INTEGRATED BUILDING MANAGEMENT SYSTEMS

Complete Solutions for :
Smart Buildings
Safe Cities
Command Control Centre & Data Centre
Smart Industry & Control Environment

BAJAJ
Inspiring Trust

BRANCH OFFICES

NORTH REGION

Chandigarh	Tel.: 0172-5103322
Delhi	Tel.: 011-66416100
Jaipur	Tel.: 0141-2388240
Lucknow	Tel.: 0522-4938900-30
Noida	Tel.: 0120-4040400

EAST REGION

Bhubaneswar	Tel.: 0674-2390697, 2396980, 2394052
Guwahati	Tel.: 0361-2346497, 2346498, 2346499
Kolkata	Tel.: 033-22622686
Patna	Tel.: 0612-2220155

CENTRAL REGION

Indore	Tel.: 0731-4271440/4271439
Raipur	Tel.: 0771-2263976
Nagpur	Tel.: 0712-2811206

WEST REGION

Ahmedabad	Tel.: 079-27543964, 27543967
Mumbai	Tel.: 022-22043841
Pune	Tel.: 020-26302000/26302001

SOUTH REGION

Bengaluru	Tel.: 080-46339000
Chennai	Tel.: 044-30662200
Cochin	Tel.: 0484-2391119, 2392039
Hyderabad	Tel.: 040-23442932, 23442933

Bajaj Electricals Ltd.
Inspiring Trust

LUMINAIRES BUSINESS UNIT,
601, Rustomjee Aspiree, Bhanu Shankar Yagnik Marg,
Off Eastern Express Highway, Sion (E), Mumbai 400 022.
Tel.: 022-24064400
E-mail: luminaires@bajajelectricals.com
www.bajajelectricals.com
 /BajajElecBiz   /BajajElecBiz   /bajajelecbiz

About BAJAJ

Bajaj Electricals Limited (BEL), a globally renowned and trusted company, with a turnaround of 4298 crores (FY 16-17), is a part of "Bajaj Group". Bajaj Electricals business is spread across – Consumer Products (Appliances, Fans, Lighting), Exports, Luminaires and EPC (Illumination, Transmission Towers and Power Distribution). We have 19 branch offices spread in different parts of the country besides being supported by a chain of distributors, authorized dealers, retail outlets, exclusive showrooms called 'Bajaj World' and approximately 462 customer care centres.

To increase our footprint globally and in India, we have partnered up with reputed brands from across the world to give you the best of services. BEL has marketing arrangements with Teleco Automation of Italy, tie ups with CREE Lighting of USA and Securiton of Switzerland for Luminaires, Delta Controls of Canada for Integrated Building Management Systems, Gooee of USA for IOT based lighting solutions, Greystone of Canada and Magnum Energy of USA for Wired and Wireless Sensors, Disney of USA and Midea of China for Fans, and Morphy Richards of UK for Appliances. Bajaj Electricals has also invested in Starlite Lighting for manufacture of energy saving lamps (CFL). With such a vast portfolio under our banner, we have managed to touch lives at every juncture.

BAJAJ IBMS

Integrated Building Management Systems (IBMS) - This is a strategic move of Bajaj Electricals to offer a wider product portfolio that includes Building Managements System, Fire Detection Systems, Gas Suppression systems, Access Control System, CCTV Surveillance System, Lighting Controls and wireless range of products.

Bajaj Electricals can provide a single ceiling solution for all the various fixtures that go onto the ceiling or on the wall; like smoke detectors, cameras, lights, speakers, thermostats with occupancy and indoor air quality options, wireless sensors and other sensors for smart buildings and smart cities.

Our cost-effective solutions also provide the flexibility to support your facilities as you expand.

Complete Solutions for:

Smart Buildings

Safe Cities

Command Control Centre & Data Centre

Smart Industry & Control Environment

BAJAJ

CONTENT

SYSTEM ARCHITECTURE

BAJAJ

Delta CONTROLS — A Delta Group Company

	HVAC	LIGHTING	ACCESS	INTEGRATION

ENTERPRISE

- enteli WEB
- Enterprise Connections

Cloud Engineering

PAS Application Software

3rd party Booking

Fault Detection and Diagnostics
Energy Analytics
Database Storage / Disaster Recovery

Delta INTEGRATED
Variable Frequency Drives (CP-2000)

MANAGEMENT

Earthright Energy Dashboard

enteli WEB

Facility Scheduler

- PCs
- Mobile Devices
- Kiosks

COPPERCUBE
Data Archiver

Network Switches

BUILDING CONTROLLERS

enteli BUS

Delta System Controller (DSC)

enteli TOUCH
Touchscreen (e-TCH)

Ethernet / IP

Delta Lighting System (DLS)

enteli BUS
Modular Control System

EV Chargers

MS/TP

APPLICATION CONTROLLERS

Delta Application Controller (DAC-PoE)

Delta VAV Controller (DVC-PoE)

enteli ZONE Dual Port Ethernet Controller (eZVP)

Delta Application Controller (DAC)

Delta VAV Controller (DVC)

enteli ZONE Application Controller (eZ)

3 DIN Room Controller

3 DALI Module

Access Door Module (ADM)

Energy Meters

LINKnet

SENSORS & I/O MODULES

enteli ZONE Network Sensor (eZNS)

enteli ZONE Network Thermostat (eZNT)

enteli ZONE Network Thermostat Wireless (eZNTW)

EnOcean Integration (CON-ENOC)

