
AABC Commissioning Group

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Integrate Operational Readiness Services with Building Commissioning

Course Number: CXENERGY1830



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Course Description

In the period of time between general contractor turn over and operational readiness, there is an opportunity for commissioning firms to integrate unique commissioning services that will assist the new operators with this transition. Attendees will learn methods and techniques integrating operational readiness services into their existing commissioning service offerings and implementing them during the commissioning process. By utilizing the time between design release and building start up, the commissioning professional can lead the effort to prepare and even commission these services. The integrated offering will not only enhance a firm's revenue stream but elevate the key role and capabilities of the commissioning industry.

Learning Objectives

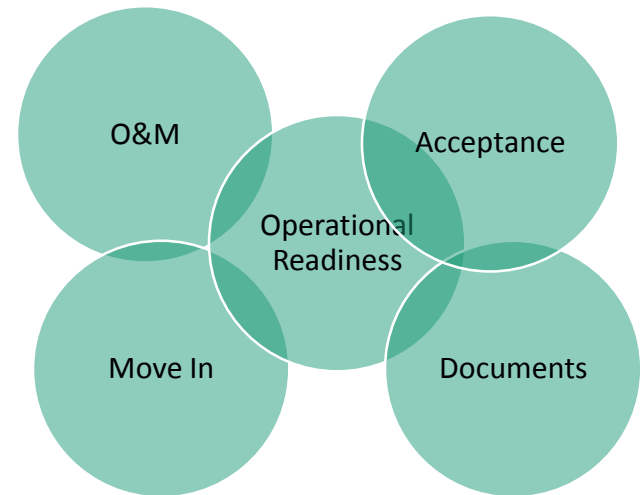
At the end of the this course, participants will be able to:

1. Understand what is operational readiness.
2. Commissioning firms traditional roles in the operational readiness process.
3. Identify opportunities to provide additional services that will enhance and accelerate the operational readiness process.



What is Operational Readiness

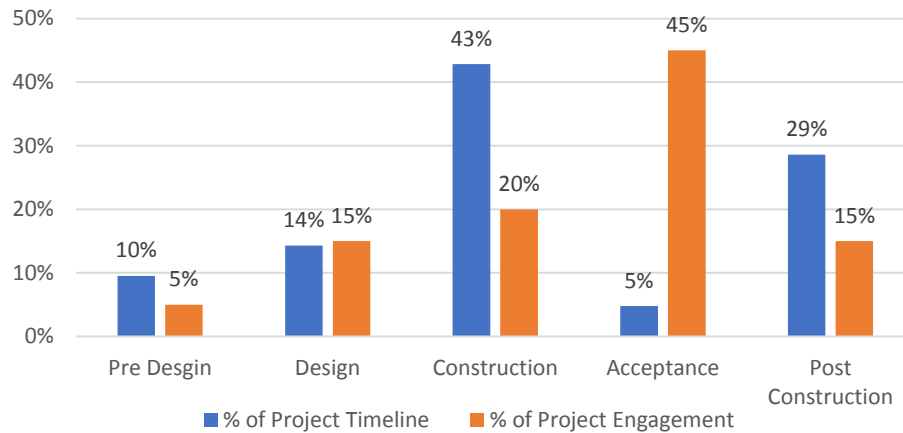
1. Period of time when the construction has been completed and the facility is ready for its intended purpose.
2. Transition of ownership from the builder to the building owner.
3. Owner preparing the building for use.
5. Stocking and Move In
6. Facility related activities include:
 - a. Acceptance phases of Commissioning
 - b. Equipment and furniture move in and setup
 - c. Start of maintenance and operation programs
 - d. Start of health and safety programs
 - e. Asset inductions
 - f. Start of documentation management
 - g. Contractor punch list and change order work



