



How to embed commissioning expertise into your facilities management teams

A guide to bridging the gap between data center construction and operations



Contents

| | |
|--|----|
| Introduction | 03 |
| Heightening pressure for commissioning teams | 04 |
| Redefining expectations of commissioning providers | 05 |
| How your commissioning provider can ease the way to smooth operations | 06 |
| Benefits of collaboration throughout the commissioning process | 08 |
| How to find a commissioning provider that will integrate with your FM team | 09 |
| About JLL | 10 |



Introduction

Imagine this scenario: Three months after your new data center goes live, a generator begins to overheat, requiring an emergency shutdown. Who would you rather have sitting in the seat to hit the emergency power off (EPO) button?

- A.** An engineer trained in another data center with a generator made by a different manufacturer
- B.** An engineer trained in your new data center during the commissioning process, who had observed testing and knew the exact protocols to follow to get the system back up and running

All other factors being equal, most data center operators would want Engineer B in that seat. Hands-on training with the exact equipment, in the real environment, offers an incomparable learning experience. However, despite many benefits, most facilities management (FM) teams do not have the opportunity to participate in the commissioning process during new facility construction or retrofits.

In most cases, the reason is because the two services operate in siloes. Commissioning experts remain laser-focused on their systems testing while the onsite operations teams get the facility open for business. *This is understandable. But it's also a missed opportunity to get your data center on solid footing right out of the gate.*

Collaboration with your commissioning provider improves your FM team's preparedness to operate the facility and maintain uptime, and it should begin long before shovels hit the ground in any new development or retrofit. This guide demonstrates why including your FM team in the commissioning process is important and how to select a provider that will embrace partnership.

Heightening pressure for commissioning teams

When a data center project is ready to go live, there is zero margin for error during the commissioning process. Data centers need highly specialized professionals to ensure all equipment is installed and tested correctly and operates seamlessly, with 99.999% uptime.

This is especially true today, as the explosion of Artificial Intelligence and machine learning is driving unprecedented demand for larger and more powerful data centers. Myriad factors — power constraints, obsolete infrastructure and expiring technical lifespans — have increased the scarcity of both land and power for data center facilities. Rapid growth has also created a labor shortage, prompting companies to recruit and train fresh talent for data center design, construction and FM jobs.

In this environment, it is more important than ever for commissioning providers to lead the transition process from project to FM, to ensure successful operations and maintenance from day one.

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Redefining expectations of commissioning providers

Commissioning providers have long served an important role in data centers. They ensure all components, systems and equipment are designed, installed and tested according to the owner's project requirements (OPR). The commissioning team also ensures optimal performance and reliability.

The nature of this job puts your commissioning provider in a unique position: a link between the design and construction professionals who leave when the site is operational and the FM team that will manage the facility for the long term. Your commissioning provider can serve as a powerful advocate and partner to the FM team in the following ways:



Providing input during programming and design to ensure that operational and maintainability concerns that are critical to FM teams are accounted for



Offering opportunities for the FM team to gain on-site training during all testing phases



Providing a thorough hand-off of knowledge and documentation to the FM team

Close coordination between facility management and commissioning teams helps ensure facilities are built for optimal operations and that your operations staff receives robust, hands-on training.





How your commissioning provider can ease the way to smooth operations

Many commissioning providers begin delivering services during the programming or pre-design phase of data center projects in adherence with the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) Guideline 0, which outlines best practices for the commissioning process. This is also the stage when the commissioning provider and FM team should begin coordinating.

However, most commissioning providers perform their function independently of the FM team until testing is complete. Their transition to the FM team doesn't happen until the end of the project.

Truly embedding your FM team in the commissioning process requires deliberate steps to promote close collaboration throughout a project's entire development.

The following graphic illustrates how the teams can partner throughout the process of developing and retrofitting data center facilities, from programming and design through the transition to daily operations.

Integrating FM throughout the commissioning process

Examples of ways your commissioning provider can collaborate with your FM team from pre-design through transition to operations.



