

# Enabling smarter, safer and more resilient data centres

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# The fast-growing requirements of the data centre environment



**In the 21st century, more than ever before, every organisation, large or small, relies on data. Data is growing at an exponential rate and its availability at any time has become a business critical requirement for all companies. This has created the need for specialised data storage facilities with a flawless 24/7 operational commitment, and beyond state-of-the-art data protection capabilities.**

With an estimated 50 billion connected devices in play by 2020, the industry is facing a staggering challenge and is growing at an unprecedented pace. Data centres and telecom hubs have become vital parts of our economy. They operate on a dedicated 24/7 basis, 365 days of the year where just one minute of downtime could have massive, even catastrophic, implications. Add to that economic fluctuations, organisational growth, new applications and cloud computing – and it's a lot to manage.

Leveraging on more than 130 years of history in building efficiency, safety and security, Johnson Controls has developed a unique package, supporting hundreds of data centres and numerous other types of critical facilities across the world. We have evolved over time, transforming our business, and we understand the challenges faced by forward thinking businesses.

Whether traditional or modular construction, operations and maintenance, or any level of support in between, we are ready to help develop an optimum data centre solution – reliable, sustainable and cost-effective – for one location or many. It's a solution that provides the control, flexibility and security required to manage escalating volumes of data. We're your security and efficiency partner through all phases of the data centre lifecycle.

## Your data centre challenges addressed

Faced with expert challenges such as power management, cooling or security, organisations today increasingly look to outsource in order to manage data effectively. This has resulted over the past couple decades in the creation of 'mega data centres' being built by the IT and internet giants. As data centres evolve from traditional, on premise, small scale server room environments to vast 15 MW purpose-built virtualised colocation facilities, the challenges of maintaining a fully secure, protected and available site are mounting. This rapid growth in data creation, movement, storage and consumption, in combination with an absolute reliance on data centre availability comes with some big challenges.

Johnson Controls has a unique, comprehensive portfolio with integrated solutions. We are able to equip data centres with the right products and services to protect and safeguard them against these challenges. Our solutions help to reduce and prevent data centre downtime, improving the security of data and equipment, and protecting the environment. These operational demands must take place as efficiently as possible to help reduce costs and enable data centre providers to continue to evolve and grow.

## 7900\$ per minute of unplanned outage

In a survey realised in 2013, the Ponemon Institute, a privacy, data protection and information security analyst, estimated that an unplanned outage in a data centre costs on average \$7,900 per minute.

More recently, in May 2017, a data centre outage hit one of the world's most famous airlines, resulting in the cancellation of 400 flights and causing disruption to 75,000 passengers on a busy holiday weekend. The incident was traced to a single engineer who incorrectly disconnected and reconnected a power supply, causing a power surge that damaged critical IT equipment. The outage was estimated to have cost up to \$112 million in refunds and compensation, in addition to the loss of productivity and future revenues and the reputational damage to the airline and the data centre.

To prevent such incidents, data centre providers turn more and more towards fully integrated system management solutions that provide situational intelligence to monitor the facility, prevent incidents and support mitigation decision processes.



# Johnson Controls is the partner for the most demanding data centres

Johnson Controls is a global, diversified, multi industrial leader serving a wide range of customers in more than 150 countries. We create intelligent buildings, energy efficient solutions and integrated fire and security systems that work seamlessly together to deliver on the promise of smart cities and communities.

The merger of Johnson Controls and Tyco has established a new market leader that serves customers in all areas of the commercial and public sector, including some of the largest players in the data centres industry.

Johnson Controls brings together leading brands under one roof with a comprehensive portfolio of solutions for smart, secure and sustainable buildings. Our unrivalled spectrum of innovative products is complemented by expertise in installation, service and systems integration. Johnson Controls is the leading company in data centre intelligence, reliability, efficiency and security solutions and has the most comprehensive service offers. At its core, our promise is about delivering innovation that makes people's lives – and the world – better.