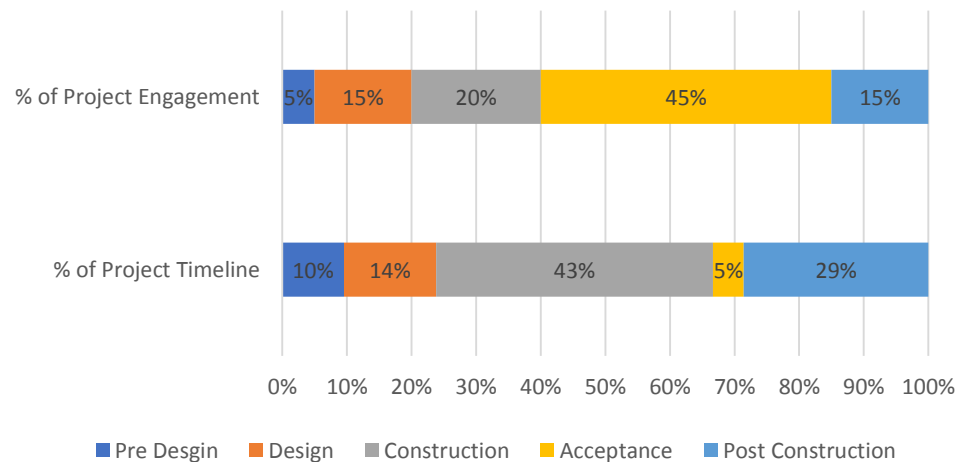
Background

1. Our firm identified productivity and engagement gaps between the development of construction documents and the constructing of the building.
2. These gaps caused a lack of continuity in project engagement, as well as dips in cash flow generation.
3. These gaps could last months or years. We sought to seek opportunities to find addition scope of services that filled in the gaps.
4. We found that keeping project engagement aloud us to keep in touch with the projects, changes, and updates, as well as maintain a steady cash flow through the project.
5. More Commissioning Firm Engagement = More Successful Operational Readiness

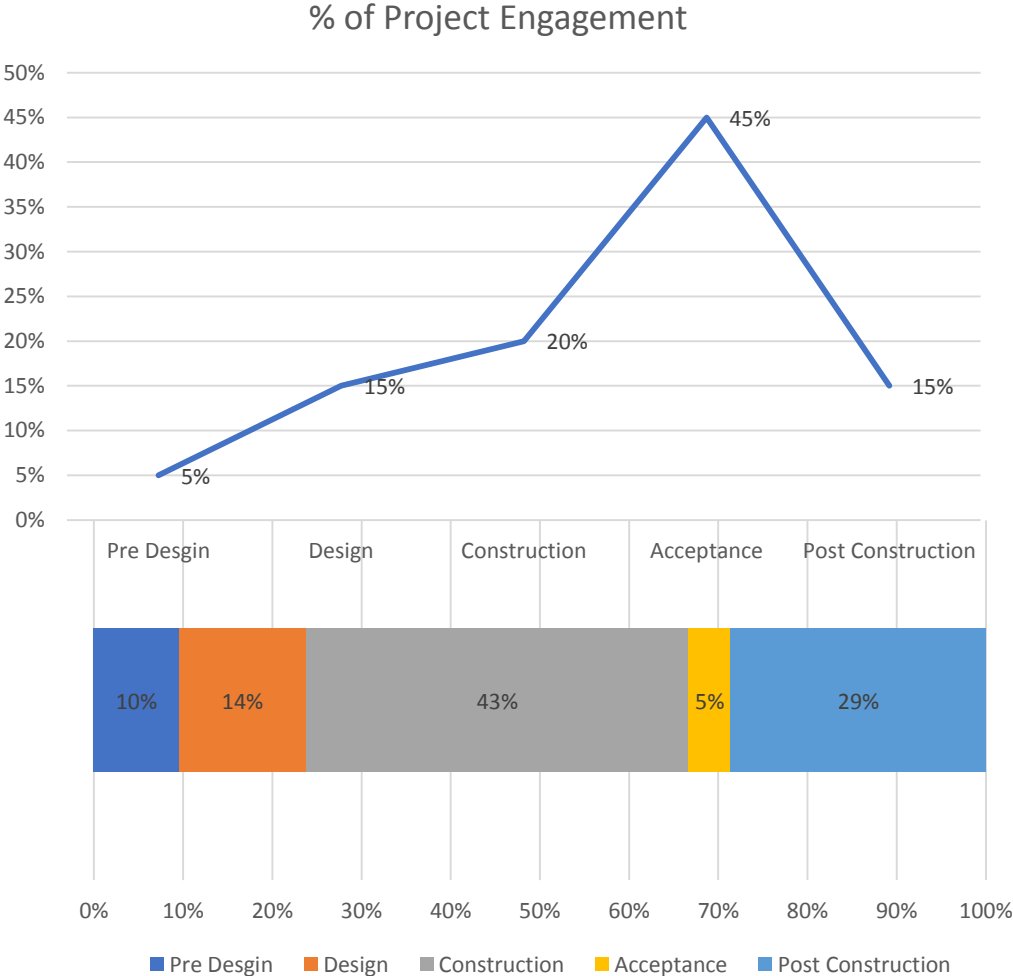
Engagement vs. Project Time



On a typical commissioning project, our maximum project engagement occurred during the acceptance phase



Engagement vs. Project Time (Cont.)



