OpenBlue

Facility management in the age of AI

In the same way CAD drawing revolutionized space planning and floorplan design that was previously done by pencil and paper, artificial intelligence (AI) is driving a seismic shift in building management.

Data and integration are changing how facility leaders approach space and occupancy planning. With the list of capabilities growing rapidly, Gartner estimates that 15% of day-to-day decisions in smart buildings will be made autonomously by AI agents by 2028.[1]

Modern buildings have become much more complex to manage, fueled by hybrid work models, sustainability imperatives and rising expectations for occupant experience. Today, digital intelligence empowers facility teams to achieve better outcomes, greater efficiency and enhanced well-being for everyone who enters their buildings. But there is even more potential in these technologies to make buildings and their occupants healthier and more resilient.

AI technologies are revolutionizing the way facility managers operate by providing real-time data analytics and insights that were previously unattainable. These systems integrate seamlessly with Internet of Things (IoT) devices to allow continuous monitoring and adjustment of building operations. Facility managers can leverage that data to optimize energy consumption, reduce waste and ensure spaces are used effectively.

AI can also drive sustainability in buildings, reducing carbon footprint by optimizing resource use and supporting renewable energy integration. This is crucial as organizations strive to meet environmental goals and regulatory requirements. These same capabilities also enhance occupant well-being by ensuring superior indoor air quality (IAQ) and creating environments that promote productivity and health.

One of the most useful advantages of AI is that it can facilitate proactive maintenance by predicting equipment failures before they occur. For example, smart sensors paired with AI can detect HVAC inefficiencies and trigger an automated service ticket. This minimizes downtime, extends the lifespan of assets, reduces operational costs and overall makes building systems more reliable. By automating these routine tasks, AI allows facility managers to focus on strategic initiatives that drive value for their organizations.
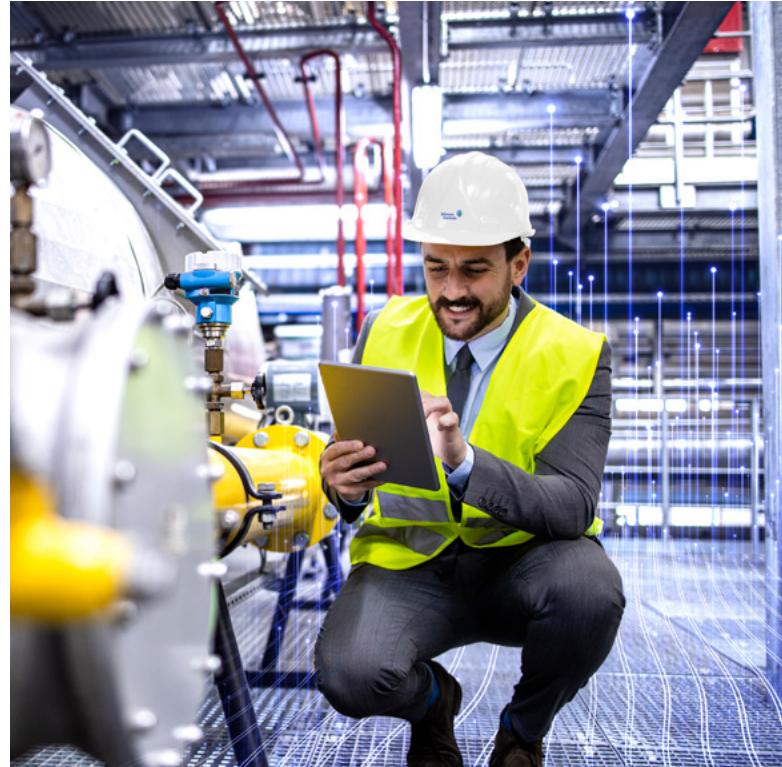
As AI continues to evolve, it will play an increasingly central role in **transforming building management.**

Facility leaders who embrace this technology are the ones who will stay competitive and meet the demands of modern building operations. By using AI, they can significantly improve energy efficiency, operational performance and occupant satisfaction, ultimately driving progress towards smart, safe, healthy and sustainable buildings.

Smarter spaces,
fewer spreadsheets

For decades, facility managers relied on manual spreadsheets, basic sensor data (or physically counting heads) and static layouts to plan and manage space. These legacy methods now struggle to keep pace with the changing demands of today's workplaces. Hybrid and flexible work arrangements have introduced unpredictability in space utilization, making it harder to forecast needs and optimize resources. The traditional approach often results in inefficiencies, such as underutilized spaces or overcrowded areas, which can lead to increased operational costs and disgruntled occupants.