## Protecting what matters most

Johnson Control's competitive edge begins with its people. Every day, the company's 120,000 employees come to work with a passion for protecting what matters most. They take great pride in knowing that they make a difference in the world; their work helps protect and safeguard people and property. Johnson Controls is proud of its diverse, creative talent from all over the world.

**An organisation's most valuable assets are its people. Protect what matters most to your business with Johnson Controls.**

## Our Values

### ► Integrity first

We promise honesty and transparency. We uphold the highest standards of integrity and honour the commitments we make.

### ► Purpose led

We believe in doing well by holding ourselves accountable by making the world a better place through the solutions we provide, our engagement in society, the way we do business, and our commitment protecting people and the environment.

### ► Customer driven

We win when our customers win. Our long-term strategic relationships provide unique insights and the ability to deliver exceptional customer experiences and solutions.

### ► Future focused

Our culture of innovation and continuous improvement drives us to solve today's challenges while constantly asking "what's next?"

### ► One team

We are one team, dedicated to working collaboratively to create purposeful solutions that propel the world forward.



# Our extensive and comprehensive solutions portfolio for data centres

A data centre is a highly complex environment with specific needs and requirements. With a comprehensive portfolio and more than 130 years of experience, Johnson Controls partners with you to minimise costs, maximise operational performance and enhance return on investment with business intelligence solutions.

From low-noise gas suppression systems to performant HVAC equipment and controls, our broad and specialised portfolio of integrated expert solutions delivers on our promise of enabling smarter, safer and more resilient data centres.

**Building Automation Systems**

Our building management systems are integrated, supervision solutions for all data centres technical functions, including heating, ventilation, air conditioning, lighting, roller blinds, access control and security. The systems maintain the overall comfort of building occupants and guarantees optimal energy consumption whilst supplying vital data and insights to improve efficiency, productivity and safety.

**Fire Protection**

We offer the most comprehensive suite of fire detection and suppression systems designed to protect your employees and your customers data, as well as your assets and property by detecting fire at the earliest stage and preventing it from spreading.

**Operational Intelligence**

Business intelligence solutions that minimise costs, maximise operational performance and enhance investment in security programs.