Trends in Commissioning and Operational Readiness

1. Our firm has identified that commissioning standards and specifications are requiring the commissioning firms to perform O&M planning tasks outside of the Traditional Systems Manual and Commissioning Report
2. For example, the current UFGS 01 91 00 Whole Building Commissioning is requiring Commissioning Specialist to provide the following.
 - a. Selection of Computerized Maintenance Management Systems
 - b. Maintenance Plan
 - c. Service Life Plan or Life Cycle Analysis
3. We decided to build upon these trends by offering additional services.

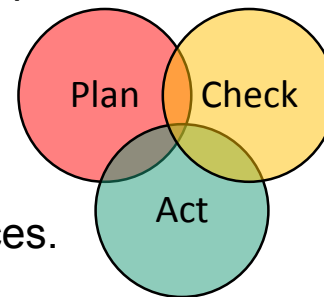


Criteria for the Additional Operational Readiness Services

- ✓ 1. Provide additional scope of services that could be developed and executed during the design, construction ,and acceptance phase.
- ✓ 2. Must be a direct benefit to the client.
- ✓ 3. Must not negatively impact the design process, commissioning service, construction activities, or move in schedules.
- ✓ 4. Keep our firm engaged with the project pre and post operational readiness.
- ✓ 5. Complement the Commissioning process: quality assurance, testing, operation and maintenance, and documentation.

Who Plans Operational Readiness Activities?

1. Project dependent.
2. Simple, smaller projects Owners may elect to perform internally. Larger and complex projects a transition consulting firms is usually hired.
3. Typically, these additional services are provided to the client through a separate contract that is not tied to construction.
4. Sometimes clients may elect to use OpEx funding oppose to CapEx.
5. Some clients may have different departments that are responsible for these services: Engineering, Operations, Maintenance, Facilities, Environment Health & Safety.....
6. It is important for the Cx firm, to learn and understand the client's structure before soliciting these additional services.



Example of Additional Services

- 1 Lockout / Tagout Programs
2. Standard Operating Procedures (SOP) Development
3. Assist Induction
4. Maintenance Programs
5. Documentation Management
6. Metrology Program Development

We will take about each one of these items.

Offering #1 Develop, Test & Train Lockout-Tagout Programs

1. Lockout / Tagout (LOTO) is a program that places procedures and safeguards to allow personal to safely isolate and document hazardous energy.
2. Traditional used with electricity, but can apply to steam, high pressure gases, water, and other fluids.
3. Commissioning firms are well suited to write LOTO plans and procedures.
4. Opportunities LOTO equipment specifications can occur during design review.
5. Commissioning firms can write procedures during the Construction Phase.
6. Procedures can be tested and verified during the Acceptance Phase.
7. Training can occur during the Acceptance Phase.



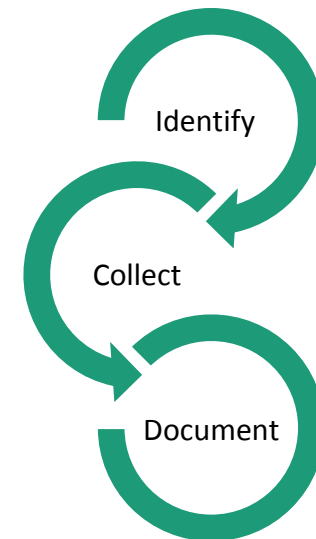
Offering #2 Write and Test Standard Operating Procedures (SOP)

1. SOP is step-by-step instructions for personal to carry out tasks operations.
2. SOPs aim to achieve quality and uniformity of work.
3. Many regulated businesses, organizations confirming to quality standards ISO, Six Sigma, GxP, etc. require SOPs.
4. Commissioning firms are well suited to write SOP for MEP, HVAC, and automated systems.
5. Commissioning firms can write SOPs during the Construction Phase.
6. SOPs can be tested and verified during the Acceptance Phase.
7. SOP training can occur during the Acceptance Phase



Offering #3 Verify and Support Induct Asset

1. Asset induction is the process for documenting critical information for fixed assets.
2. Information is used by accounting, maintenance, and quality departments
3. Programs include identifying what are assets, their classification, and required information.
4. Critical information can be identified during the Construction Phase and can be collected, verified, and documented during the commissioning process.