Traditional space planning tools fall short in several key areas:

Counting heads, manual data entry and reporting are **time-consuming and prone to errors**, increasing the workload for facility managers and leading to inaccuracies that can affect decision-making and cause inefficient space use.

Basic sensor or badge swipe data **misses the nuances** of real-time occupancy flows, utilization and intent, preventing managers from understanding the true usage patterns of their facilities and hindering them from making informed adjustments.

Static layouts cannot adapt quickly to changing business needs or workforce patterns. As organizations evolve, their spatial requirements change and static layouts can become obsolete, leading to **inefficient use of space.**

Legacy approaches lack the agility to meet **new standards for efficiency, sustainability and user experience.** In an era where sustainability and user-centric design are expected, outdated methods can't keep up.

AI-driven building management systems (BMS) mark a turning point from spreadsheet-based management to intelligent, adaptable and automated operations.

The power of
unlimited scenario planning

AI can help facility managers develop strategies that optimize operations, occupant health, space usage and more. It opens a door to insights beyond human capability as it can analyze data from an infinite number of connected functions. In a building, this includes:

Space types	Light	Air quality
Use patterns	Energy	Security
Adjacencies	Assets	Occupancy
Assigned and unassigned spaces	Sound	Weather
Blocking and stacking	Wi-Fi utilization	Time, date and day of week
Humidity	Temperature	

As buildings become more complex and mission-critical, facility AI offers a transformative leap forward. AI empowers facility managers to move from reactive, manual processes to proactive, data-driven decision-making, unlocking new levels of efficiency and occupant satisfaction. For instance, AI can predict peak usage times, factor in weather data and adjust HVAC systems accordingly, ensuring optimal comfort while minimizing energy consumption. AI-driven insights can also guide design choices to accommodate changing workforce dynamics, such as the shift towards more collaborative environments.

AI systems can integrate with other smart building technologies, creating a cohesive ecosystem that enhances overall building performance. This not only improves operational efficiency, but also supports sustainability goals by reducing energy waste and promoting resource conservation.

By embracing AI, facility managers can achieve greater control over their environments, positioning organizations to thrive in an increasingly complex and competitive landscape.

From guesswork to
real-time space intelligence

A modern BMS uses real-time occupancy and utilization analytics, drawing on sensors, digital twins and IoT to deliver actionable insights. These systems continuously monitor how spaces are used, providing facility managers with a clear picture of actual utilization versus planned capacity. For example, a hospital can use a digital twin to simulate patient flow, energy use and fire evacuation routes.

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Over the past couple of years, we've introduced sensors to identify the types of seating that people prefer. In our UK offices, for example, we use these little cubby areas and the employees there say they love it. We introduced some of these at our headquarters and the seats are not being used. The sensors saved us a lot of time, money and effort that we might have otherwise wasted in rolling them out to other offices in the US. That data was very insightful.

Managing director of global investment management firm

Key capabilities include:

Real-time analytics

Sensors and digital twins track occupancy patterns, desk usage, meeting room bookings and movement throughout the building. This data enables dynamic adjustments to layouts and resource allocation.

Predictive forecasting

AI models analyze historical and real-time data to anticipate future space needs and resource consumption.

Automated scenario planning

Facility AI supports dynamic blocking, stacking and adjacencies tailored to business needs. Automated scenario planning allows managers to test multiple layouts and configurations, optimizing for density, energy use and occupant comfort.

Integration of diverse data streams

An AI-driven BMS unifies data from access control, collaboration platforms, environment sensors and more. This holistic approach eliminates silos, enabling comprehensive space management and reporting.

Building automation systems (BAS)

Integration with BAS forms the backbone of contemporary space planning strategies. BAS powered by AI can automatically adjust lighting, climate and other systems in response to occupancy and usage patterns.

In a survey of 750 business leaders, **76%** said they planned to deploy **generative AI** to assist with the operations and maintenance of workplaces in 2025, **up from 58%** a year prior.[2]

By harnessing these capabilities, organizations can optimize space utilization and energy efficiency in modern office environments. AI building management systems provide the intelligence needed to adapt quickly to changing demands, ensuring that every square foot is used effectively and sustainably.

