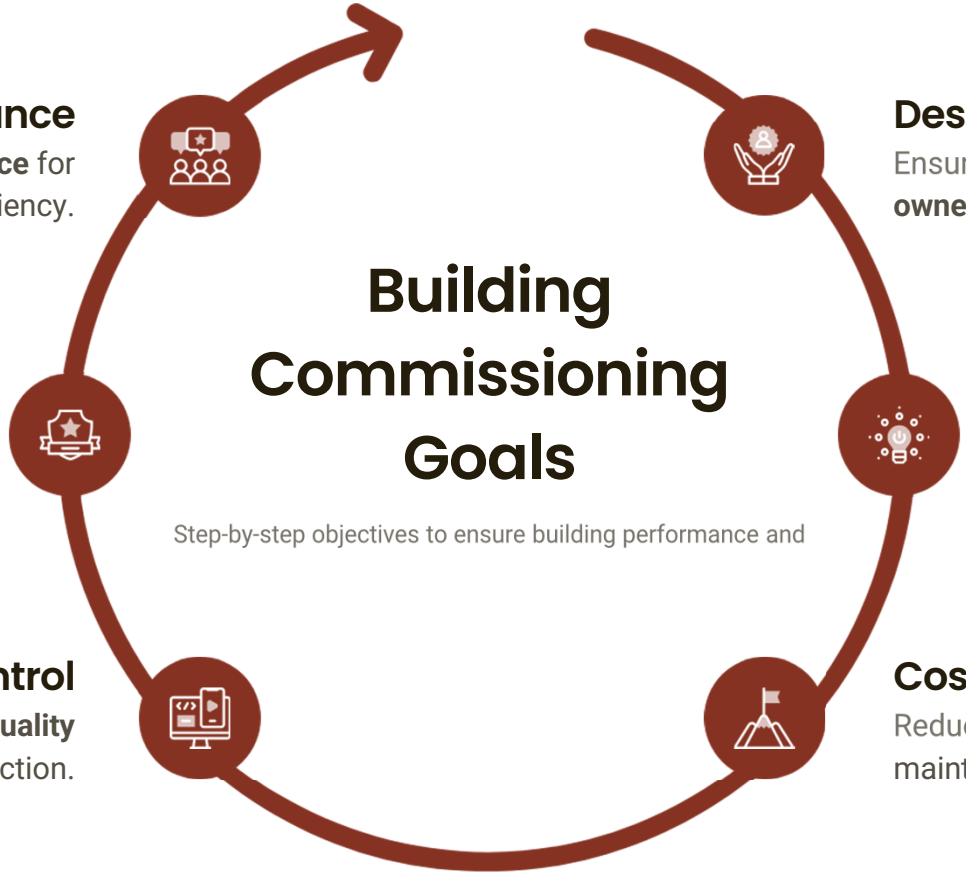
Record standards of performance and maintain a historical roadmap of project decisions.

Span process from planning to ongoing operations

Commissioning covers pre-design, planning, occupancy, and continuous operational phases.

Building Commissioning Goals

Step-by-step objectives to ensure building performance and



Performance

Optimize building **performance** for comfort and efficiency.

Design Intent

Ensure the building meets **design** and **owner** requirements exactly.

Accurate Docs

Provide precise **documentation** for future operation and care.

System Check

Verify all systems are installed and operate as **required**.

Quality Control

Prevent issues with proactive **quality** and early detection.

Cost Saving

Reduce **energy**, operations, and maintenance **costs** effectively.

Primary Benefits of Commissioning

Understand how commissioning improves building performance and occupant satisfaction

Mitigate risk and ensure performance

Commissioning helps identify and address **issues early**, ensuring the building operates as intended and reducing failures.

Enhance occupant safety and comfort

Proper commissioning ensures ventilation and fire safety systems work correctly, creating a healthier, safer environment.

Deliver energy and cost savings

Commissioning provides **measurable reductions** in energy consumption and operational expenses through system optimization.

Reduce change orders and delays

By verifying design and installation early, commissioning minimizes costly modifications and keeps projects on schedule.

Improve system and equipment function

Commissioning fine-tunes equipment performance, ensuring all systems function effectively and reliably throughout lifecycle.

Facilitate smooth design to operations

Commissioning bridges gaps between design intent and operations, enabling efficient building management from day one.

Benefit Highlight: Unlock Energy Savings with Building Commissioning

Discover how commissioning reduces energy costs and extends equipment life effectively

01

Commissioning delivers promised energy savings

Commissioning ensures buildings perform as intended, lowering utility bills and shortening payback periods by realizing energy savings and emissions reductions.

02

Commissioned buildings cut operating costs by 8–20%

According to the GSA's Building Commissioning Guide, commissioned buildings operate at 8–20% lower costs compared to non-commissioned ones, providing significant financial benefits.

