



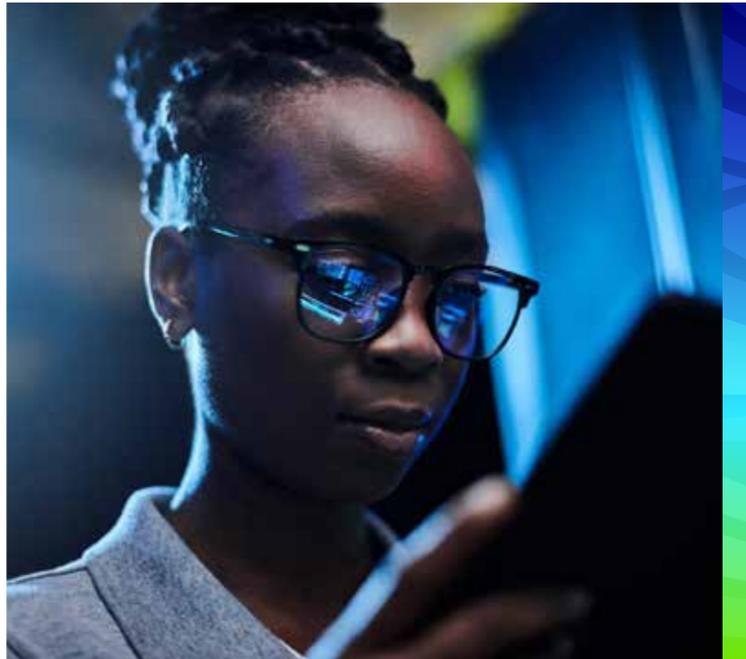
Your dedicated global data center solutions partner

Driving success with innovation, scalability and consistency

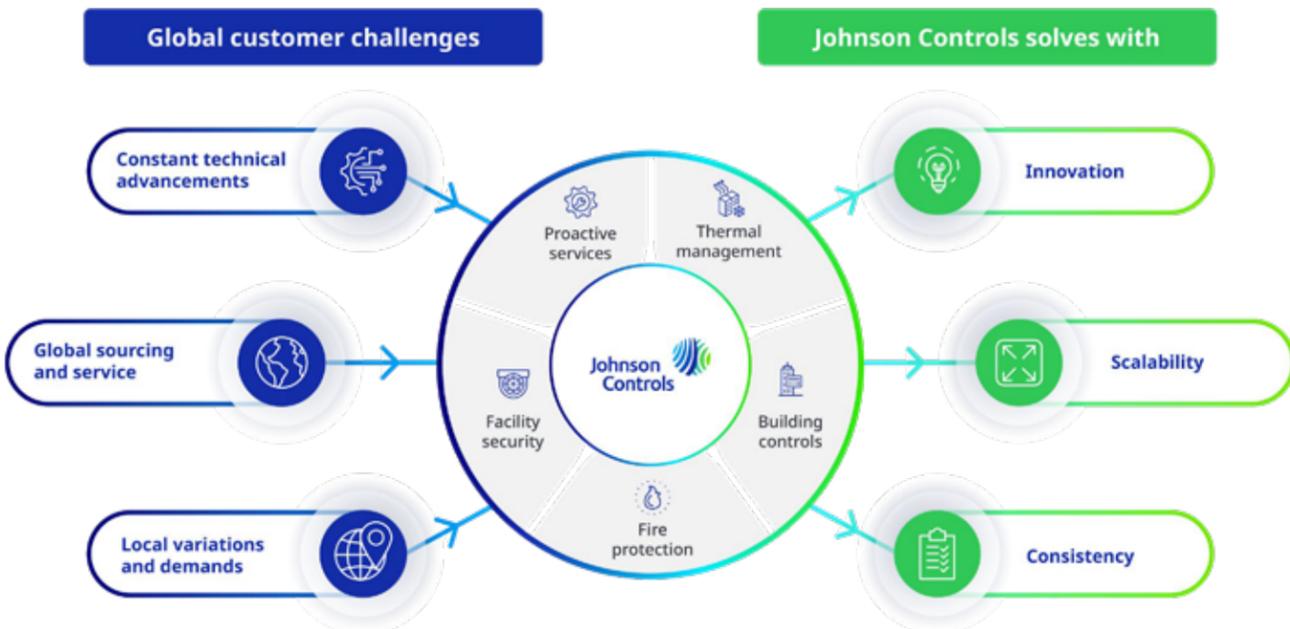
The backbone of the digital age

Data centers drive the infrastructure of our connected world, powering everything from cloud computing to global communication. But the industry is facing a pivotal moment. As data centers participate in the global race to AI and the cloud, you must confront numerous challenges in the planning, commissioning and operation of your facilities.

