We Are Helping Customers Build the Future

At Johnson Controls, we have seen the future of buildings, facilities, campuses, and cities. That future is intelligent, using embedded sensors, real-time data monitoring, and smart, automated systems that make every location safer, more productive, and more efficient. This means the people you serve are safer, more productive, and more efficient—and it means the world as a whole gets more sustainable.

Working with our customers and partners around the world, we are creating a smart future for all kinds of facilities by applying our vast experience in building-related equipment and systems, and our deep knowledge of contemporary technologies in intelligent controls and batteries.
BUILDING SMARTER CITIES SMARTER
Leadership Message

Long before the advent of smart cities and technological advances in the field of energy conservation, in 1885 Warren Johnson launched a company to explore new ways to harness and conserve precious energy resources. In doing so, he also started a tradition of customer focused innovation – a tradition that has inspired countless innovations and has been instrumental in operating numerous state-of-the-art facilities across the globe for more than 130 years. It is that very same tradition and ethos that continues to drive the success of Johnson Controls.

Claude Allain
Vice-President & General Manager
Building Technologies & Solutions
Johnson Controls Middle East & Africa
# Table of Contents

- Explore Our Range Of Capabilities ............................................. 06
- Metasys® Building Management System ........................................ 10
- Facility Explorer® Building Automation System ................................ 10
- BCPRO™ Building Automation System ........................................ 10
- Guest Room Management System (GRMS) ..................................... 10
- Critical Environment Controls ................................................... 11
- HVAC Controls Products .......................................................... 11
- Verasys™ Smart Control System .................................................. 11
- Penn® Refrigeration Products ...................................................... 11
- YORK® Chillers ........................................................................ 12
- YORK® Heat Pumps ................................................................. 13
- Modular Packaged Chilling Solutions ............................................. 13
- Cooling Towers and Close Circuit Coolers .................................. 13
- YORK Close Control AC Units .................................................... 14
- Flexsys Underfloor Air Distribution (UFAD) .................................. 14
- Ruskin® Air Control Solutions ..................................................... 14
- Titus® Air Distribution Solutions ................................................ 14
- Air Handling Units & Coils .......................................................... 15
- YORK® Fan Coil Units .............................................................. 15
- Residential, Light Commercial & VRF Systems ............................. 15
- YORK® Room Air Conditioners (RAC) ......................................... 16
- YORK® Packaged Air Conditioners (PAC) .................................... 17
- YORK® Amazon Variable Refrigerant Flow (VRF) ....................... 18
- HITACHI Air Conditioners (RAC, PAC & VRF) ............................ 19
BRINGING YOU THE BEST OF JOHNSON CONTROLS.

More comprehensive products, technologies and services. More innovation and efficiency over the life of a facility. More holistic, integrated solutions to help make buildings, campuses and cities increasingly safe, smart and sustainable.

MEET THE WORLD-LEADER IN INTEGRATED BUILDING TECHNOLOGY AND ENERGY STORAGE.
TAKE ADVANTAGE OF
A BROADER RANGE OF CAPABILITIES.
A complete product range to cover solution needs for your facilities

**BUILDING AUTOMATION SYSTEMS**
Connect commercial HVAC, lighting, security and protection systems on one platform. Vital data and insights improve efficiency, productivity, and occupants’ comfort and safety.
- Metasys® Building Automation System
- Metasys Enterprise Optimization applications

**CONTROLS**
Equip facilities with intelligent HVAC controls to keep occupants comfortable, run equipment efficiently and optimize operating budgets.
- Actuators
- Control panels
- Control sensors
- Current sensors and transducers
- Thermostats
- Valves
- Variable speed drives

**HVAC EQUIPMENT**
Draw on the most comprehensive HVAC portfolio for commercial and residential buildings of all types, ages and sizes to enhance sustainability, energy use and the indoor environment.
- Chillers: air-cooled, water-cooled, connected
- Condensers and condensing units
- Dedicated Outdoor Air Systems (DOAS)
- Duct-free mini-split systems
- Indoor packaged equipment
- Rooftop units
- Variable Refrigerant Flow (VRF) Systems

**ENERGY STORAGE**
Rely on our innovative distributed energy storage products to better manage energy use, cut costs and ensure electrical back-up for a building, campus or enterprise.
- In-building distributed energy storage system
- Modular distributed energy storage system

**SECURITY SYSTEMS**
Help protect and enhance working and living environments today and tomorrow with integrated, customer-specific solutions from the world’s leading security company.
- Full range of security systems
- 24/7 remote monitoring
- Access control
- Advanced video surveillance
- Intrusion detection
- Managed services

**AIR SYSTEMS**
Use efficient air flow building-wide to create healthy, comfortable and visually appealing environments that increase work productivity and occupant satisfaction.
- Air handling units
- Air measuring
- Chilled beams
- Dampers
- EcoAdvance™ HVAC load reduction (HLR) module
- Energy recovery ventilators
- Fan and blower
- Fans
- Filtration
- Grilles and diffusers
- Heating coils and cooling coils
- Louvers
- Under floor air distribution
- Unit ventilators
- Variable air volume (VAV) terminals
- Variable speed drives

**LIGHTING CONTROLS & RETROFIT**
Save energy, minimize costs and meet organizational goals with a range of services, from business remodels, to new construction lighting design, to municipal street lights.
- Lighting retrofits
- Street and roadway lighting
- Turn-key lighting upgrades
**FIRE, LIFE-SAFETY & HAZARD PROTECTION**

Help keep people and assets safe with comprehensive solutions, design, installation, service and monitoring from a world-leading fire and life-safety systems provider.

- Fire Alarm and Detection Systems
- Fire Sprinkler, Hose Reel, Deluge, Waterspray and Water Mist Systems
- Fire Suppression Systems
- Mass Notification Systems
- Special hazard solutions

**OPTIMIZATION & RETROFIT SERVICES**

Make the most of existing building and financial assets through cost-effective upgrades, central plant strategies, and financing solutions.

- Central chiller plant optimization
- Clean energy assessments
- Energy performance contracts
- Energy retrofits
- Equipment financing
- Healthcare environment optimization
- Public/private partnerships
- Technology refresh services
- Turnkey upgrades and retrofits

**OPERATIONAL INTELLIGENCE & LOSS PREVENTION**

Helps minimize costs, maximize operational performance and enhance return on investment in security programs with business intelligence solutions.

- Information management solutions
- Real-Time Location Systems (RTLS) for asset management
- Video and traffic analytics

**RETAIL SOLUTIONS**

Gain real-time insights into retail facilities, inventories, employees and customers to achieve maximum business performance in a digitally-driven shopping world.

- Loss Prevention
- Inventory Intelligence
- Traffic Insights

**BUILDING SERVICES & PARTS**

Tap into resources of the industry’s largest service network for HVAC, security and life-safety system installation and product support. More than 12,000 technicians working out of nearly 500 local offices can provide 24x7x365 proactive monitoring, remote and on-site service and repair, and replacement parts.