03

Additional savings from reduced repairs and longer equipment life

Commissioning also reduces repair and replacement expenses and extends the lifespan of building equipment, further enhancing overall cost savings.

Benefit Highlight: System & Equipment Functionality

Key advantages of commissioning for systems and equipment performance

Verify correct installation and operation of systems and equipment

Ensure all systems and equipment are installed properly and functioning as intended to avoid future issues and inefficiencies.

Use commissioning documentation as performance benchmarks

Commissioning records provide standards for future checks, helping to verify ongoing system performance against initial benchmarks.

Support longer equipment lifespan and reduce maintenance

Proper commissioning helps extend equipment life and lowers the frequency and cost of future maintenance by ensuring optimal operation from the start.

Benefit Highlight: Improved Project Integration

How commissioning enhances collaboration and project flow from design to operation

Bridges gaps between stakeholders

Commissioning connects owners, design teams, contractors, and occupants to improve collaboration.

Enhances communication and training

Improves information flow and prepares teams with necessary knowledge for project success.

Reduces delays, improves quality

Helps to avoid project hold-ups while ensuring consistent and high-quality outcomes.

Facilitates smooth project transition

Supports seamless movement from design through construction to operation phases.

What Drives Building Commissioning Projects?

Key factors motivating commissioning for better building performance

Achieve energy efficiency and sustainability goals

Building commissioning helps meet targets for reducing energy consumption and promoting sustainable practices in building operations.

Ensure code compliance

Commissioning verifies that building systems meet required codes and standards, avoiding regulatory issues and ensuring safety.

Reduce energy, operating, and maintenance costs

By optimizing building systems, commissioning lowers ongoing expenses related to energy use and facility upkeep.

Improve building function, performance, and controls

Commissioning enhances how building systems operate, ensuring better performance and control for occupants and managers.

The 4 Most Common Types of Commissioning

An overview of key commissioning types to ensure building efficiency and performance

Type of Commissioning	When It Is Applied	Purpose/Benefit
New Construction Commissioning	During design and construction of new buildings	Prevents issues early in the building process
Re-Commissioning	For existing buildings that were previously commissioned	Ensures continued system efficiency and operation
Retro Commissioning	For buildings never commissioned before	Addresses existing operational issues and improves efficiency
Continuous Commissioning	Ongoing process using technology	Optimizes building performance over time

New Construction Commissioning Explained

Understand key steps and benefits in early building phases

01 Begin commissioning early in design and construction

Starting commissioning activities during design and construction phases helps identify potential issues before they escalate, ensuring smoother project delivery.

02 Focus on the most common and impactful commissioning type

New construction commissioning is widely used because it significantly improves building outcomes and long-term performance.

03 Enable preventative measures to avoid costly issues

Commissioning allows teams to detect and fix problems early, reducing expensive repairs and downtime after project completion.

04 Establish baseline for building performance

Setting baseline performance standards during commissioning ensures the building operates efficiently and meets design intent.

Re-Commissioning & Retro Commissioning

Understanding processes to improve building performance and efficiency

Verify And Improve Performance Of Aging Buildings

Re-Commissioning Focuses On Buildings That Have Already Been Commissioned, Helping To Identify Inefficiencies And Prevent Failures By Ensuring Existing Systems Perform Optimally.

Target Buildings Never Previously Commissioned

Retro Commissioning Addresses Buildings That Were Never Commissioned. It Resolves Design And Construction Defects While Adapting The Building To Changing Usage Patterns.

Focus On Energy Savings And Operational Improvements

Retro Commissioning Aims To Enhance Energy Efficiency And Optimize Operations, Leading To Cost Savings And Improved Functionality In Buildings.

Continuous Commissioning Overview

Step-by-step approach to ongoing building performance and energy management

Ongoing commissioning approach

Tailored to evolving operational and sustainability goals over time.

Optimal building operation alignment

Ensures building functions meet current needs, not just original design.

Innovative energy management technologies

Uses advanced tools to monitor energy use and resolve operational issues.

Retrofit identification and performance improvement

Supports finding retrofit opportunities and continuous enhancement of building performance.

The Building Commissioning Process

Step-by-step phases to ensure building systems meet owner requirements

01

Pre-Design / Planning

Identify commissioning team, define owner's project requirements, and develop preliminary plan and budget.

02

Design

Create detailed system specifications, conduct commissioning reviews, and refine the commissioning plan.

03

Construction

Verify system installations, perform start-up, conduct performance testing, and provide training.

04

Issue Resolution

Identify, document, communicate, and proactively resolve problems during commissioning.

05

Occupancy and Operations

Finalize documentation, perform deferred testing and re-inspections, and complete commissioning report.

Contact Highland Commissioning's expert team for tailored solutions that ensure efficient, sustainable, and reliable facility operations.

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