Offering #4 Maintenance Programs

1. Write and test equipment maintenance procedures.
2. Identify consumables and materials required for maintenance.
3. Determine time requirements
4. List special tools, materials or equipment
3. Establish frequency and resources required
4. Determine maintenance impacts: shutdown, cleaning, etc.
5. Type of maintenance: Preventive Maintenance, Predictive Maintenance, Corrective Maintenance, Situational Maintenance (SIT), etc.
6. Assist in the procurement of vendors and materials.
7. Establish CMMS requirements.



Offering #5 Documentation Management

1. Organize the construction and design team documents from a structure built for construction to one designed for operations and maintenance.
2. Beyond O&M and as built: Organize RFIs, drawings, RAW format files, design evolution logs, submittals, shop drawings, BIM model, meeting minutes, certifications, purchase orders, permits, OPR, BOD, quality testing, warranty letters, P&IDs, calibration certificates, etc.
3. Integrate construction documents with Owner Purchased Contractor Installed or Owner provided service provider documents.



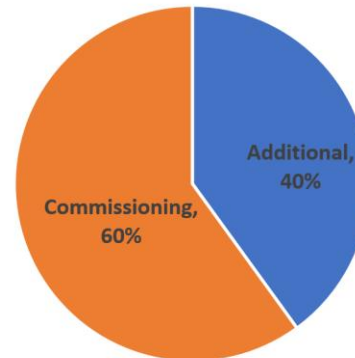
Offering #6 Metrology Program Development

1. Calibration and adjustment of critical instrumentation and field devices.
2. Required in many regulated and quality control environments.
3. Involves identifying critical instruments,
4. Researching manufacturer and regulator requirements
5. Developing SOPs and schedules for calibration.



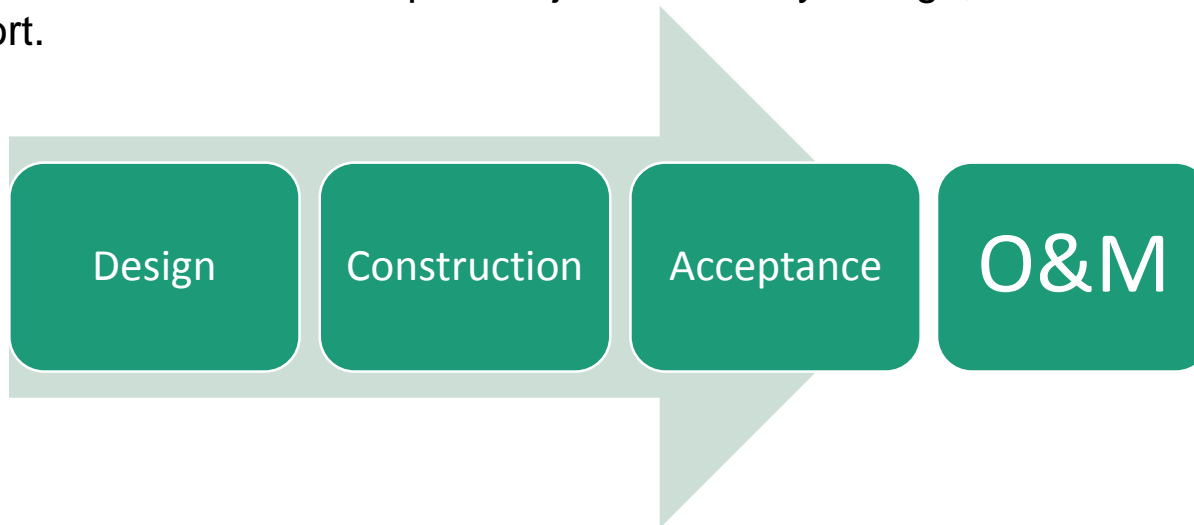
Our Results After Offering These Services.

1. Over 40% of our work comes from additional offerings.
2. On projects with additional offerings
 1. We are more engaged during the construction
 2. Our clients ask us to provide additional services post construction – post acceptance
 3. Our firm provides these services through the life of the building.



Closing Thought

1. The industry typically views Commissioning Firms as people that test and verify systems and equipment post construction.
2. Only a few people understand that commissioning involves operation and maintenance turn over, documentation quality, and training.
3. Our firm is marketing commissioning as Operation & Maintenance Specialist. We are a service that can be called upon for just about any Design, Construction, and O&M support.



This concludes The American Institute of Architects
Continuing Education Systems Course

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