- Aftermarket parts
- Building remote monitoring
- Building system and HVAC repair
- Planned and preventive maintenance
- Predictive and diagnostic services
- Security and life-safety system repair
- Providing electrical, mechanical, preventative and reactive maintenance throughout all market sectors

**BUILDING-WIDE SYSTEMS INTEGRATION**

Construct a smarter building by converging building, business/IT and specialty systems on an intelligent infrastructure. Let us streamline the process to measurably improve initial and life-cycle costs, enhance function, ensure connectivity and create an innovative, optimized, sustainable environment.
METASYS® BUILDING MANAGEMENT SYSTEM

**METASYS® SERVER**
Support of IT standards and technologies, multi-platform web-based user interface, long-term storage

**SMART NETWORK ENGINE**
Supervision of controller networks including 3rd party protocol devices such as; BACnet MS/TP & IP, LonWorks, N2, Modbus RTU & TCP, M-Bus serial & IP, KNX IP

**SMART NETWORK CONTROLLER**
Family of IP connected supervisory controllers with onboard Input/Output (IO) points

**PROGRAMMABLE / ADVANCED APPLICATION CONTROLLERS**
Complete family of field controllers and accessories

**INPUT/OUTPUT MODULES**
Scalable family of configurable Input/Output (IO) modules

**VAV CONTROLLERS**
Complete family of programmable controllers suitable for all VAV applications

**FIELD USER INTERFACES**
Self-configuring local touch screen display allowing simplified access to equipment or controls

FACILITY EXPLORER® BUILDING MANAGEMENT SYSTEM

**FX SERVER**
Scalable, configurable and intuitive system, mobile-optimized user interface. Adapts legacy and proprietary systems to current open system architecture

**FX SUPERVISOR**
Supervisory class controllers. Provides integrated control, supervision and network management services to one or more local networks of field controllers

**INPUT/OUTPUT MODULES**
Scalable family of configurable Input/Output (IO) modules

**VAV BOX CONTROLLERS**
Complete family of programmable controllers suitable for all VAV applications

**FIELD USER INTERFACES**
Self-configuring local touch screen display or web server user interface options allowing simplified access to equipment or controls

**PROGRAMMABLE / ADVANCED APPLICATION CONTROLLERS**
Provides a comprehensive controls solution for a wide variety of HVAC applications

BCPRO™ BUILDING MANAGEMENT SYSTEM

**BCPRO SYSTEM**
The BCPro™ Building Automation System is a dependable solution, for building management

**BACNET® ROUTER**
Enable control of a wide variety of HVAC equipment, and integration with third-party systems via BACnet MSTP equipment

**MODBUS ROUTER**
Enable control of a wide variety of electrical meters, and integration with third-party MODBUS equipment

**CH-PC FIELD CONTROLLER**
CH-PC field controller family is complete with BACnet IP and MSTP Field Controllers that are fully programmable

**INPUT/OUTPUT MODULES**
The CH-PCXs expand the I/O interfaces of the CH-PC controllers and as an I/O point multiplexer on the FC Bus

**VAV CONTROLLERS**
Complete family of programmable controllers suitable for all VAV applications

GUEST ROOM MANAGEMENT SYSTEM (GRMS)
Offers scalable, easy to use and cost-effective guest room management solutions to control lighting, entertainment, temperature, privacy and security in the hotel industry
VERASYS™ SMART CONTROL SYSTEM

VENTURI AIR VALVE
Provide a rapid and accurate response in order to maintain the desired air flow volume independent of static pressure changes.

ROOM PRESSURE MONITOR / CONTROLLER
Optimizes the safety, comfort, and efficiency of critical space spaces by coordinating information like room pressure, air exchange rates, humidity, temperature, and setbacks.

FUME HOOD CONTROLLERS
Displays sash height, face velocity, exhaust, hood status, time, and date. It utilizes a closed-loop system to better regulate air entering and exiting the hood.

CENTRAL MONITOR STATION
Allows staff to simultaneously monitor the parameters of up to four rooms or fume hoods.

HVAC CONTROL PRODUCTS

TERMINAL UNIT VALVES AND ACTUATORS
Complete offering of control valves, PICV and actuators for terminal unit applications.

CONTROL VALVES AND ACTUATORS
Ball, globe and butterfly valves with pneumonic and electric actuators.

DAMPER ACTUATORS
Spring and non-spring return rotary actuators for air, fire and smoke dampers.

PLANT SENSORS
Plant temperature, humidity, CO₂, dew point, delta pressure.

ROOM SENSORS
All in one room module, room temperature, humidity, CO₂, passive, analog and network models.

THERMOSTATS
Line-powered fan coils thermostats, smart, standalone, Modbus and BACnet communicating.

TERMINAL EQUIPMENT CONTROLLERS
Complete local control of unitary equipment. Available in BACnet and LON.

VERASYS™ SMART BUILDING HUB
Web-based control system that provides a mobile user interface to smart equipment-branded controllers and thermostats.

SMART EQUIPMENT CONTROLLERS
Family of controllers and accessories specifically designed for HVAC/R equipment optimization.

LIGHTING CONTROL SYSTEM
Features a pre-wired, pre-assembled, and pre-programmed BACnet® commercial lighting control panel solution.

METERS
Monitors the voltage, amperage, demand and consumption for each phase of incoming power with interlock features of SBH and compatible with controllers.

PENN® REFRIGERATION PRODUCTS

PRESSURE SWITCHES, THERMOSTATS & HUMIDISTATS
Designed for refrigeration, cooling, heating, ventilation and air-conditioning applications.

ELECTRONIC CONTROLS & TRANSDUCERS
Designed and provide a high-quality long-lasting solution for control of any commercial refrigeration unit.

WATER VALVES & FLOW CONTROLS
Controls the quantity of water to a condenser by directly sensing pressure changes in a refrigerant circuit.

ELECTRONIC EXPANSION VALVES
The combination of Quick Response Expansion Valves (QREV) and Precision SuperHeat Controller (PSHC) forms an electronically-controlled expansion valve that will maximize evaporator efficiency.
YORK® CHILLERS

**AIR-COOLED**
- **YCAL**
  - Cooling capacity: 50 – 225 kW
  - Scroll compressors, R410A
- **YVAG**
  - Cooling capacity: 11–32 kW
  - DC Inverter Heat Pump YVAG
- **YCAG**
  - Cooling capacity: 9 – 40 kW
  - Scroll compressors, R410A
- **YMAA**
  - Cooling capacity: 45 – 255 kW
  - DC Inverter technology, Scroll compressors, R410A
- **YCME**
  - Cooling capacity: 160 – 225 kW
  - Up to 8 modules, Screw compressor R134a
- **YCAE-X**
  - Cooling capacity: 65 – 136 kW
  - Modular Chiller System, Scroll compressors, R410A
- **YLAA**
  - Cooling capacity: 180 – 530 kW
  - Scroll compressors, hydro kit, R410A
- **YVAA**
  - Cooling capacity: 525 – 1,750 kW
  - Variable-speed screw compressors, R134a
- **YVFA**
  - Cooling capacity: 400 – 1,340 kW
  - Air-Cooled VSD Screw Free Cooling, R134a and R513a

**WATER-COOLED**
- **YMWA/YMRA**
  - Cooling capacity: 26 – 193 kW
  - Scroll compressor, R410A
- **YCE/YCRE**
  - Cooling capacity: 140 – 240 kW
  - Up to 8 modules, Screw compressor, R134a
- **YCW/L/YCRL**
  - Cooling capacity: 175 – 600 kW
  - Scroll compressor, R410A
- **YVWA**
  - Cooling capacity: 420 – 1,055 kW
  - Variable speed screw compressor, R134a
- **YZ**
  - Cooling capacity: 580 – 4740 kW
  - Variable Speed Centrifugal, Magnetic Bearings, R1233zd(E)
- **YMCA**
  - Cooling capacity: 580 – 3,520 kW
  - Variable Speed Centrifugal, Magnetic Bearings, R134a and R513a
- **YK**
  - Cooling capacity: 880 – 10,550 kW
  - Centrifugal compressor, R134a and R513a
- **YK-EP**
  - Cooling capacity: 8,800 – 12,300 kW
  - Dual centrifugal compressor, R134a
- **YD**
  - Cooling capacity: 5,000 – 21,000 kW
  - Centrifugal compressor, R134a
- **CYK**
  - Cooling capacity: 1,050 – 8,800 kW
  - Compound centrifugal compressor, R134a
- **YVWH**
  - Cooling capacity: 400 – 1,550 kW
  - Variable speed screw compressor, R134a
- **YGWH**
  - Cooling capacity: 400 – 1,320 kW
  - Screw compressor, R134a
- **YEWS**
  - Cooling capacity: 350 – 1,460 kW
  - Screw compressor, R134a