**HVAC**

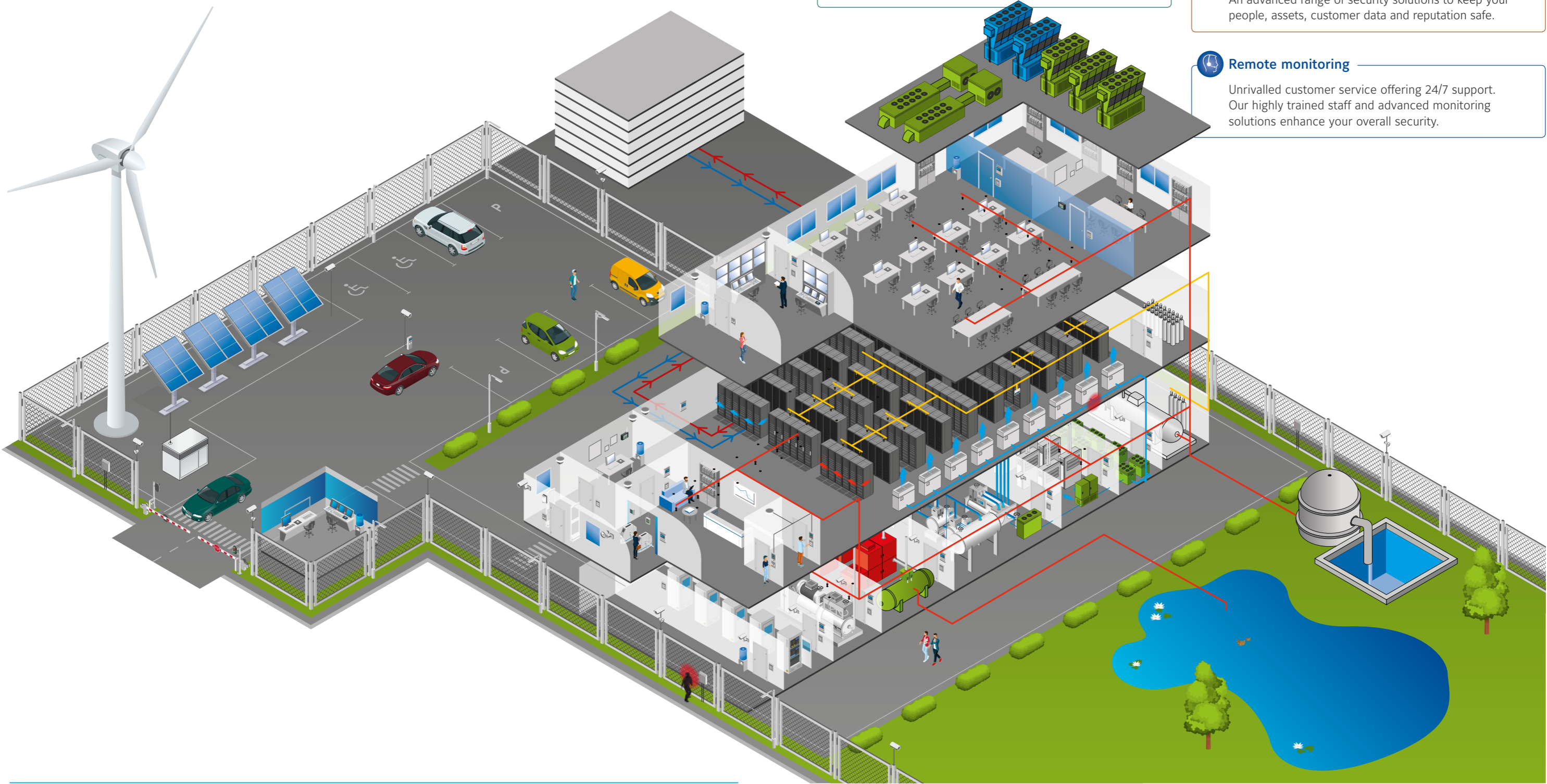
Advanced air-conditioning systems for industrial and commercial buildings that enhance their sustainability, energy use and user comfort.

**Security**

An advanced range of security solutions to keep your people, assets, customer data and reputation safe.

**Remote monitoring**

Unrivalled customer service offering 24/7 support. Our highly trained staff and advanced monitoring solutions enhance your overall security.





# Expertly integrated solutions for data centres

The modern data centre is a complex environment, and each facility is unique from a design point of view. A fully consultative approach to solution design is therefore of paramount importance in terms of achieving the optimal levels of efficiency and protection.