Question to business leaders

Which of the following technologies are you planning to implement to assist with the operations and maintenence of workplaces over the next year?

Technology	Percentage
Gen AI	76%
Automation	46%
Machine learning	37%
Digital twins	22%
Robotics	20%

Percentage of business leaders (%)

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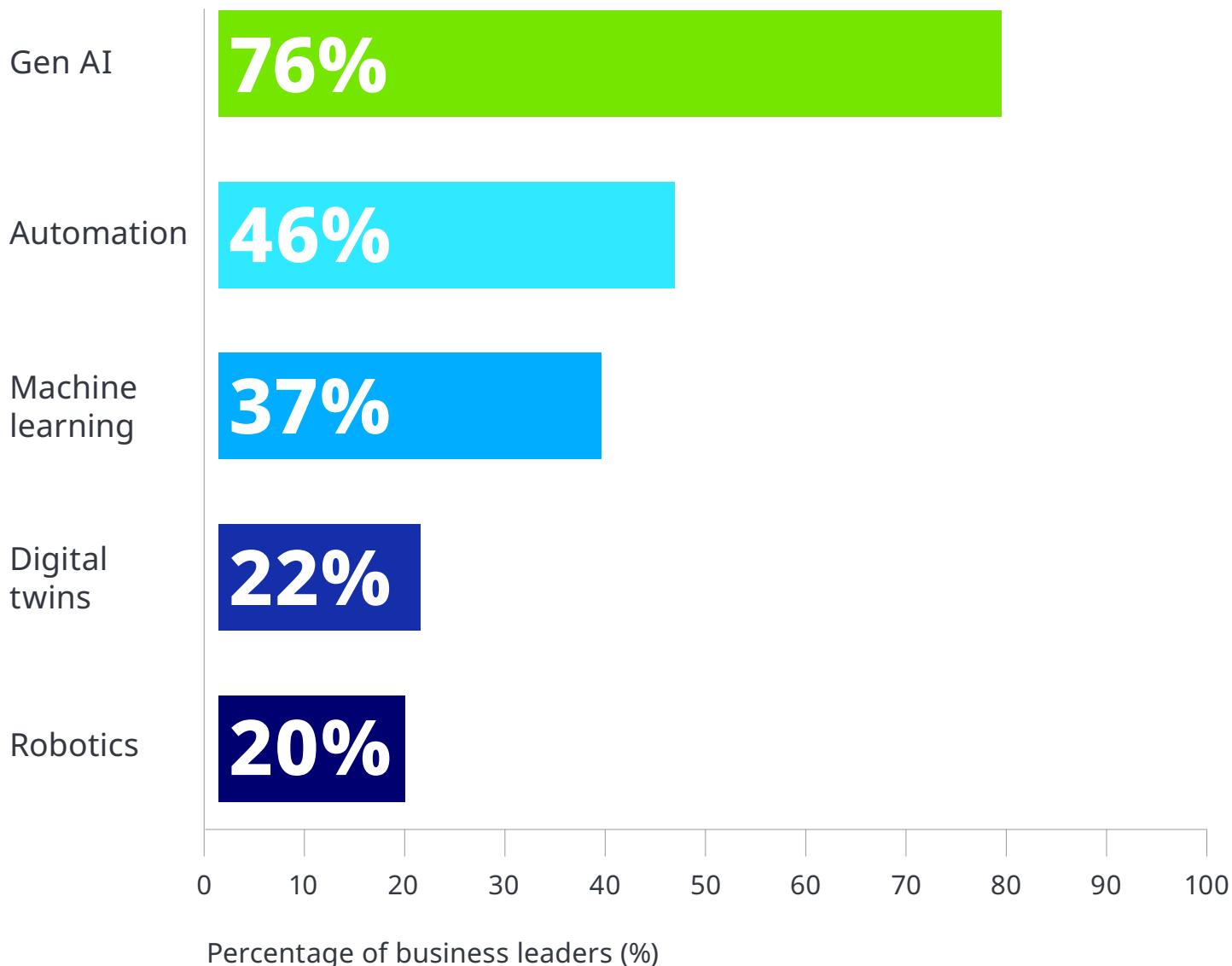
# How today's facility managers use AI in BMS

The adoption of AI in BMS is delivering measurable results across corporate, healthcare, educational campuses and more. These intelligent, automated building controls are helping facility managers reduce costs, energy use and carbon footprint, while making their environments more resilient.