**ABSORPTION CHILLERS AND HEAT PUMP**
- **SINGLE EFFECT HOT WATER**
  - **YHAU-CL/CH**
    - Cooling Capacity: 105 – 7,034 kW / 30 – 2,000 TR
  - **SINGLE EFFECT STEAM**
    - **YHAU-C**
      - Cooling Capacity: 105 – 7,034 kW / 30 – 2,000 TR
  - **DOUBLE EFFECT STEAM**
    - **YHAC/CECA**
      - Cooling Capacity: 422 – 14,067 kW / 120 – 4,000 TR
- **DOUBLE EFFECT NATURAL GAS AND/OR DIESEL**
  - **YHAC/CG/CA**
    - Cooling Capacity: 422 – 5,626 kW / 120 – 1,600 TR
- **DOUBLE EFFECT EXHAUST GAS**
  - **YHAC/CE**
    - Cooling Capacity: 527 – 5,064 kW / 150 – 1,440 TR
- **MULTI ENERGY EXHAUST AND JACKET HOT WATER**
  - **YHAC/CE-J**
    - Cooling Capacity: 527 – 5,064 kW / 150 – 1,440 TR
YORK® HEAT PUMPS

AIR-COOLED

YCAG / YVAG
Heating capacity: 10 – 41 kW
Scroll compressors, R410A

YMPA
Reversible, water up to 55°C
Heating capacity: 45 – 255 kW
DC Inverter technology, Scroll compressors, R410A

YHME
Reversible, water up to 55°C
Heating capacity: 145 – 185 kW
Up to 8 modules,
Twin screw compressor, R134a

YCAE-X
Heating capacity: 66 – 132 kW
Modular system, Scroll compressors, R410A

YLRA
Reversible, water up to 55°C
Heating capacity: 200 – 680 kW
Scroll compressors, R410A

YLPB
Reversible, water up to 52°C
Heating capacity: 345 – 650 kW
Scroll compressors, R410A

WATER-COOLED

YMWA-HP
Reversible, water up to 55°C
Heating capacity: 25 – 210 kW
Scroll compressor, R410A

YCSE
Water up to 55°C
Heating capacity: 170 – 300 kW
Up to 8 modules,
Screw compressor, R134a

YCWL / YCRL
Water up to 52°C
Heating capacity: 180 – 600 kW
Scroll compressor, R410A

YLCS
Water up to 70°C
Heating capacity: 400 – 1,300 kW
Screw compressor, R134a

YVWA
Water up to 65°C
Heating capacity: 650 – 1,250 kW
Variable-speed screw compressor, R134a and R513a

YMC HP
Water up to 65°C
Heating capacity: 1,600 – 3,000 kW
Variable Speed Centrifugal, Magnetic Bearings, R134a and R513a

YK
Water up to 50°C (Std) / 70°C (HP)
Heating capacity: Contact a chiller rep
Centrifugal compressor, R134a and R513a

YK-YD
Heating capacity: Contact a chiller rep
Centrifugal compressor, R134a and R513a

CYK
Heating capacity: Contact a chiller rep
Centrifugal compressor, R134a and R513a

ABSORPTION SINGLE STAGE

YHAP-C
Water up to 95°C
Heating capacity: 900 – 40,000 kW
Steam, Gas or Hot Water driven R718 (Natural Water)

MODULAR PACKAGED CHILLING SOLUTIONS

YMPC (YORK MODULAR PACKAGED CHILLERS)
Pre-designed factory-assembled self-contained system shipped in modules and assembled at site.
Range - 1,000 - 20,000 tons.

YPCC (YORK PUMP POWER CONTROL)
Pre-designed factory-assembled air-cooled chiller pumping, power and control skid
Range - 80 Tons to 4,000 tons

COOLING TOWERS AND CLOSED CIRCUIT COOLERS

AT COOLING TOWER
Induced Draft Counter flow
CTI certified
Capacity: 30 – 5,750 tons.

LSTE COOLING TOWER
Forced Draft Counter flow.
CTI certified
Capacity: 150 – 1,800 tons.

ATW / ESWA / LSW
CLOSE CIRCUIT COOLERS
Induced / forced draft counter flow
Capacity: 30 – 2,650 tons.
YORK® CLOSE CONTROL AC UNITS

**YC-P SERIES**
Cooling capacity: 7.7 – 160 kW
Brushless DC compressors with inverter technology and brushless EC motor fans.
Upflow or downflow options, R410A

**YC-G SERIES**
Cooling capacity: 43.0 – 183.5 kW
Downflow supply, R410A

**YC-R SERIES**
Cooling capacity: 20.6 – 36.2 kW
Horizontal supply, R410A

FLEXSYS UNDERFLOOR AIR DISTRIBUTION (UFAD)

**VARIABLE AIR VOLUME**
100 to 300 CFM
Unique time-modulation control, variety of sizes, shapes and colors

**MANUAL DIFFUSERS**
80 to 300 CFM
Variety of sizes, shapes and colors, user control, directional and omni-directional

**FAN TERMINAL UNITS**
Up to 1800 CFM
Programmable circuit board design, electric or hot water

**LINEAR GRILLE TROUGHS**
Up to 900 CFM Heating/cooling
Electric or hot water, time-modulation, VAV control option

RUSKIN® AIR CONTROL SOLUTIONS

**LIFE SAFETY DAMPERS**
**CURTAIN TYPE FIRE DAMPER**
UL555-classified.
Maximum velocity: 4000 fpm.
Maximum pressure: 4 in. wg.
Fusible link: 165, 212 and 285 deg F.

**COMBINATION FIRE AND SMOKE DAMPER**
Hourly rating: 1.5 and 3 hr
(only MSFD – UL555).
Leakage class: 1, 2 and 3 (UL 555 S).
Maximum velocity: 4000 fpm.
Maximum pressure: 8 in. wg.
Maximum assembly temp: 350 deg F.
Electric fuse link: 165, 212, 250 and 350 deg F (only MSFD).

**CONTROL DAMPER**
AMCA certified.
Leakage class: 1, 2 and 3.

**SAND TRAP LOUVER**
Aluminium and galvanized construction.
AMCA certified:
Air performance and sand removal efficiency.

**SOUND CONTROL**
Rectangular silencers.
Rectangular elbow silencers.
Grille silencers.
Modular panels.
Airvent transfer silencers.