Supply chain coordination for the installation, operation and maintenance of required solutions can be time-consuming and complicated. Meanwhile, data centers have to navigate various local requirements, regulations and water and power availability. The ever-advancing technical landscape adds further layers of complexity, and organizations often have to take on the roles of general contractor and program manager. This may be at odds with your core business and expertise.



Johnson Controls is your dedicated global data center solutions partner



The way forward

At Johnson Controls, we understand the pressures data center operators deal with every day. That's why we deliver modular, scalable solutions for thermal management, building controls, fire protection and facility security – tailored to your specific needs. We understand that each of these elements is critical in a data center. In fact, outages are 19 times more likely to be caused by a cooling issue than a cyber attack, and three times more likely to be caused by fire than a cyber incident.*

Challenges facing data centers in 2025

Constant technical advancements

As the overall performance of data centers becomes more critical, dense and technically challenging, organizations must carry out constant and extensive due diligence when selecting and implementing solutions.

These solutions must demonstrate that they were built on a foundation of real-world development and testing, while also showing their innovative approach to technological advancements expected in the near and medium term. This not only helps ensure high performance from day one, but also creates a vision for future success.

Fragmented global sourcing and service

You may be challenged with accelerating your time to deployment while competing for, and coordinating with, multiple implementation timelines, supply chain and pricing elements. This is further exacerbated when you have multiple points of contact for purchasing, services and escalations with each vendor, supplier or contractor. It makes the overall program management time-consuming, inefficient and error prone.

For the solution components, reliable in-region manufacturing with backup contingencies of parts and services are required to hit critical target dates and Mean Time to Repair Service Level Agreements (MTTR SLAs). Failure to deliver promised facilities and services to your clients on time, or maintain 100% uptime, can incur major costs in penalties, significant reputational damage and the need to source alternate facilities. Managing the vast array of required elements is a highly specialized function that many organizations do not have.

Local variations and demands

The Owner Project Requirements (OPR) and Basis of Design (BoD) documents define the high-level data center specifications, functionality and capacity, as well as the locations and environments they will operate in.

However, fulfilling these requirements, especially for global projects, creates significant challenges in managing the vast array of regional and local demands. These include environment, regulatory and building code variations, as well as potential power and water supply limitations.

* Annual Outage Analysis 2024 – Uptime Institute

Driving success with innovation, scalability and consistency

How we can help

We can offer solutions throughout the entire lifecycle of your project. With us as your partner, you get the broadest range of solutions, experience and expertise, as well as direct communication with a dedicated sales team, end-to-end program management, problem resolution and service.

With decades of experience, we can help accelerate your time to deployment, enhance operational efficiency and ensure reliability, safety and security of data centers across the world. We deliver highly innovative modular solution sets for thermal management, building controls, fire protection and facility security – supporting every phase of design, deployment and operation. Plus, you'll be supported by dedicated service teams every step of the way.



Innovation: pioneering the future of data centers

With decades of experience building data centers worldwide, we stay at the forefront of innovation by addressing emerging challenges through:

- State-of-the-art research facilities: Johnson Controls Advanced Development Engineering Center (JADEC), one of the world's most advanced testing and research labs, exemplifies our dedication to innovation
- Continued advancement in the power consumption of our cooling solutions, such as the 25% reduction in connected load achieved by the new YORK YVAM chiller
- The YORK YVAM chiller can also reduce overall power consumption (in kWh) by up to 40% when compared to other solutions, which can drastically reduce energy usage costs over time while also making a significant contribution to sustainability initiatives
- Continuous R&D and customer-focused design directly driven by the voices of our customers. This allows us to continue innovating in technology, efficiency and sustainability – helping us stay in sync with our ever-evolving customer needs.
- Direct partnerships with consulting engineers/MEPs to validate and improve strategy and design
- Full product lifecycle management from design, manufacturing, engineering and deployment to maintenance and support. We can also provide continuous feedback and advancements for solutions and services.
- Active participation in industry-driven organizations, such as the Open Compute Project and ASHRAE code development
- Advanced solution development from our naval/marine division, resulting in the delivery of major innovations such as oil-free magnetic-bearing centrifugal chillers
- Innovation to address developing chip cooling demands, with both air and liquid cooling solutions
- Custom design of fire suppression components for specific applications
- AI-based object recognition and alerts for tracking vehicles, license plates, people, clothing, baggage and their movements around the facility