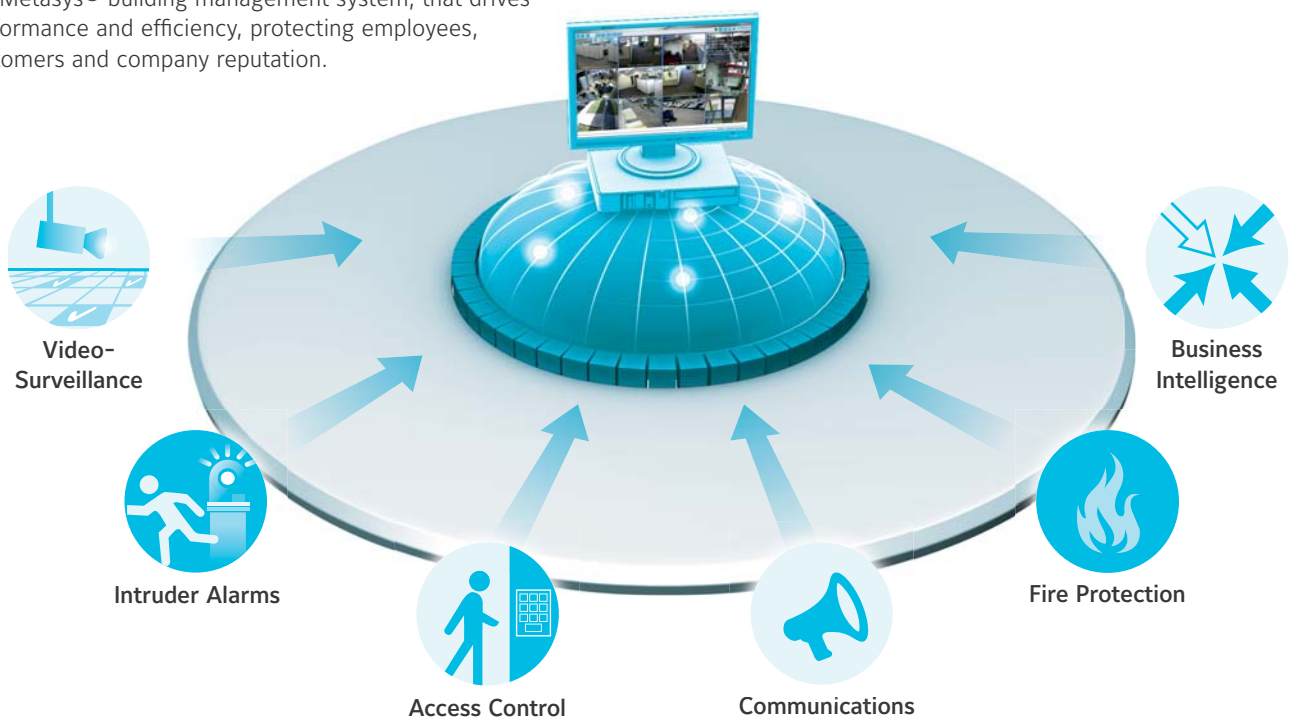
## Building Automation Systems

### Metasys® building management

A comprehensive suite of solutions and services, with our Metasys® building management system, that drives performance and efficiency, protecting employees, customers and company reputation.

Johnson Controls' Physical Security Information Management (PSIM) software provides situational intelligence to support decision processes. It is a cost effective way to integrate existing legacy systems into a unified, state-of-the-art management and control system.

PSIM also helps customers maximise the value of the information collected by all data centre systems enabling improved security, processes and business continuity. PSIM enables the centralisation of disparate hardware systems.





## Energy Efficiency

Increasingly, today's businesses face a moral, statutory and reputational imperative to act sustainably. Data centres are energy intensive facilities. By using energy management and storage, in addition to renewable energy controls, power concentrators and uninterruptable power supplies, modern data centres are able to operate at optimum levels of efficiency.

With such an unprecedented strain on infrastructure, organisations today require hardware and networks that are smarter and more capable than ever before in terms of comfort, safety and sustainability. Our commitment at Johnson Controls is to enable these smarter, safer and more sustainable buildings and industries. "The future is being built today" is how we express our sense of urgency and optimism when it comes to fulfilling this mission.

We create intelligent buildings, energy efficient solutions, integrated infrastructure and safe, reliable fire solutions that work seamlessly together to deliver on the promise of smart cities and communities. At its core, that promise is about delivering innovation that improves lives and makes the world a better place.



## HVAC

Maintaining absolute control of the ambient temperature and ventilation in data centres is critical to the overall performance of the technology housed within. Security and resource requirements often lead to data centres being locked away out of sight which is not conducive to good ventilation. Internal temperatures at data centre facilities can be affected by highly variable or extreme external conditions.

Our history is steeped in HVAC technology and expertise. The company's founder, college professor Warren Johnson, patented a bi-metal room thermostat in 1883, and two years later filed a patent for the first multi-zone thermostatic control system. Johnson's system for temperature regulation was adopted worldwide for office buildings, schools, hospitals, and hotels – essentially any large building with multiple rooms that required temperature regulation. Things have moved on significantly of course, though Warren Johnson's name will forever be associated with cutting edge HVAC solutions.