TITUS® AIR DISTRIBUTION SOLUTIONS

**FLOW BAR LINEAR DIFFUSER**
Aesthetic consideration.
High throw and jet throw.
Pattern controller.

**SQUARE DIFFUSERS**
Pleasing appearance.
Removable core.
Face-operated OBD.

**SINGLE DUCT TERMINAL UNIT**
AHRI Certified
Integral attenuator available.
Compact size and easy access.

**GRILLES & REGISTERS**
Front and rear blades.
Face operated OBD.

**LINEAR SLOT DIFFUSER**
Up to 8 slots available.
Hit and miss damper.
Integral deflector.

Different insulation liner types available.
**AIR HANDLING UNITS & COILS**

- **N-YSM**
  - AIR HANDLING UNIT
  - 1,200 to 99,180 m3/hr
  - AHRI-certified / Eurovent-certified
  - Thermal Break Profile

- **YMA CUSTOM MADE**
  - AIR HANDLING UNITS
  - Flexible construction, premium product

- **YMS AIR HANDLING UNITS**
  - With modular construction, standard product

- **YGFC**
  - Cooling capacity: 0.7 – 12.7 kW
  - Concealed and Decorative range, BLDC motor as option

- **YAH**
  - Cooling capacity: 5.2 – 97 kW
  - Belt Drive Blower coil unit

- **LASER & LOW BODY / - EST**
  - Cooling capacity: 0.6 – 9.7 kW
  - Cased and concealed, horizontal or vertical mounting, EC variable speed motor option

- **YEFB**
  - Cooling capacity: 4.3 – 28.9 kW
  - Horizontal mounting without case

**YORK® FAN COIL UNITS**

- **YGFC**
  - Cooling capacity: 0.7 – 12.7 kW
  - Concealed and Decorative range, BLDC motor as option

- **YAH**
  - Cooling capacity: 5.2 – 97 kW
  - Belt Drive Blower coil unit

- **LASER & LOW BODY / - EST**
  - Cooling capacity: 0.6 – 9.7 kW
  - Cased and concealed, horizontal or vertical mounting, EC variable speed motor option

- **YEFB**
  - Cooling capacity: 4.3 – 28.9 kW
  - Horizontal mounting without case

- **YDFC**
  - Cooling capacity: 5.7 – 17.4 kW
  - Concealed only

- **YECFC EC MOTOR**
  - Cooling capacity: 0.7 – 17.4 kW
  - Concealed only

- **YFCN / YFCN-ECM**
  - Cooling capacity: 0.7 – 7.4 kW
  - Cased and concealed, horizontal or vertical mounting, EC variable speed motor option

**RESIDENTIAL, LIGHT COMMERCIAL & VRF SYSTEMS**

- **R22, R407C, R410a Refrigerant, 50Hz and 60Hz**
  - Air-Cooled Package Units 36 - 1500 MBH
  - Ductless Split Units 09 - 110 MBH

- **HITACHI VRF SERIES**
  - R410a, 50Hz/60Hz
  - SMZ T1 77 – 928 MBH, Heat Pump
  - SMZ T3 48 – 246 MBH, Heat Pump
  - HAPQ T1 77 – 928 MBH, Heat Pump
  - SMZ T1 77 – 516 MBH, Heat Recovery
  - SMZ T3 48 – 516 MBH, Heat Recovery
  - 77 – 192 MBH, Water-Cooled Heat Pump

- **AMAZON VRF SERIES**
  - R410a, 50Hz/60Hz
  - 78 – 158 MBH, Standard Efficiency Heat Pump
  - 87 – 721 MBH, High-Efficiency Heat Pump
  - 82 – 460 MBH, Heat Recovery
  - 30 – 64 MBH, Mini VRF (Side Discharge)
  - 78 – 115 MBH, Mini VRF (Side Discharge) 50 Hz
  - 80 – 359 MBH, Water-Cooled

- **YORK-JCH - R410a, 50Hz/60Hz**
  - 77 to 341 MBH, High-Efficiency Heat Pump
York® Room Air Conditioners (RAC)

Window Units

Blanc Series
- 7 - 24 MBH
- Window Units for T1 & T3 Markets
- R410A & R22 Refrigerant, Cooling Only

Sierra Series
- 12 - 18 MBH
- Window Units for T1 Market
- R410A Refrigerant, Heat Pump

High Wall Units

Ridaa U Series
- 12 - 36 MBH
- High Wall Units for T3 Market
- R410A Refrigerant, Fixed, Cooling Only, 9.5 EER

Ridaa Q Series
- 12 to 30 MBH
- High Wall Units for T3 Market
- R410A Refrigerant, Fixed, Cooling Only, 11.5 EER

Ridaa RQ Series
- 12 - 36 MBH
- High Wall Units for T1 & T3 Markets
- R410A Refrigerant, Fixed, Heat Pump, 9.5 EER

Ridaa IQ & IQH Series
- 12 - 24 MBH
- High Wall Units for T1 & T3 Markets
- R410A Refrigerant, Inverter, Cooling Only & Heat Pump, 12 EER

Amazon Series
- 18 - 32 MBH
- High Wall Units for T3 Market
- R410A Refrigerant, Cooling Only, 11.5 EER

Floor Standing Units

Amazon Series
- 32 - 80 MBH
- Floor Standing Units for T1 & T3 Markets
- R22 Refrigerant, Fixed, Cooling Only

Monterosa Series
- 9 - 24 MBH
- High Wall Units for T3 Market
- R410A Refrigerant, Fixed & Inverter, Heat Pumps

Ganges Series
- 9 - 36 MBH
- High Wall Units for T1 Market
- R410A Refrigerant, Fixed & Inverter, Heat Pumps

Column Tropical Series
- 76 - 110 MBH
- Floor Standing Units for T1 & T3 Markets
- R410 Refrigerant, Fixed, Cooling Only

Grande Series
- 24 - 55 MBH
- Floor Standing Units for T1 & T3 Markets
- R410 Refrigerant, Fixed, Heat Pump
**YORK® PACKAGED AIR CONDITIONERS (PAC)**

### DUCTED UNITS

#### GLOBAL PAC SERIES
- 9 - 60 MBH
- Ducted Split Units for T1 & T3 Markets
- R410A Refrigerant
- Inverter Compressor (T1), Fixed Compressor (T1 & T3)

#### GRANDE SERIES
- 18 - 55 MBH
- Ducted Split Units for T1 Markets
- R410A Refrigerant
- Fixed Compressor Side
- Discharge Condensing Units

#### GRANDE SERIES
- 36 - 60 MBH
- Ducted Split Units for T3 Markets
- R410A Refrigerant
- Fixed Compressor Top
- Discharge Condensing Units

#### AMAZON SERIES
- 18 - 48 MBH
- Ducted Split Units for T3 Markets
- R410A Refrigerant
- Inverter Compressor Side
- Discharge Condensing Units

#### SABER SERIES
- 36 - 300 MBH
- Packaged Units for T3 Markets
- R410A Refrigerant

#### ACTIVA SERIES
- 60 - 600 MBH
- Packaged Units for T1 Markets
- R410A Refrigerant

#### SABER SERIES
- 360 - 1500 MBH
- Condensing Units for T3 Markets
- R22 & R407C Refrigerant

#### VITALITY SERIES
- 60 - 300 MBH
- Ducted Split Units for T1 Markets
- R410A Refrigerant

### CASSETTE SPLIT UNITS

#### GLOBAL PAC SERIES
- 9 - 55 MBH
- Cassette Split Units for T1 & T3 Markets
- R410A Refrigerant
- Inverter Compressor (T1)
- Fixed Compressor (T1 & T3)

### CEILING/FLOOR SPLIT UNITS

#### GLOBAL PAC SERIES
- 18 - 55 MBH
- Ceiling/Floor Split Units for T1 Markets
- R410A Refrigerant
- Inverter Compressor

#### ECOSMART SERIES
- 18 - 60 MBH
- Ceiling/Floor Split Units for T3 Markets
- R410A Refrigerant
- Inverter Compressor
**OUTDOOR UNITS**