Scalability: global manufacturing, services and support

Customers demand in-region manufacturing, distribution and services to meet local deployment needs – without extended delays and high shipping costs. We're expanding our industry-recognized leading global manufacturing and service footprint to:

- Produce components efficiently and sustainably
- Minimize lead times and enhance time to deployment in any location
- Provide direct global and local support service teams for thermal management, controls, fire protection and physical security to support clients with:
 - Solution design, project management, commissioning, operation, remote monitoring, service, support and embedded dedicated personnel
- Activate over 100,000 personnel across 150 countries to continuously adapt and support regional and global demands
- Standardize price methodologies and global cost control to support future client projects and budget planning
- Create custom SKUs for client-specific components and systems for ease of business
- Offer JCI financing options where needed



Consistency: tailored solutions and effective communication

Data centers are demanding consistent performance, reliability, quality, service and adherence to their overall Basis of Design specifications – even where local requirements differ. This means they want simple, effective communication with their chosen solutions provider while covering all program elements, regardless of geographic location. Flexible solutions and consultative services are needed to deliver adaptable modular offerings for thermal management, building controls, fire protection and physical security.

We can offer support by providing:

- Dedicated teams with a global view and the ability to take action locally via minimal points of contact for executive communications, sales, program management, problem resolution and service
- End-to-end program management for all elements across the entire lifecycle, from ordering, shipping, delivery, installation, commissioning, operation, monitoring and servicing. We track the status of every item and its dependencies.
- The YORK YVAM functions perfectly in environments from Dublin to Dubai. Depending on ambient temperatures, the solution predictably consumes between only 7-14% of the power that the IT elements use over the course of any given year. This allows for the creation of a single design, which can be implemented and operated regardless of location
- A selection of the appropriate solutions and services for every phase of the project lifecycle with end-to-end advisory services
- Tailored flexibility while meeting local environment, regulatory, building, code or energy directive demands, where the overall functionality must still adhere to the global standard
- Collaborative engineering of solutions that address specific local issues or requirements, such as a customized high-energy efficiency implementation where the supply of power is limited, or a zero water waste capability where water usage is a major concern
- Seamless deployments where solution components are sourced, installed, commissioned, monitored and maintained, eliminating the need for clients to manage every step themselves
- Compatible fire and security solutions for associated NOC/SOC deployments for uniformity and ease of deployment, operation and service
- Multiple aaS options, including those for thermal management and fuel cells, to alleviate capital expenditure and operational costs
- The unique ability to offer all primary data center fire suppression systems in general use, including inert and halocarbon gaseous systems, pre-action sprinklers and water mist. The best solution can be selected, installed and serviced based on local requirements

Removing barriers to deployment

Our comprehensive expertise, from manufacturing to innovation, allows us to eliminate barriers to timely, efficient, secure and reliable data center deployments. With end-to-end solutions and services, we empower customers to achieve their data center goals with confidence.



Data center outages are nearly 20x more likely due to cooling failures, and 3x more likely due to fire, than a cybersecurity incident* – the time is now for data centers to act accordingly.