Johnson Controls' proven, advanced technologies, including extensive HVAC solutions and a highly qualified team, strive to continuously improve data centre performance ensuring maximum uptime, regulatory compliance, technical scalability and future optimisation.

## Communications

Disseminating information as quickly and clearly as possible can be the difference between life and death in an emergency. Effective communications rely on faultless wireless networking with built in redundancies, a clear public address system and operational intelligence at its heart.

### Emergency exit control

Public address systems within data centres are especially important in the case of emergencies to provide clear instructions to people in potential danger. Visual marking and lighting of escape routes provide additional guidance. Having efficient emergency lighting supports timely, safe and compliant evacuation procedures.





## Fire Protection

### Fire detection and alarm

Data centres are enclosed environments where unchecked overheating can result in the rapid outbreak of fire. Johnson Controls provides superior, universal smoke detectors which combine robust design and very early detection capability with unmatched false alarm rejection. Our detectors are designed to be both adaptable and flexible in order to protect against a wide range of potential fire risks.

Commanded by our ZETTLER Profile panel, the next generation of flexible, addressable panels which fit any requirements, our fire detection and alarm systems excellent performance and reliability thanks to the Fastlogic algorithm, which combines different sensor values to provide precise situational information. Our panels can be clustered on a security network to ease the tasks of management and maintenance.

### Fire sprinklers /watermist extinguishing systems

Water is an effective, recognised, and environmentally-friendly fire-fighting material. With their specially developed spray heads that react automatically to heat from a fire, our sprinkler and watermist systems enable an efficient release of water over a potential fire source, in line with your extinguishing or suppression objectives and environmental constraints. In addition, through the use of very thin water droplets, our watermist systems effectively protect your hardware against the feared 'fuse effect' that can occur in confined electrical equipment.

### Clean agent fire extinguishing systems

Leveraging 130 years of experience with our industry-recognised Inergen system, we offer data centres excellent gas suppression systems that efficiently protect data and suppress fire at its very early stage whilst protecting equipment. The Inergen system uses a powerful combination of inert gases (including argon and nitrogen) to extinguish fires without any negative impact on the environment. Furthermore, thanks to the innovative power of its R&D teams, Johnson Controls was one of the first companies on the market to develop a silent nozzle that significantly reduces the noise caused by gas release, which also helps to protect data centre hard drives from further damage.





## Security

Trust is arguably the most valuable commodity in the multi-billion dollar data centre industry. It can take years of investment and hard work to build a trusted reputation for security, but only seconds to destroy it. The threats posed by terrorism, theft, sabotage, cyber-criminals and accidental damage are real. Protection of a data centre provider's hardware, and the data itself, are reliant on a sophisticated, integrated, network of solutions.

### Constant video surveillance

Our portfolio encompasses analogue, IP and hybrid video surveillance systems which can be seamlessly integrated into existing architectures to help deter and prevent crime. We provide best-in-class, flexible and cost-effective enhanced video solutions.

### Intruder detection

We can identify threats, assess vulnerabilities and determine potential impacts and consequences. Intruder detection deters and mitigates threats, it safeguards people, data, and property from criminal acts. Furthermore, our intruder detection manages and coordinates the response to criminal acts or other emergencies. Data centres also benefit from 24/7 monitoring services through our large network of alarm receiving centres.

### Access control

We offer different access control solutions to fit the needs of data centre risk requirements. From medium or high risk areas such as specific security room access or server room access to low risk areas such as the building's reception area. Every access point in a data centre environment can be fitted with its own control and can support fully integrated security solutions with complex process structures and high levels of security.

### Biometric access to server rooms

For higher levels of security access, biometrics that are able to verify individuals based on a physical attribute such as a facial recognition are available. This unobtrusive and user-friendly technology simply scans the individual's attributes to reliably restrict access to facilities and sensitive areas of operations.