**HIGH EFFICIENCY**

**HIGH AMBIENT**
Outdoor units from 8HP to 60HP with 2HP increments
8/10/12/14/16/18/20 HP
Dual frequency 50/60Hz
R410A

**MINI VRF**

**STANDARD AMBIENT**
8/10/12 HP
Dual frequency
50/60Hz
R410A
Side discharge

**HIGH EFFICIENCY**

**STANDARD AMBIENT**
Outdoor units from 8HP to 72HP with 2HP increments
8/10/12/14/16/18/20 HP
R410A
Dual frequency 50/60Hz

**MINI VRF HIGH AMBIENT**
8/10/12 HP
Dual frequency
50/60Hz
R410A
Side discharge

**INDOOR UNITS**

**4 WAY CASSETTE**
2.8/3.6/4.5/5.5/6.7/7.1/
8.0/9.0/11.2/14.0 Kw
Built-in drain pump

**LOW STATIC DUCTED**
2.2/2.8/3.6/4.5/5.5/6.7/1 Kw
Optional drain pump

**ROUND WAY CASSETTE**
2.2/2.8/3.6/4.5/5.5/6.7/1/
8.0/9.0/11.2/14.0/16.0 Kw
Built-in drain pump

**MEDIUM STATIC DUCTED**
5.6/7.1/8.0/9.0/11.2/14.0 Kw
Built in drain pump

**HIGH WALL**
2.2/2.8/3.6/4.5/5.6/
7.1/8.0/9.0 Kw

**HIGH STATIC DUCTED**
5.6/7.1/8.0/9.0/11.2/14.0/16.0/22.6/28.0 Kw
Optional drain pump

**FLOOR / CEILING**
2.8/3.6/4.5/5.5/7.1/
8.0/9.0/11.2 Kw

**SLIM DUCTED**
2.2/2.8/3.6/4.5/5.5/6.7/1 Kw
Built in drain pump

**2 WAY CASSETTE**
2.8/3.6/4.5/5.5/6 Kw
Built-in drain pump

**FRESH AIR DUCTED**
14.0/22.6/28.0 Kw

**1 WAY CASSETTE**
1.5/2.2/2.8/3.6 Kw
Built-in drain pump

**BUILT-IN FLOOR STANDING**
2.2/2.8/3.6/4.5/5.5/6.7/1 Kw
HITACHI AIR CONDITIONERS

ROOM AIR CONDITIONERS (RAC)

**RQH SERIES**
12,000 - 36,000 Btu/h
Heat Pump for T3 Market

**ZUNOH Q SERIES**
12,000 - 30,000 Btu/h
Cooling Only for T3 Market

**ZUNOH U SERIES**
12,000 - 36,000 Btu/h
Cooling Only for T3 Market

**KASHIKOI IQ**
12,000 - 24,000 Btu/h
Inverter, Cooling Only & Heat Pump for T3
50/60 Hz Market

PACKAGED AIR CONDITIONERS (PAC)

**DUCT SERIES**
9,000 - 59,000 Btu/h
Fixed Speed & Inverter, Cooling Only & Heat Pump for T1 & T3 Markets

**DUCT RUA SERIES**
39,900 - 160,400 Btu/h
Cooling Only for T3 Market

**CASSETTE SERIES**
10,000 - 52,000 Btu/h
Fixed Speed & Inverter, Cooling Only & Heat Pump for T1 & T3 Market

**FLOOR CEILING CONVERTIBLE SERIES**
16,000 - 50,000 Btu/h
Fixed Speed & Inverter Heat Pump for T1 Market

**PACKAGE RUA SERIES**
41,600 - 322,100 Btu/h
Cooling only for T3 Market

VARIABLE REFRIGERANT FLOW (VRF)

**HEAT PUMP AND HEAT RECOVERY, STANDARD AND HIGH EFFICIENCY TYPE FOR T1 MARKET**
5 - 24 HP Single Module and up to 4 Modules Combination Wide Range of Indoor Units

**HEAT PUMP AND HEAT RECOVERY FOR T3 MARKET**
8 - 18 HP Single Module and up to 4 Modules Combination Wide Range of Indoor Units

**MINI VRF SINGLE AND THREE PHASE 4, 5 & 6 HP FOR T1 MARKET**
Wide Range of Indoor Units

**HEAT PUMP & HEAT RECOVERY MINI VRF SINGLE AND THREE PHASE 4-12 HP FOR T3 MARKET**
Wide Range of Indoor Units
SABROE® INDUSTRIAL REFRIGERATION

RECIPROCATING COMPRESSOR UNITS

CMO
Capacity: 50 – 190 kW
Fixed or variable speed, Ammonia (R717), hydrocarbons (HCs), common HFCs and derived blends

SMC
Capacity: 130 – 1,225 kW
Fixed or variable speed, Ammonia (R717), hydrocarbons (HCs), common HFCs and derived blends

HPO/HPC/HPX
Heating capacity: 330 – 700 kW
Cooling capacity: 80 – 185 kW
Fixed or variable speed, Ammonia (R717), carbon dioxide (R744), hydrocarbons (HC), common HFCs and derived blends

SCREW COMPRESSOR UNITS

SAB, small
Capacity: 120 – 180 kW
Fixed or variable speed, Ammonia (R717), carbon dioxide (R744), hydrocarbons (HCs), common HFCs and derived blends

SAB, large
Capacity: 540 – 1,800 kW
Fixed or variable speed, Ammonia (R717), carbon dioxide (R744), hydrocarbons (HCs), common HFCs and derived blends

WATER-COOLED CHILLERS

ChillPAC
Cooling capacity: 100 – 1,400 kW
Recip compressor, fixed or variable speed, Ammonia (R717) (<50 kg charge)

ComPAC
Cooling capacity: 200 – 2,200 kW
Screw compressor, fixed or variable speed, Ammonia (R717) (low charge)

PAC recip
Cooling capacity: 50 – 1,400 kW
Recip compressor, fixed or variable speed, Ammonia (R717)

PAC screw
Cooling capacity: 200 – 6,200 kW
Screw compressor, fixed or variable speed, Ammonia (R717)

CAFP low-temperature chiller
Capacity: 85 – 790 kW
Fixed or variable speed, Ammonia/CO₂ (R717/R744)

CONTROLS

Unisab III
Integrated systems controller for chillers and heat pumps

Chiller plant controller
Plug-and-play control panel for plant integration of chillers

ISAC
Monitoring and control interface configuration system for refrigeration installations

IRIS
Intelligent reporting and documentation system for optimising refrigeration plant performance

SABROE® HEAT PUMPS

HeatPAC recip
Water up to 70°C
Heating capacity: 200 – 2,000 kW
Recip compressor, fixed or variable speed Ammonia (R717) (<50 kg charge)

HeatPAC HPX recip
Water up to 90°C
Heating capacity: 100 – 1,400 kW
Reciprocating compressor, variable speed only, Ammonia (R717) (<50 kg charge)

DualPAC
Water up to 90°C
Heating capacity: 400 – 2,000 kW
Variable speed, Ammonia (R717)

HeatPAC screw
Water up to 90°C
Heating capacity: up to 1,600 kW
Screw compressor, variable speed only, Ammonia (R717)

Customised heat pumps
Water up to 90°C
Heating capacity: up to 13,000 kW
Screw compressor, variable speed only, Ammonia (R717)
FRICK® COMPRESSOR PACKAGES