Design: Levels 0 & 1

Programming, design and factory acceptance

- Ensure the Owner's Project Requirements (OPR), Basis of Design (BOD) and construction documents address facility management, operations and maintenance requirements
- Include details of FM trainings in the commissioning plan
- Transfer learnings gained through quality assurance/quality control visits to FM team



Construction: Levels 2 & 3

Site acceptance, startup and pre-functional testing

- Represent FM's needs during site inspections and equipment startup
- Ensure that the engineer-of-record, general contractor and trades establish a document repository to collect, save and organize documentation in accordance with FM requirements
- Ensure that FM technology platforms are populated with documentation as it becomes available



Acceptance: Levels 4 & 5

Functional performance and integrated systems testing

- Coordinate acceptance testing schedule with the FM team when their witnessing is necessary or would provide training benefit
- Provide opportunity for FM team to observe functional performance tests and integrated systems tests, which provide valuable opportunities to see the facility in operation and gain hands-on experience with the equipment



Transition: Level 6

Transition to operations

- Compile systems manuals with all required information to operate the facility
- Develop and oversee FM staff training
- Coordinate with FM to perform seasonal testing and perform warranty review to ensure issues are resolved prior to warranty expiration

Benefits of collaboration throughout the commissioning process

As illustrated above, each stage of commissioning provides opportunities to help set up the FM team for long-term success. Collaboration throughout the process results in a more prepared and better-trained staff, supporting your uptime mandate.



Programming and design

The programming and design phases lay the groundwork for effective communication. Throughout the development of your OPR and basis of design (BOD), a commissioning provider that understands the intricacies of managing data centers will be able to represent FM's best interests and ensure your data center is optimally designed for ongoing operations.

Additionally, having your commissioning provider specify training requirements in the commissioning plan and contract will ensure FM training needs are fully met later in the process. The plan should include details on training content, delivery methods, timing and the parties responsible for delivering training.



Construction

During construction, your commissioning provider can represent FM's needs during site inspections and equipment startup by ensuring that equipment is accessible and maintainable. They can also invite FM to participate in select progress

inspections and pre-functional tests. Participating in pre-functional testing gives your operators a chance to ask questions of the equipment vendors and gain hands-on experience with the equipment in a controlled environment.

At this stage, the project team will start accumulating documentation. The commissioning provider should ensure that installation, operation, and maintenance manuals are being collected, and contractor inspection and static testing reports are through and complete prior to turnover.



Acceptance

The acceptance phase is one of the most critical times to involve the FM team in the commissioning process. The people responsible for day-to-day operations can see how the system responds to various load conditions as well as how equipment responds during power, and/or equipment failure, for example. They can also collect baseline performance data that will be helpful for troubleshooting issues in the future.

One of the leading causes of downtime is operator error, which is why training is so critical. The sooner you can let your operators see the equipment in action, the more opportunity they will have to understand how the system works — making them more prepared to respond accordingly during an unexpected incident after the data center goes live.



Transition

An efficient and effective transition from acceptance testing to operations requires close coordination throughout the process by the commissioning team. A proactive commissioning provider can ensure timely delivery of FM required documentation, including operating and maintenance manuals, that are critical to a successful handoff.



Long-term operations

After your new facility is fully operational, engaging your commissioning provider for seasonal testing, warranty checks, and continuous commissioning programs can ensure your site is optimized over the long-term. A strong working relationship between your commissioning provider and FM team can bring peace of mind given that testing in any live environment comes with additional risk.

