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WELCOME TO BEYOND MONITORING BASED COMMISSIONING - MBCX

ONLINE TRAINING

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05

Implementation Phase - MBCx

SECTION - MBCX



The objectives of the implementation phase are to implement the approved ECMs and FIMs and confirm they are operating correctly.



Learning Objectives

- Brief Introduction
- Activities during Implementation Phase
- Identify and Implement Corrective Actions, and Update the Facility Documentation
- Verify Performance Improvement
- Implement Reporting, Documentation, and Training

Introduction

Implementation Phase Cx tasks include these activities:

- Prepare an Implementation Plan
- Implement Selected FIMs
- Verify Successful FIM Implementation
- Adjust Energy Savings Estimates and Measure Costs
- Review and comment on remediation designs by a design professional
- Execute Measurement and Verification Plan and Metering (If in Scope)
- Update EBCx Documentation/Prepare Implementation Phase Summary Report
- Plan for Ongoing Commissioning
- Obtain Owner Acceptance and Written Decision to Proceed



MBCx Investigation Phase – Activities

Once the EMIS has been commissioned and any periodic review/update requirements have been defined, the MBCx program moves to the Implementation Phase. Refer to the MAP as the key document defining the monitoring phase activities using the EMIS. The following steps define the ongoing MBCx Implementation Phase:

- Identify issues and opportunities using EMIS and MAP, and identify highest priority issues for further action
- Investigate root cause for prioritized issues
- Identify and implement corrective actions, and update facility documentation
- Verify performance improvement
- Implement reporting, documentation, and training
- These MBCx Implementation steps are further defined in the following sections.

Identify Issues and Opportunities Using EMIS and the Monitoring Action Plan

- The MAP defines the metrics and analytics that will be included in the EMIS to help identify issues and opportunities for improvement.
- Using the EMIS to identify issues can consist of a combination of FDD analytics and and/or manual review of performance indicators and automated charts.
- The issues and opportunities identified will be compiled in an Issues Log, prioritized based on severity and cost



Investigate Root Cause

After issues or opportunities are found using the EMIS, the cause of the problem will be determined by reviewing BAS trends, setpoints, and controls programming, and through field investigation of equipment. The results will again be tracked in the Issues Log.

NEXT



Identify and Implement Corrective Actions, and Update the Facility Documentation

In planning the MBCx process, it is critical to define how the analytics will be acted upon and used to support building operations. The plan for follow-up and corrective actions for the issues found through the MBCx process is as follows:

- Monthly team meetings (or more frequent as needed) with the energy manager and facilities staff to communicate the results of performance monitoring and review/prioritise any identified issues.
- Prioritise issues based on their relative severity and cost, as provided by the EMIS savings estimates.
- Cost thresholds are set with management for approval of corrective actions.
- Improvements identified and approved will be manually inputted into the work order system. FutureSystem enhancements may include automated work order generation.

Verify Performance Improvement

- Once measures are implemented, they will be verified to ensure proper implementation.
- Then FDD rules or performance indicators will be updated to detect degradation or failure of the measure automatically.
- EMS metering and analysis capabilities may be utilised to automatically quantify energy and cost savings.

Implement Reporting, Documentation, and Training

Documentation will aid in the persistence of benefits from the MBCx process. The following documents will be updated by the MBCx team on a quarterly basis:

- Issues Log
- Sequences of operation and controls, as-built documents
- As-built and record documents for the building
- Updates to the CFR, if facility needs have changed
- Training records
- Energy savings and return-on-investment reporting

Section 3: MBCx Implementation Phase			
3.1 Identify issues and opportunities using EMIS	The core of MBCx is implementation of the Monitoring Action Plan. Key performance indicators (KPIs) and analytics will be reviewed in the EMIS to help identify issues and opportunities for improvement. Results will be compiled in an Issues Log.	Building engineers and MBCx providers	
3.2 Investigate root cause	After issues or opportunities are found using the EMIS, the cause of the problem will be determined by reviewing BAS trends, setpoints, and controls programming, and through field investigation of equipment. The results will be tracked in the Issues Log.	Building engineers and MBCx providers	
3.3 Identify and implement corrective actions, update facility documentation	The corrective actions implemented may be in the form of a maintenance action, setpoint modification, control sequence modification, or recognition of needed capital improvements (capital improvements may be outside of the MBCx process). Implementation will be tracked in the Issues Log, and changes will be updated in relevant building documentation.	Building engineers, contractors, and MBCx providers	
3.4 Verify performance	To verify that the building systems are operating as intended, energy savings will be estimated at whole building level. EMIS metering and analysis capabilities will be utilized to automatically quantify energy and/or cost savings (see Appendix D for guidance on configuration of the EMIS to track energy savings and identify energy anomalies).	Building energy managers and engineers, and MBCx providers	
3.5 Implement reporting, documentation, and training	The following documents will be updated by the MBCx team on a quarterly basis: Issues Log; Sequences of operation and controls as-built documents; as-built and record documents for the building; updates to the CFR if facility needs have changed; training records; energy savings and return-on-investment reporting.	Building energy managers and engineers	



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