**RXF FRICK® COMPRESSOR PACKAGES**
Fewer moving parts reduce upkeep, noise, and repair costs.
- Dependability proven in thousands of installations
- Rotor design for efficiency
- Matches required loads

**RWF II FRICK® COMPRESSOR PACKAGES**
Designed for ammonia and hydrocarbon refrigerants.
- Variable control saves power
- Flange-mounted motors exclude coupling alignment
- Quick Cold-Start™ valve

**FRICK® POWERPAC™ INDUSTRIAL REFRIGERATION CHILLER**
Advanced technology for lower refrigerant operation.
- Variable speed drives
- Requires up to 50% less space to install
- Easy portability

**FRICK® SMARTPAC™ HEAT PUMPS**
Cost-saving industrial water heating solutions that are environmentally friendly.
- Quality components
- Easy portability
- Compact footprint

**OTHER WORLD-CLASS SOLUTIONS**
- Low Charge Central System
- Pressure Vessels
- Hygienic Air Units
- Evaporators
- Condensers
- Heat Exchangers
- Controls

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YORK PACKAGED SYSTEMS

**SKIDDED SYSTEMS**
Heavy-duty refrigeration with screw or centrifugal compressors for a wide range of refrigerants.

**YORK® PACKAGED SYSTEMS**
Industrial pressure vessels that can withstand high pressure and low temperature requirements.

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SPARE PARTS

**HVAC COMPRESSORS AND PARTS**
Scroll, screw, reciprocating, centrifugal compr. and parts

**LINE COMPONENTS**
Expansion and solenoid valves, driers, sensors, sight glasses, gauges, relief valves and ball valves

**ELECTRONIC COMPONENTS**
Electronic board, high pressure/low pressure switches, timers and electronic expansion devices

**HEAT EXCHANGERS**
Finned coil, shell & tube and plate type heat exchangers

**CONDENSERS**
Evaporative and air-cooled

**REFRIGERATION COMPRESSOR PARTS**
Parts for reciprocating and screw compressors

**LINE COMPONENTS**
Gauges, sensors etc.

**CONTROLS**
Sabreo® Unisab III retrofit
FRICK® Quantum™ HD

**KITS AND SETS**
Packaged solutions for easy service

**UPGRADE KITS**
Packaged solutions for optimizing equipment
AMERICAN DYNAMICS VIDEO MANAGEMENT SYSTEM
Victor is a scalable monitoring solution synchronizing video surveillance with access control, fire, intrusion and other systems into one powerful, intuitive interface.

AMERICAN DYNAMICS VIDEOEDGE
An extensive range of IP and Hybrid Network Video Recorders with on-board advanced analytics, for proactive video surveillance.

EXAQC TECHNOLOGIES
An IP and Hybrid Network Video recording and management solution, with many integrations and an intuitive easy to use client application.

HOLIS NVR AND HOLIS HD
A choice of IP or High Definition analogue camera recording systems, with a range of features suited to the small to medium business sectors.

Accessories
AMERICAN DYNAMICS MONITORS
A Professional level range of monitors designed for 24/7 use.

AMERICAN DYNAMICS MATRIX SWITCHERS
For video walls in control room environments using analogue systems.

AMERICAN DYNAMICS INTELLEX
The first Digital Video Recorder, providing a surveillance solution for customers requiring an analogue system.

HD Cameras
AMERICAN DYNAMICS HD ANALOGUE BULLET CAMERA
Perfect as an upgrade to a legacy standard definition analogue system.

IP Cameras
ILLUSTRA CAMERAS
A large range of IP cameras with three ranges, Essentials, Flex and Pro; cameras to suite most requirements and budgets.

PRO MINI DOME IP CAMERAS
Low light technology and on-board advanced analytics, for mission critical installations.

PRO MICRO IP CAMERA
High-definition camera and a separate lens are perfect for ATM machines and discreet installations.

PRO PTZ IP CAMERAS
Easily track suspects and zoom in to take a closer look at events.

FLEX BULLET IP CAMERAS
The latest technology in the Illustra Range giving advanced bandwidth management and clear crisp picture in 3MP resolution.

FLEX COMPACT IP CAMERAS
A low-profile camera for unobtrusive video surveillance in a high resolution.

ESSENTIAL EYEBALL IP CAMERA
A HD resolution camera meeting the fundamental needs of a video surveillance system.

SOLUTIONS FOR DISPATCH CENTERS

CELIOS
Central management of operations planning from alarm reception to documentation.

CEUS
Mobile solution for rescue missions to support Fire-medics.

CEVAS
Documentation, quality management, billing and statistics for emergency operations.
**INTRUDER ALARMS**

**ZETADRESS**
High-security alarm system according to VDE, DIN, VdS, PIZ and UVV. Covers all assault and Burglary risks and the requirements of operating surveillance and false alarm systems.

**VISIONIC**
Wireless intruder alarm system for residential and SMB environments. Encrypted transmission of signals and easy to install.

**DSC POWERSERIES NEO**
Hybrid intruder alarm system for small medium business environment. Up to 128 zones.

**ZETADRESS TOUCHSCREEN CONTROL PANEL**
Durable 5.7” touchscreen LED-backlight and intuitive interface. For high security purposes.

**TOUCHSCREEN KEYPAD**
Used with DSC PowerSeries Neo (control panel) available as wired and wireless device.

**2-WAY REMOTE HANDSET**
Remote control for Visonic intruder panel.

**MOTION DETECTOR WITH INTEGRATED CAMERA**
Detects moving objects in its range. With the camera, these objects can be identified and alarms verified.

**REED AND VIBRATION DETECTOR**
Any attempt to open a strong room will cause vibrations that can be used to detect an intrusion.

**GLASSBREAK DETECTOR**
For glass doors and large windows. It detects the sound of breaking glass.

**LSN MOTION DETECTOR**
The Tri-Focus-Optics uses three different focal length with high, middle and short range.

**LSN GLAS BREAKAGE DETECTOR**
LSN bus technology for an efficient Installation.

**LSN PANIC ALARM BUTTON**
To manually trigger an alarm.

**OUTDOOR MOTION DETECTOR**
Detects moving objects, thus enabling perimeter protection.

**MAGNETIC CONTACT FOR DOORS AND WINDOWS**
Enables the monitoring of the status of a door by the intruder panel.

**INDOOR SIREN**
Informs people in the building of an alarm.

**OUTDOOR SIREN**
Informs the public, i.e. people outside the building of an alarm.

**REPEATER**
To expand the coverage of wireless systems.

**SMOKE AND GAS DETECTOR**
Expands intruder systems with carbon monoxide detection.

**CELLULAR UNIVERSAL WIRELESS ALARM COMMUNICATOR**

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**INTEGRATED SOLUTIONS**

**TYCO INTEGRATED SYSTEMS MANAGER**
This advanced Physical Security Information Management (PSIM+) software connects and correlates all building systems at the operator desk.

**VICTOR UNIFIED MANAGEMENT SYSTEM**
All-in-one integration platform for advanced security solutions combining intelligence, mapping, reporting and event management.
ACCESS CONTROL

C-CURE 9000
SECURITY+EVENT
Powerful and flexible access control and security management systems.

PHYSICAL SECURITY
INFORMATION
MANAGEMENT
Integrates PSIM technologies.

CEM
Access control system with on- and offline readers, interactive for middle-sized to big assets.

CONTROLLERS & MODULES
Access control IP controllers to perform manual and automatic control functions. Modules to connect readers, doors and additional points.

MULTI-TECHNOLOGY READERS
Multi-protocol, multi-frequency solution.