AI helps facility managers improve three key areas

Energy efficiency

AI can automatically adjust HVAC, lighting and other systems controlled by BAS, based on real-time occupancy and predictive analytics. This reduces energy waste and costs, with potential savings of up to 30%.[3] By continuously analyzing data, these systems can anticipate changes in building usage and adjust settings accordingly, maximizing energy savings without compromising comfort.
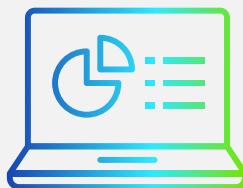
Portfolio management

Facility AI enables right-sizing and consolidation of real estate portfolios. Automated reporting and analytics minimize manual effort, providing portfolio-wide visibility and strategic insights for decision-making. This allows facility managers to optimize space utilization, reduce unnecessary expenses and make informed decisions that align with their sustainability objectives.

Occupant well-being

Data-driven allocation of amenities and environmental controls enhances comfort and productivity. AI monitors IAQ, temperature, humidity and noise levels, ensuring optimal conditions. This contributes to improved well-being and productivity, particularly in sensitive settings like hospitals and schools. Research shows productivity increases by approximately 1% for every 10% increase in air quality.[4]

Case study

Pharmaceutical industry leader transforms headquarters through system integration and AI-powered data

A multinational pharmaceutical brand sought to improve occupant comfort, employee productivity, space use and carbon management at its global headquarters. Spanning 10 floors, 5,000 assets and 2,500 employees, the HQ required a scalable, smart infrastructure as part of plans to reach net zero before 2040.

The facilities team implemented a BAS that centralized multiple systems into one integrated platform, enabling data-driven decision-making and control across HVAC, lighting and energy systems. Accessible dashboards aggregated data to reflect the building's performance, energy usage and indoor environmental quality.

This new access to a wealth of data identified opportunities to optimize energy use, avoiding potential emissions equal to removing more than 20 cars from the road per year. It also facilitated the seamless closure and relocation of a nearby 10-building campus with minimal disruption to employee productivity. These changes are projected to save the company over $100,000 annually.

AI-powered building management technology is transforming energy efficiency and occupant comfort in modern buildings. BAS streamlines facility operations, reduces maintenance costs and supports sustainability initiatives. The result is a smarter, healthier and more productive environment for everyone. As these technologies continue to evolve, they promise even greater advancements in building management, offering facility managers powerful tools to achieve their energy and operational goals.

AI turns buildings from
problems into partners

Facility managers face numerous challenges, from managing fluctuating occupancy patterns to meeting regulatory mandates for energy reduction. A BMS with AI offers powerful solutions to these multilayered problems.

Managing fluctuating occupancy: AI-driven analytics tackle the unpredictability of hybrid work and centralize data across multiple sites. Real-time monitoring through sensors enables facility managers to respond quickly to changing occupancy levels, reallocating resources as needed.

Regulatory and sustainability mandates: Automated energy and resource optimization helps organizations meet stringent sustainability targets. AI systems continuously measure and adjust building performance, supporting compliance and reporting.

Optimizing cleaning, maintenance and energy costs: Facility AI enables condition-based maintenance, prioritizing repairs based on actual equipment status rather than fixed intervals. This reduces downtime and costs, ensuring maintenance resources are used efficiently.

Personalizing workspace experiences: AI matches employee preferences with available space, creating personalized environments for occupants. The same systems that track resources and energy can also help people reserve desks, meeting rooms and amenities, enhancing satisfaction and productivity and streamlining communication.

Maintenance scheduling: AI automates maintenance scheduling, reducing manual effort and minimizing unplanned outages. Predictive analytics identify potential issues before they escalate, extending asset lifespans and improving reliability. A study from Forrester found that AI systems could reduce chiller maintenance by 67%.[3]

Facility AI empowers real-time monitoring and data-driven decision-making. By optimizing maintenance scheduling and enabling condition-based maintenance, AI helps facility managers reduce downtime (and the dreaded "fire drills" associated with it), lower costs and maintain high-quality workplaces.

Unlocking the future
with AI-driven BMS

Preparing facility data for AI deployment is a critical first step. Integration and readiness are essential to overcome legacy system barriers and ensure a smooth transition to intelligent building management. Launching pilot programs with targeted use cases and measurable outcomes builds confidence and demonstrates value for leadership and stakeholders.