### Perimeter protection

Data centres are located in a wide range of buildings and perimeter protection forms the first line of defence everywhere. We offer a complete range of reliable and intelligent perimeter protection systems whatever the situation, both for indoor and outdoor security needs.





# Why choose Johnson Controls for your data centre?

Our customers benefit from a wide range of solutions and products; a one-stop-shop for the entire lifecycle of their buildings and facilities. Our expert teams accompany building stakeholders every day, advising them on the optimum solutions to make their facilities smart and reliable whilst mitigating risks to ensure their systems are maintained and sustainable.

Our goal is to help our customers win everywhere, every day. We are a global company with a local feel; a unique trait to Johnson Controls. Our local branches all over the world ensure that we are always close to our customers' facilities and needs, giving you confidence and peace of mind that your assets, employees and brand are protected.

Johnson Controls' integrated fire and life-safety solutions suite enables risk mitigation, improved security and compliance with local regulations, while offering a rapid return on investment and a low total cost of ownership.

Whether running an enterprise data centre or using collocated facilities, the reputation of the site depends on its operational availability. Johnson Controls provides a tailored and consultative approach that applies innovative safety solutions for data centres.



We are with our customers every step of the way!



# Reasons to choose Johnson Controls

## 1. One-stop-shop

With its globe-spanning portfolio of brands, products and services, Johnson Controls is a one-stop-shop for the three most important aspects of building and facilities management: comfort, safety and sustainability. Comfortable and safe working environments combined with greater energy efficiency means companies can lower their costs, fulfil their responsibility to the environment and increase productivity from employees who feel safe, comfortable, secure and respected.

## 2. Credibility

We are a leader in multiple industries today, backed by 130+ years of experience. Our customer focus, combined with a globally diversified portfolio of technologies, products and services, has helped us form long-term relationships with customers in more than 150 countries. Certainly one of the keys to these longstanding relationships and our credibility, is a simple cost-benefit calculation: our customers save money over time. We deliver comfort, safety and sustainability, but also a provable return on customer investment.

## 3. Customer focus

The key to our success is our tradition of customer-focused innovation; combining state-of-the-art technology with solutions that respond to our customers' specific needs. Our customers benefit not only from our long history, but from our long-term vision:

- ▶ Complete solutions that can be modified in response to changing environments.
- ▶ Our commitment to a safe and sustainable future. Today our R&D facilities are working hard on next-generation technologies so that customers can continuously improve their systems and processes.
- ▶ Unrivalled 24/7 customer service, including 12,000 engineers in 500 locations to assist locally and/or remotely.

### What you can expect from Johnson Controls:

- ▶ Stand-alone and/or holistic systems delivering greater efficiency and return on investment.
- ▶ Fire, safety and security solutions that meet your unique industry requirements.
- ▶ Protection of your assets, property, personnel and customers.
- ▶ A dedicated partner providing ongoing support, wherever you need it, whenever you need it, through one single point of contact.



## Tyco is now Johnson Controls

The combined strengths of two great companies are now under one recognised brand, making Johnson Controls the world leader in integrated fire protection, security, HVAC, building controls and industrial refrigeration solutions.

### About Johnson Controls' Building Technologies & Solutions

Johnson Controls' Building Technologies & Solutions is making the world safer, smarter and more sustainable; one building at a time. Our technology portfolio integrates every aspect of a building, whether security systems, energy management, fire suppression or HVAC, to ensure that we exceed customer expectations at all times. We operate in more than 150 countries through our unmatched network of branches and distribution channels, helping building owners, operators, engineers and contractors enhance the full lifecycle of any facility. Our arsenal of brands includes some of the most trusted names in the industry, such as Tyco®, YORK®, Metasys®, Sabroe®, ZETTLER®, Frick®, TOTAL and Sensormatic®.



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