GO READER MOBILE APP
Reader grants or denies access in the most remote, disconnected areas.

EMERALD™ TS300
Intelligent access terminal with VoIP communication station and remote application.

EMERALD™ TS300F
Multi-functional touch screen access control terminal with fully-integrated fingerprint security and VoIP Intercom.

OFFLINE READER
Integration of wireless as well as data-on-cards solutions.

PORTABLE READER S3040
Light but robust portable reader for counting of people in case of evacuation.

WATER EXTINGUISHING SYSTEMS

SPRINKLER
Well-performing safety element since 1881. Sprinkler ESFR-25 is designed for primarily use as ceiling-only protection of storage applications.

RESIDENTIAL SPRINKLER
The unique spray characteristic of these sprinklers make them an optimized safety element for care homes and private estates.

AQUAMIST® SONIC
Droplets with a size of 10 – 20µm with an extraordinary kinetic energy for water sensible equipment in spaces up to more than 1000m². True 3-dimensional performance.

SPRAY SYSTEMS
Open nozzles for the protection of transformers and storage systems for flammable liquids. Also very common in theaters to substitute the iron curtain.

AQUAMIST® ULF
Water mist with droplets in the range of 200– 500 µm and a wide range of applications.

FOAM SYSTEMS
Cooling capacity: 0.8 – 4.0 kW Ceiling-mounted coanda cassette, 2 and 4 pipe versions available, EC variable speed motor option.

AQUAMIST® FOG
Very fine droplets in the range of 20 – 200 µm with its best performance at burning liquids in enclosures, e.g. paint booth.

WATER VALVE STATION
Various types of valve stations give the operability to sprinklers, foam systems, spray systems and most water mist systems.
FIRE DETECTION

PROFILE FLEXIBLE®
Fire alarm panel. 4 to 16/32 loops, up to 250 addresses per loop. Expansion card slots: up to 6.

GENERATION 6 FIRE DETECTORS
Point detectors for heat, smoke, CO concentration or a combination of these criteria.

FLAME VISION FLAME DETECTORS
Infrared technology to detect open flames. Optionally with video camera for optical verification.

VESDA ASPIRATING SMOKE DETECTOR
Analyze air samples extracted through a pipeline network.

LINEAR HEAT DETECTION
Uses a sensor cable to detect high temperatures. Thus, they are able to cover extremely long distances.

BEAM SMOKE DETECTORS
Form a photoelectric barrier for smoke, which enables them to protect large areas.

MANUAL CALL POINTS
Call points are used to trigger a fire alarm manually.

ALARMING DEVICES
In case of fire, the building has to be evacuated, i.e. people have to be informed acoustically and optically by sounders and beacons.

OPTICAL ALARMING DEVICES
To inform people optically to leave the premise, beacons and flashing lights are used.

GAS EXTINGUISHING SYSTEMS

FAST 2000 EXTINGUISHING CONTROL SYSTEM
Modular fire detection panel and control panel. Widely redundant, uses the detector lines of the PROFILE panels.

CO2 HIGH-PRESSURE EXTINGUISHING SYSTEM

KOTIKA LOW-PRESSURE EXTINGUISHING SYSTEM
CO2 is a natural extinguishing agent which combines high efficiency in extinguishing fires with a low price for the agent.

SAPPHIRE™

GAS EXTINGUISHING INERGEN
Extinguishing without residue and harmless for persons. Low conductivity.

ACOUSTIC NOZZLE
To avoid damaging hard disks in data centers by the noise of the agent which is discharged through the nozzles.

NOZZLES
For CO2 systems.
Digital Solutions: The Future of Data-enabled Business

Energy & Optimization
Monitoring, managing, and optimizing equipment, environments, and enterprises.

JOHNSON CONTROLS ENTERPRISE MANAGEMENT
Proactively analyzes building data across your enterprise to help find opportunities for improved performance.

SMART CONNECTED CHILLERS
Monitor performance from anywhere, and even predict when a chiller will go down—because uptime is everything.

CENTRAL PLANT OPTIMIZATION
Solutions to help minimize energy costs in central plants without compromising reliable service.

Protection & Security
Proactively protect your organization from threats to your building, campus, or whole real estate portfolio.

ASSURANCE SERVICES
Asset tagging, mapping, monitoring, and servicing for asset compliance and cybersecurity risk prevention.

CONNECTED CONVERGED SECURITY
Our monitoring client combines an advance risk algorithm with other data to provide proactive threat protection.

Mid-market Portfolios
Mid-size multi-location solutions for a better business.

DIGITAL PLATFORM
Aggregate and analyze data from a portfolio of small- to medium-sized commercial buildings.

FALSE ALARM REDUCTION SERVICE
Reduce your alarm activity and the costs that comes with it.
WHAT IS DIGITAL VAULT?

The Johnson Controls Digital Vault is a flexible, scalable, cloud-based platform that reaches across silos to gather data from disparate sources, stores it securely and standardizes the data. It then converts the data into something you can leverage to predict business and building outcomes and gain new insights related to buildings and occupants. It can also ensure your processes comply with regulatory or internal business rules.

We offer the capability to fully integrate disparate internal and external data sources to help you make sense of energy usage, security breaches, equipment performance and space utilization. The pace of technological change requires building professionals like you to be more analytical, flexible and agile than ever before. Plus, as budgets shrink, enterprise executives are being asked to ‘do more with less.’

Digital Vault helps you meet those challenges head-on. We give you the power to make faster, smarter, data-driven decisions which better positions you to achieve other business goals such as reducing energy use, increasing productivity and creating safer, more comfortable environments.
Johnson Controls
Data Center Solutions

**HVAC**
- Water-Cooled Centrifugal Chiller
- Air-cooled Chillers with Free Cooling
- Air Handling Unit

**Building Management**
- Heat Pumps
- District Heating/ Cooling Equipment
- Direct Evaporative Cooling (DEC) Unit
- Building Management System
- Data Center Infrastructure Management (DCIM)

**Fire**
- Fire Detection Equipment
- Aspirating Smoke Detector (ASD)
- Fire Panel
- Water Sprinkler Nozzle
- Acoustic Solutions to Protect Data
- Watermist Nozzle
- Sapphire Gas Suppression
- INERGEN® iFlow System

**Security**
- Proactive Video Surveillance
- Command & Control Center
- Visitor Access & Management System
- Video Surveillance
- Access Control
- Intruder Detection
- Perimeter Protection
- Security Lighting
- Cabinet-level Access Control

**Service**
- Proactive Chiller Replacement
- Chiller Plant Optimization
- Data Center Operations Management
- Integrated Security Systems & Services
- Centralized Fire Alarm Monitoring
- Fire / Life Safety Improvements
- Gas Suppression Upgrades & Connected Solutions

**Range of Offerings**
PRODUCT AND SERVICE PORTFOLIO
Data Center - Engineered Solutions

INFRASTRUCTURE LEADER - DRIVING SEVERAL KEY OBJECTIVES

EFFICIENCY
TCO, PUE, WUE, Optimization Maintenance / Service for asset compliance and cybersecurity risk prevention.

RELIABILITY
Uptime, Recovery, Monitoring, Control, Resiliency

SECURITY
Access, Video, Fire, Power, Buildings, Hardware, Data, Privacy

FLEXIBILITY
Simplification, Standardization, Compatibility, Responsiveness
REDUCING UNPLANNED DOWNTIME, INCREASING ASSET LIFE AND RELIABILITY, AND ENSURING PRODUCTIVE ENVIRONMENTS ARE KEY BENEFITS OF OUR PLANNED MAINTENANCE AND PREDICTIVE & DIAGNOSTIC SERVICES.