Continuous improvement is at the heart of any modern BMS driven by AI. These systems learn and adapt in real time, measuring performance and providing feedback to refine strategies. Facility teams can leverage AI's evolving intelligence to stay ahead of changing workforce trends and future-proof their operations.

But building team confidence is equally important. Clear guidelines, transparency and human oversight ensure that AI-driven environments remain under control and stay aligned with organizational goals. As they explore implementing AI solutions, facility managers should focus on:

Data integration

Unifying various data sources, such as IoT devices, maintenance logs, occupancy sensors and BMS for comprehensive analysis and reporting.

Pilot programs

Testing AI solutions in specific areas to validate benefits and refine approaches.

Performance measurement

Using AI to monitor and improve facility functions continuously.

Team training

Ensuring stakeholders understand AI capabilities and limitations, fostering collaboration and trust.
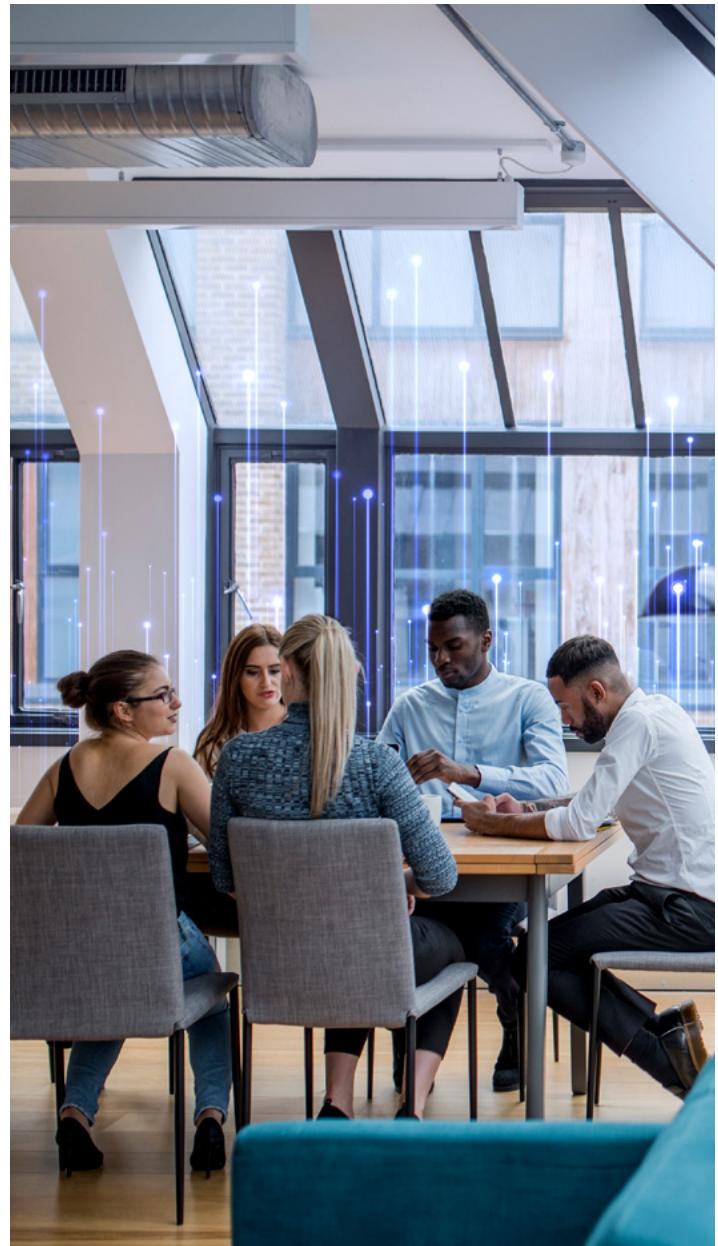
Are your facilities ready for AI?
Use the Smart Building Readiness Scorecard to determine the next steps your organization should take toward AI deployment.