*Uptime Institute Global Survey of IT and Data Center Managers, 2023

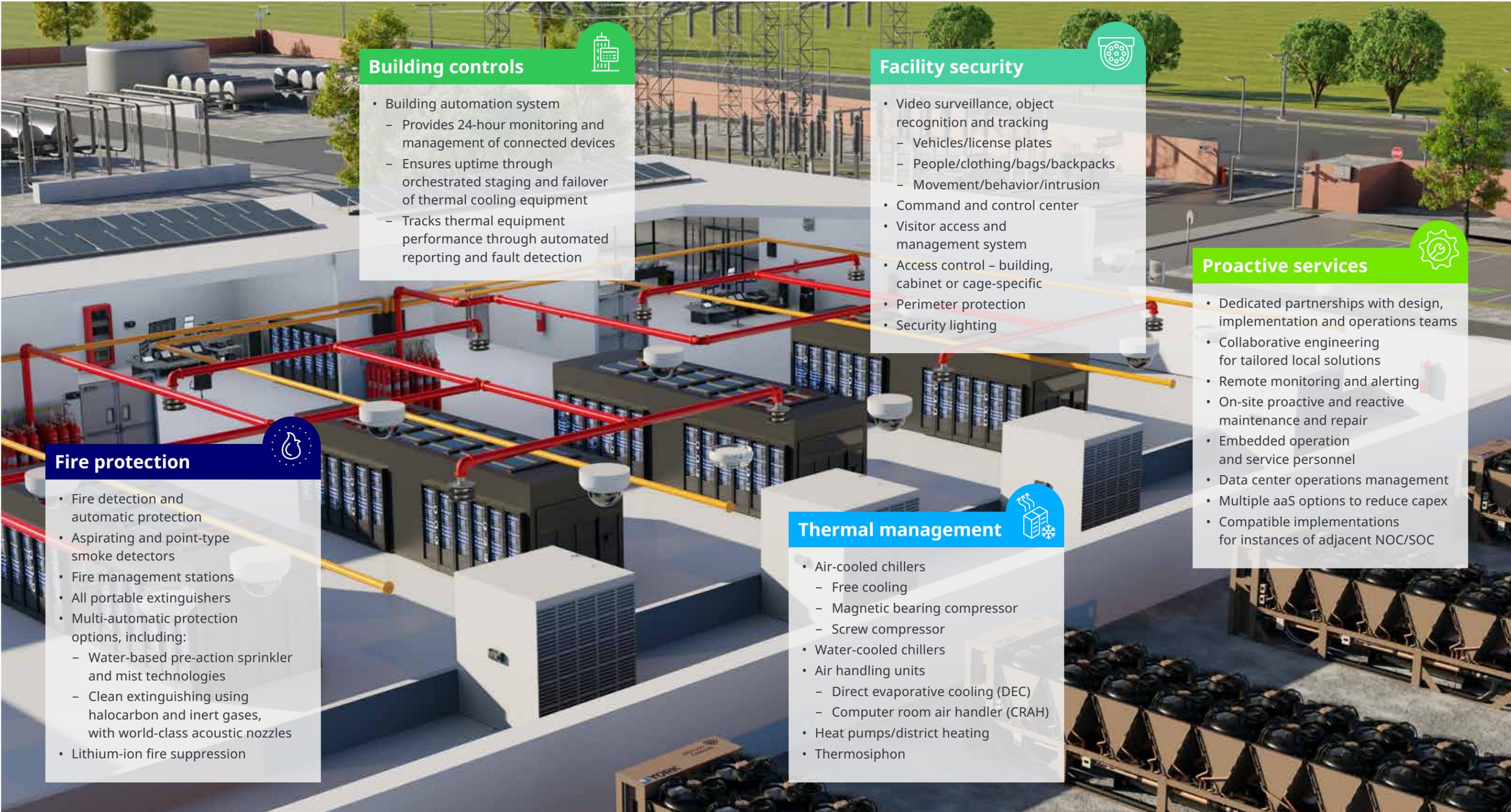
Your trusted data center partner

We know what it takes to build successful data centers, as well as successful partnerships. Our vast portfolio of innovative and sustainable solutions, combined with our global reach, proven track record and customer-centric approach, has solidified our position as a leader in the data center cooling industry.

In mission-critical environments, reliable products and responsive services are everything. That's why our solutions can be found in the most demanding data centers in the world.



Your dedicated global data center solutions partner



Building controls

- Building automation system
 - Provides 24-hour monitoring and management of connected devices
 - Ensures uptime through orchestrated staging and failover of thermal cooling equipment
 - Tracks thermal equipment performance through automated reporting and fault detection

Facility security

- Video surveillance, object recognition and tracking
 - Vehicles/license plates
 - People/clothing/bags/backpacks
 - Movement/behavior/intrusion
- Command and control center
- Visitor access and management system
- Access control – building, cabinet or cage-specific
- Perimeter protection
- Security lighting

Proactive services

- Dedicated partnerships with design, implementation and operations teams
- Collaborative engineering for tailored local solutions
- Remote monitoring and alerting
- On-site proactive and reactive maintenance and repair
- Embedded operation and service personnel
- Data center operations management
- Multiple aaS options to reduce capex
- Compatible implementations for instances of adjacent NOC/SOC

Fire protection

- Fire detection and automatic protection
- Aspirating and point-type smoke detectors
- Fire management stations
- All portable extinguishers
- Multi-automatic protection options, including:
 - Water-based pre-action sprinkler and mist technologies
 - Clean extinguishing using halocarbon and inert gases, with world-class acoustic nozzles
- Lithium-ion fire suppression

Thermal management

- Air-cooled chillers
 - Free cooling
 - Magnetic bearing compressor
 - Screw compressor
- Water-cooled chillers
- Air handling units
 - Direct evaporative cooling (DEC)
 - Computer room air handler (CRAH)
- Heat pumps/district heating
- Thermosiphon

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.



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