ENGINEERED (GREENBOX) SOLUTIONS
A holistic approach that allows chiller plants to reach & sustain their high-performance, high-efficiency potential

ENERGY EFFICIENT RETROFITS
Increases overall efficiency. Reduces utility costs.

ENERGY SOLUTIONS NEW & EXISTING BUILDINGS
Adding value where it's needed the most

ENERGY SOLUTIONS & ENERGY AUDIT
Benchmarking your facility

ENERGY SOLUTIONS ENERGY BASELINE
Benchmarking your facility

PLANNED SERVICE AGREEMENT (PSA)
Delivering the performance you expect and the efficiency you need.

BUILDING PLANNED & PREVENTATIVE MAINTENANCE
Protecting critical assets through professional care.

BUILDING REMOTE MONITORING MANAGEMENT
Peace of mind through rigorous observations.

PREDICTIVE & DIAGNOSTIC SERVICES
Data-driven maintenance timing.

BUILDING SYSTEM & HVAC REPAIR SERVICES
Rapid response keeps operations going.
How does improved comfort, safety, performance and energy efficiency throughout the lifecycle of your project or building sound? We have the solution – design, HVAC maintenance and repair, retrofits, system integrations and even financing options – no matter the type, age or size of the facility.

Engineered (Greenbox) Solutions

A HOLISTIC APPROACH THAT ALLOWS CHILLER PLANTS TO REACH AND SUSTAIN THEIR HIGH-PERFORMANCE, HIGH-EFFICIENCY POTENTIAL

- Electricity costs are rising at rates greater than inflation
- Owners are seeking a "total cost of ownership" solution

A SHIFT IN SMART APPROACH WILL DELIVER RESULTS

In a common chiller plant, chillers, by far, have the largest energy demand.

- Chillers spend more than 99% of operating hours at off-design conditions.
- Simultaneous occurrence of 100% load and design outdoor conditions is very unlikely.
- Compressor running at lower speeds, whenever possible, consumes less power and can potentially save up to 30% of annual energy consumption.

Greenbox ‘ENERGY SAVING OPPORTUNITIES’
Energy Efficient Retrofits
Increases overall efficiency. Reduces utility costs.

1. VSD Chillers
   Savings of up to 30% at off-design conditions

2. LED Bulbs
   Average savings of up to 40% load.
   Lasts up to 10 times as long as conventional incandescent light.

3. Chiller Plant Optimization (CPO)
   Savings of up to 15% overall operating costs.

4. PSA Service Agreement
   Up to 15% energy costs reduction via periodic equipment maintenance.
Energy footprint calculation is the first step to improving efficiency and reducing costs of any existing facility.

5. OCCUPANCY SENSOR
   Enables BMS-controlled HVAC operation, turns off light and resets thermostat.

6. CONTROLS RETROFIT
   Matches energy needs of a space with amount of energy delivered. Up to 15% reduction on overall energy consumption.

7. WINDOW FILMS
   Up to 30% reduction on cooling costs.
Calculating the Baseline

- Identify savings potential
- Prioritize possible improvements
- Comparison methodology
- Data sources and references

Energy Consumption Varies Based on Different Application and Occupancy Levels

- Building Area (Sq Meter)
- Building Use (Occupancy Hrs)
- Energy Cost (US$/Yr/Sq Meter)
- Energy Use (kWhr/Yr/Sq Meter)

Air Conditioning

Largest Energy Consumers

- Typical Facility
- Energy Usage Profile

- Typical Facility

- Air Conditioning
- Lighting
- Others
- Chiller Plant
- Total Facility Energy Use

RETRO COMMISSIONING
RETROFIT REPLACEMENT
TESTING BALANCING
HVAC ENHANCEMENT
CONTROLS UPGRADE
LIGHTING IMPROVEMENT
INSULATION IMPROVEMENT
SAVE ENERGY

FACILITY IMPROVEMENT MEASURES - FIMs

Benchmarking your facility

RETRO COMMISSIONING
RETROFIT REPLACEMENT
TESTING BALANCING
HVAC ENHANCEMENT
CONTROLS UPGRADE
LIGHTING IMPROVEMENT
INSULATION IMPROVEMENT
SAVE ENERGY

Energy Savings Potential

- Save Energy kWh/Yr/Sqm

Facility Improvement Measures - FIMs

- Need Improvement
- Fair
- Good
- Excellent

Retrofits

Retrofit Comissoning

Retrofit Replacement

Testing Balancing

HVAC Enhancement

Controls Uplgrade

Lighting Improvement

Insulation Improvement

Save Energy
Energy audits with facility improvement measures reduce operational costs by 10% to 30%.
Chiller Plant Energy Services

Adding Value Where It’s Needed The Most.

Chiller plant rooms and HVAC equipment account for over 60% of the total energy consumed in buildings. Chiller Plant Energy Service (CPES) is a set of well defined energy saving programs, which are designed to optimize and save energy consumption in chiller plants.

The process goes beyond chillers (retrofits, replacements and upgrades) into other areas of the plant room and helps customers gain additional energy and cost saving in both existing buildings and new projects.

Value to Customer:
- Reduced energy consumption.
- Increased efficiency.
- Optimized energy performance.
- Increased life cycle of equipment.
- Minimization of equipment failure.

Energy Impact

CPES is a right mix of services and strategies used to monitor equipment, gather and analyze data, forecast failure and determine the root cause of existing equipment condition. It takes various components such as chillers, cooling towers and chilled water distribution pumps, etc. into account and ensures that performance is optimized in relation to load requirements. The result is a reduction in energy consumption by up to 30% as compared to a traditional chiller plant.
Meeting your needs with comprehensive planned maintenance

No two facilities have the same service needs. A service strategy maximizes return and minimizes risk. Johnson Controls can develop a planned service program built around your specific building performance requirements, keeping HVAC equipment and controls performing at optimum levels with a combination of scheduled, predictive and measurable preventive maintenance services.
The Next Generation of Smart and Connected

A global portfolio of proven solutions.

Management systems & Integrated solutions
Make your building smarter with our automation systems and integrated solutions.

Energy Efficiency
Enabling smarter and more sustainable buildings by using energy management and storage.

HVAC
Bring comfort to your employees with our HVAC solutions.
**Safety & Security**

Ensure people and asset security all the time.

- Integrated operations centre (PSIM)
- Digital CCTV surveillance
- Cyber security
- Access controls (doors, gates, elevators)
- Perimeter protection
- Intruder detection
- People counting
- 24/7 monitoring
- Combined smart-card (access & cashless payment)
- Handheld access control
- Car park management
- Car park utilisation (prioritized areas)
- Automated plate recognition (ANPR)
- Queue monitoring

**Fire, life-safety & hazard protection**

Protect life and assets.

- Incident management
- Voice alarm
- Fire evacuation
- Emergency lighting
- Digital addressable fire panel
- Gas detection
- Water tank (fire extinguishing)
- Smoke detector (fire extinguishing)
- Sprinkler & water mist (fire extinguishing)
- Clean-Agent cylinders (fire suppression)
- Smoke detector (fire suppression)
- Clean-Agent nozzle (fire suppression)

**Communication**

Enable seamless communications around your facilities.

- Radio systems
- Public address, evacuation systems
- Information desk & visitor management
- Operational Intelligence
- Desk reservation
- Wireless networks
Global Strength

Local Expertise. At your service.

About Johnson Controls Building Technologies and Solutions

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