Download your scorecard here

Take action

See inside your building like never before with OpenBlue AI
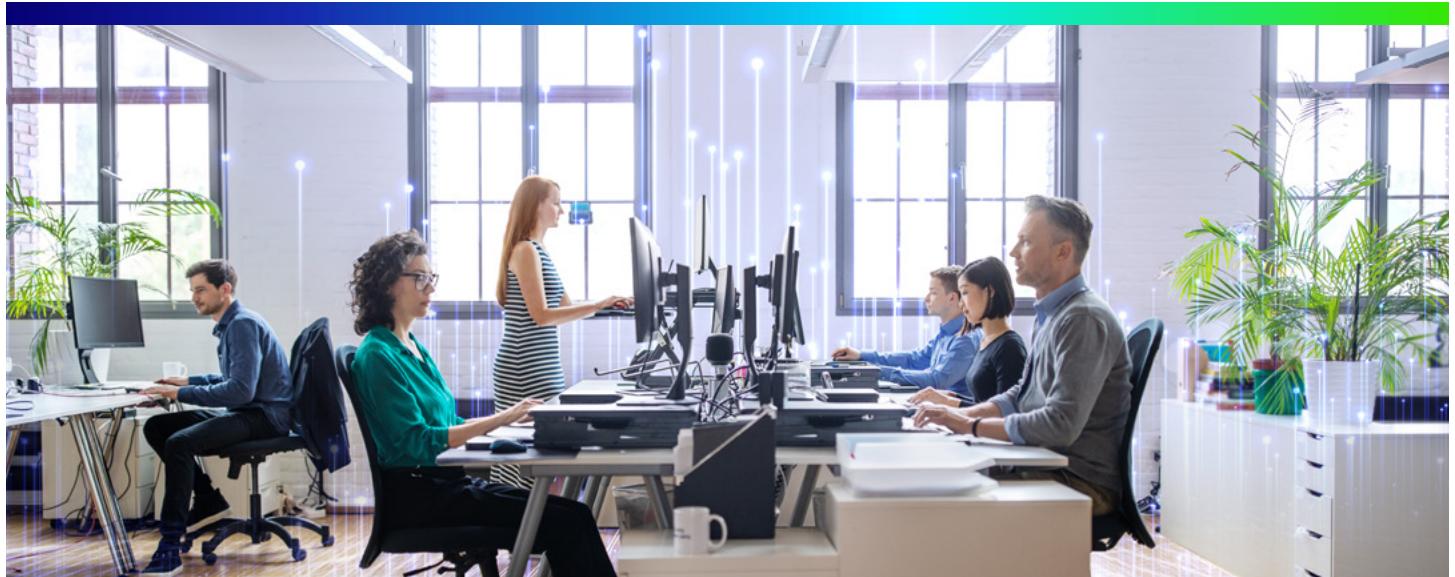
OpenBlue from Johnson Controls is an award-winning, AI-driven platform powering smarter, safer and more sustainable buildings. It is a game-changer for space and occupancy planning, delivering up to 30% savings in energy spend, up to 21.9% savings in leased real estate and up to 155% ROI.[3] Automated, data-driven insights make reporting and compliance easier, supporting sustainability and business objectives with measurable results.

Solutions like OpenBlue Workplace, OpenBlue Insights and the platform's advanced sensors are brand-agnostic, integrating seamlessly into existing building systems to deliver actionable intelligence. Facility managers get even more value when they layer solutions like OpenBlue Net Zero and OpenBlue Insights to support ambitious sustainability goals.

Future-proof your global portfolio. Connect with our team to explore OpenBlue AI solutions and request your tailored demo today.

Request a demo here

Sources

1: [Gartner: "Intelligent Agents in AI Really Can Work Alone. Here's How."](#)

2: [FM:Systems: "2025 Inside the Workplace Report"](#)

3: [Forrester Consulting: The Total Economic Impact of Johnson Controls OpenBlue](#)

4: [Indoor Air Quality Scientific Findings Resource Bank: "Perceived Indoor Air Quality and Work Performance"](#)

About Johnson Controls

At Johnson Controls (NYSE:JCI), we transform the environments where people live, work, learn and play. As the global leader in smart, healthy and sustainable buildings, our mission is to reimagine the performance of buildings to serve people, places and the planet.

Building on a proud history of 140 years of innovation, we deliver the blueprint of the future for industries such as healthcare, schools, data centers, airports, stadiums, manufacturing and beyond through OpenBlue, our comprehensive digital offering.

Today, Johnson Controls offers the world's largest portfolio of building technology and software as well as service solutions from some of the most trusted names in the industry.

The power behind **your mission**