



Ebook | Building automation systems

The BAS Lifecycle Playbook

How to maximize the value of your building automation system

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01

The Lifecycle Approach

Why piecemeal upgrades limit progress

Beyond piecemeal upgrades

An effective building system is the result of many factors, including energy reduction, regulatory compliance and facility management simplification. However, building systems are often designed and updated based on a piecemeal approach that focuses on a single stage of a building's lifecycle or area of operation.

By making updates in isolation or based solely on immediate needs, this approach can limit progress and overlook valuable opportunities to maximize performance.

The Lifecycle Approach: Imagine a constant circle in which technology continually monitors building systems and is constantly refreshed with the latest functionality. This approach helps deliver optimal outcomes from the building's initial design and build to commissioning and operation and any potential service or retrofit upgrades as the building ages.

The role of an intelligent BAS

An intelligent building automation system (BAS) connects commercial HVAC, lighting, security and protection systems on a single platform, making the lifecycle approach possible. Facility teams can use BAS technology to monitor assets in real time, automate processes and gain access to data and analytics that help them enhance building efficiency, occupant comfort, safety and more.

Although hardware and devices in these systems may not last for the duration of a building's lifespan, specific capabilities in dynamic BAS software can help building owners and facility managers ensure that their systems evolve to meet operational and sustainability goals across the full building lifecycle.

Four strategies for maximizing BAS value

This ebook explores four interconnected strategies drawn from the lifecycle approach, each of which builds on the last:

- Drive toward zero engineering – simplifying installation, programming and commissioning
- Shift toward continuous commissioning – leveraging remote capabilities and the digital thread
- Enable autonomous operations – maximizing the value of day-to-day BAS monitoring and support
- Deploy future-proof systems – decoupling software from hardware for seamless, ongoing upgrades

02

Driving Toward Zero Engineering

Reducing BAS complexity with plug-and-play and standardized sequences

The skilled labor challenge

Many currently available building automation systems require specialized expertise to install, program and commission. Because of skilled labor shortages, service providers are using the lifecycle approach and implementing plug-and-play BAS technologies and factory-connected assets. This is helping to move the industry closer to the zero-engineering concept.

What is zero engineering?

Zero engineering reduces BAS tool complexity and relies on artificial intelligence (AI) and machine learning (ML) to make processes simpler and more efficient. One key way to reduce engineering is by avoiding time-consuming and costly customized control sequences in favor of standardized ones.

ASHRAE GUIDELINE 36: Using proven control sequences according to ASHRAE Guideline 36 – High-Performance Sequences of Operation for HVAC Systems (G36) – helps to maximize HVAC control stability and provide insights through real-time fault detection and diagnostics.

From complexity to value-added services

From factory-connected, plug-and-play assets to zero-engineering BAS technologies, contractors and technicians can reduce the learning curve associated with BAS programming and installation. Instead, they can use their time to focus on value-added services and maximize an organization's capital expenditure (CAPEX) investment.

Key shift: The zero-engineering concept moves the industry away from requiring specialized expertise for every installation. Plug-and-play technologies and factory-connected assets reduce complexity, enabling technicians to focus on delivering value rather than navigating programming challenges.

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Continuous Commissioning

Remote, connected commissioning that reduces cost and human error

Beyond traditional commissioning

Following BAS installation and programming, the next step is deployment and commissioning – a process that often requires specialized, on-site personnel such as a dedicated commissioning agent. This specialist ensures the wiring aligns from both a control and electrical engineering perspective and that the system operates as designed – a process that is critical to operational success.

In tandem with zero engineering, the industry is shifting toward continuous commissioning.

The power of the digital thread

Using a lifecycle approach, engineers and technicians can use connected controls to remotely and continuously commission building automation systems by leveraging the power of the digital thread — from the engineering phase to reducing the engineering effort and the need for on-site specialists, as well as to help minimize human error.

Remote experts supporting local technicians

Leading service providers with dedicated BAS experts can remotely support local technicians while leveraging software to diagnose commissioning issues and faults. Some service providers have developed workflow tools to guide local technicians with clear, standard processes.

This helps ensure that technicians of any skill level can effectively program and commission the system, ensuring systems are ready for use on time and within budget.

The first step: The first step toward zero commissioning starts with collaboration between remote experts and local technicians. Workflow tools with clear, standard processes enable technicians of any skill level to deliver effective results.