How to find a commissioning provider that will integrate with your FM team

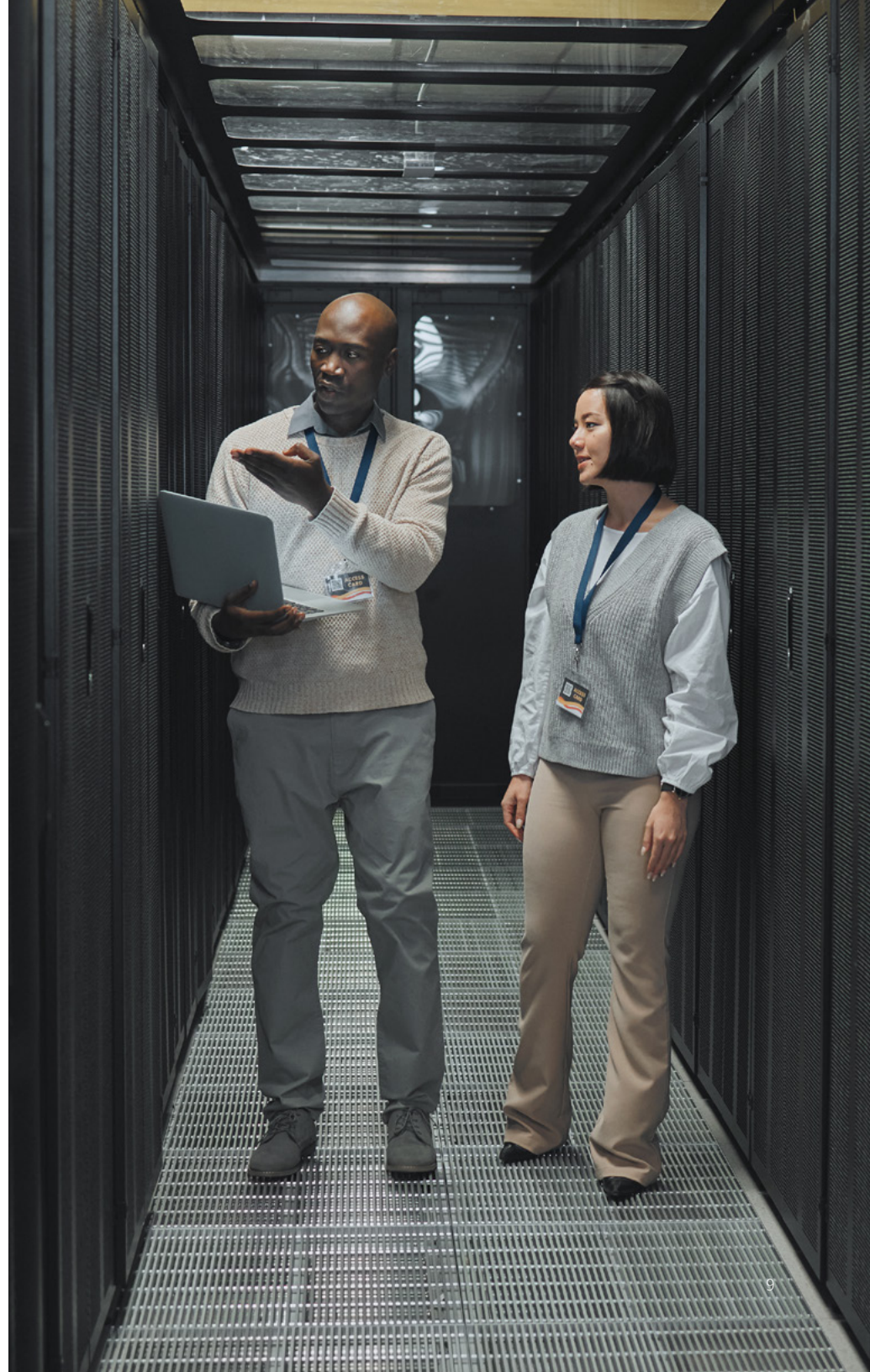
Embedding your FM team into the commissioning process starts with finding a commissioning provider that understands the intricacies of data center FM and values real-world collaboration. It helps to have a partner with a vested interest in ensuring your day-to-day team is set up for success.

As you vet potential partners, ask the following questions to help you identify a provider with the right skill set, along with a collaborative approach:

- Is operations and maintenance training included in the contract? If yes, what level of detail is offered?
- What is your experience with data centers and mission-critical facilities in general?
- What certifications do you hold?
- What is your approach to integrating the FM team into the commissioning process?

The answers to these questions will help determine if the commissioning provider will go above and beyond to ensure a smooth transition to ongoing operations.

With the right partner, your FM team will be better equipped with the knowledge, experience and confidence to operate your data center to the highest standards, reducing the risk of downtime and driving long-term success.



About JLL

JLL's Commissioning & Building Analytics team provides comprehensive QA/QC and commissioning services for major data centers and other critical environments. Our team includes mission-critical subject matter experts, commissioning and consulting professionals, certified commissioning providers, mechanical and electrical engineers, control specialists, data center operations experts and project managers — ensuring that we have the right expertise to address every aspect of your commissioning needs.

Our team of 40-plus experts is fundamentally different from other engineering and commissioning firms. We focus not only on the design, construction and acceptance testing of the facility, but also on the transition from construction to long-term operations to ensure site performance is optimized and maintained over the life of the facility. Our collaboration with our IFM business gives us deep knowledge and experience, which helps us take a vested interest in your day-to-day operations and ongoing success.

For more information, contact the [JLL Data Centers Commissioning and Building Analytics team](#) today.