04

Enabling Autonomous Operations

Getting more value from your BAS through remote monitoring and expertise

Day-to-day Operations and monitoring

After BAS commissioning and integration with smart building equipment and systems, the facility team assumes day-to-day operation and monitoring. Through connected controls, teams can remotely monitor and manage a building's smart assets.

With this enhanced visibility and control, teams can get more value from a BAS which, in turn, optimizes building performance, maximizes operational expenditures (OPEX) and helps achieve positive outcomes.

Outcomes of effective BAS operations

When facility teams fully leverage their BAS capabilities, the lifecycle approach delivers the following outcomes:

- Save energy and meet decarbonization goals
- Accelerate return on investment (ROI)
- Advance operational efficiency and enhance reliability
- Maximize system performance
- Simplify building management
- Maintain regulatory compliance
- Strengthen cybersecurity
- Improve occupant productivity, comfort and well-being

Untapped potential: Because BAS can be so feature rich, understanding a system's full capabilities can be a challenge for facility teams. Many teams take advantage of just a fraction of what their BAS can do.

Expert support and remote diagnostics

Facility teams and local technicians can get support from the same BAS experts that support programming and commissioning. Using remote capabilities, these experts can connect to a building's BAS. This allows them to view and assess analytics in relation to outcomes so they can prioritize how to align the system with an organization's goals and adjust remotely.

If needed, BAS experts can also provide remote support to on-site technicians.

Transforming the service approach

Remote assessment can be especially useful for maintenance. In the current service approach, when there is an issue, a technician must make an on-site visit to determine what is needed. This trial-and-error process can waste time and require multiple visits, potentially extending downtime and impacting comfort, performance and efficiency.

A better way: With the lifecycle approach, facility managers can leverage BAS data, digital capabilities and remote BAS experts to streamline diagnostics. In some cases, remote experts may be able to address the issue immediately. If a local technician is required, they are able to understand the issue before they arrive, helping them work more efficiently, reducing costs and getting maximum value from the visit.

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Deploying Future-Proof Systems

Decoupling software from hardware for seamless, continuous upgrades

Decoupling software from hardware

A future-proof BAS is one in which the software application lifecycle is decoupled from the hardware lifecycle. The service provider continuously upgrades software over time and, when the hardware approaches end of life, it only takes a few clicks to move the software to a new hardware platform, reducing system downtime.

Separating the software lifecycle from that of the hardware allows the system to seamlessly upgrade, expand and evolve while it helps reduce costs for building owners and facility managers.

The continuous release model

Advanced BAS technologies offer software applications that upgrade within a few clicks. As in the concept of continuous commissioning, some BAS software employs a continuous release model to seamlessly update system functionality.

A continuous release model lets operators access new capabilities and features as they are developed, rather than on a periodic release schedule. This approach gives organizations more control over system functionality, since they can choose which updates and features to implement.

Key benefit: With a continuous release model, facility teams can be better equipped to respond to new and emerging challenges while achieving their goals. They choose which updates to implement, giving them more control over system functionality.

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Building a Smarter Future

Partnering for better long-term outcomes

The complete ecosystem

Building owners and facility managers can get the most out of a BAS by considering a lifecycle approach that optimizes value and achieves better long-term outcomes. By partnering with a building technology supplier with a complete ecosystem of connected technologies, expertise and services, organizations can drive results across the full building lifecycle.

Intelligent building automation systems deliver a powerful combination of technology, software, data analytics, remote support and the expertise of local specialists. With these solutions, building teams are well positioned to maximize the potential of their facility and build a future that is smarter, healthier and more sustainable.

The lifecycle in summary

The four strategies explored in this ebook form a continuous cycle:



Zero engineering

Plug-and-play BAS technologies, factory-connected assets and standardized control sequences like ASHRAE G36 reduce complexity, lower the learning curve and free technicians to focus on value-added services.



Continuous commissioning

Connected controls and the digital thread enable remote, continuous commissioning – reducing the need for on-site specialists, minimizing human error and ensuring systems are ready on time and within budget.



Autonomous operations

Remote monitoring, BAS expert support and streamlined diagnostics help facility teams unlock the full potential of their BAS – from energy savings and decarbonization to occupant comfort and regulatory compliance.



Future-proof systems

Decoupling software from hardware and adopting a continuous release model ensures BAS can seamlessly upgrade, expand and evolve – reducing costs and keeping pace with emerging challenges.

Ready to transform your building?

Partner with a building technology supplier
with a complete ecosystem of connected technologies,
expertise and services.

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