UPS / Power Supplies
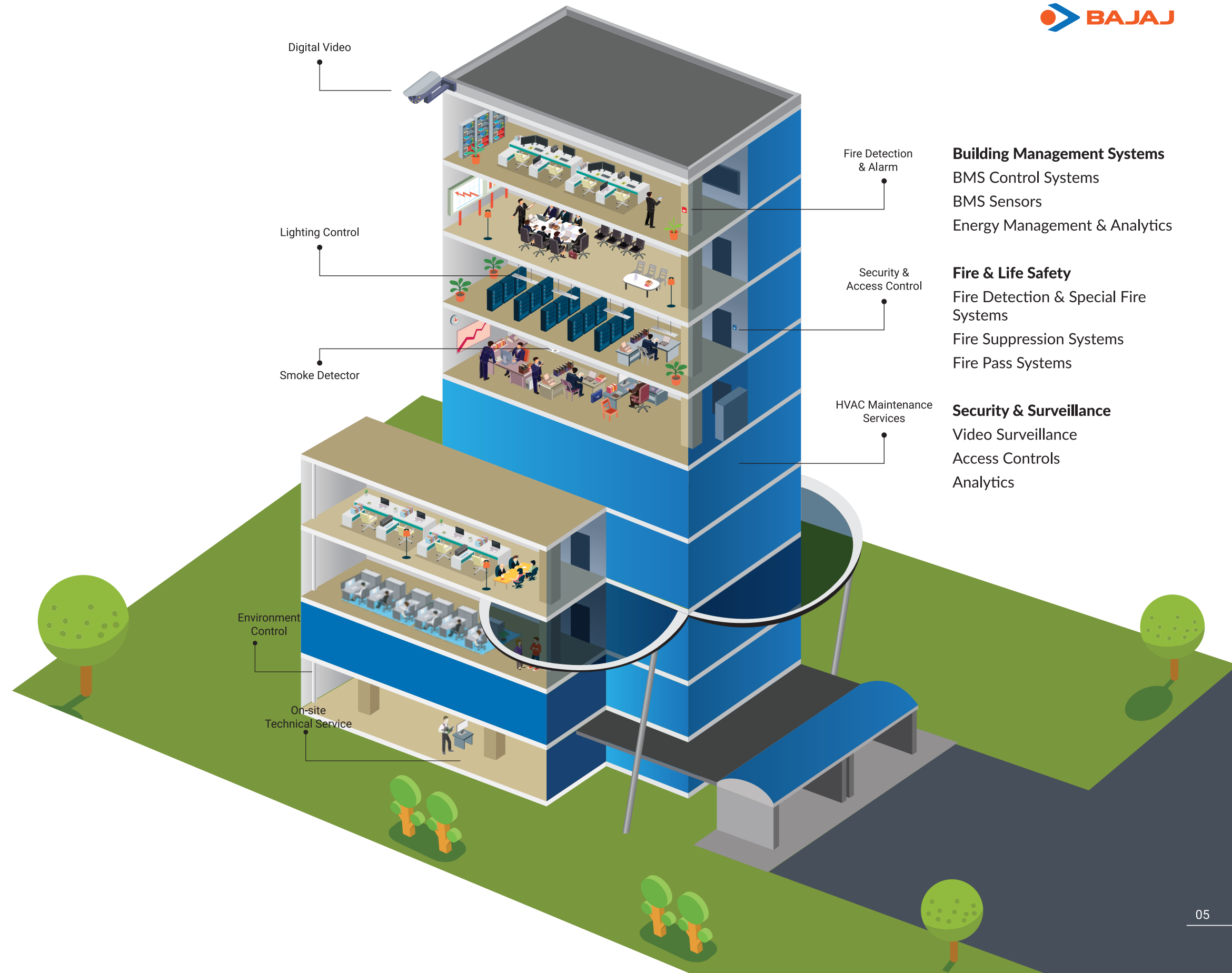
SMART BUILDINGS

Advanced. Efficient. Sustainable

Smart Building Systems exists to improve every facet of how buildings operate. We apply our deep knowledge of mechanical, electrical and civil engineering with information technology to optimize HVAC, power, lighting, security and other building infrastructure. We develop systems that are innovative, efficient and sustainable.

Digital Video

Fire Detection & Alarm

Lighting Control

Security & Access Control

Smoke Detector

HVAC Maintenance Services

Environment Control

On-site Technical Service

Building Management Systems
BMS Control Systems
BMS Sensors
Energy Management & Analytics

Fire & Life Safety
Fire Detection & Special Fire Systems
Fire Suppression Systems
Fire Pass Systems

Security & Surveillance
Video Surveillance
Access Controls
Analytics

BUILDING MANAGEMENT SYSTEMS (BMS)

More than 400 projects in India and abroad have been equipped with technology*solutions and products provided from house of BEL IBMS. The team has done upscaling of more than 95 partners across the length and breadth of the country alongwith global Master System Integrators. (Dell, Vertiv, HP, IBM. Schiender, Johnson Controls and Siemens) Through them we have performed landmark installations in major business verticals like commercial buildings, industrial premises, large format mall, giant media houses & production facilities, service sectors like hotels, hospitals, BFSI & IT.

We have been recognized as the leaders in Data Center solutions with more than 100 successful installations in four year & a dozen of tier-3 data centers across all class of cities in India.

With an unique open technology that is simple, redundant and scalable, BMS provides up-time performance guarantees and specializes in customer delight backed-up with service excellence.

With the world's first fully integrated native BACnet building solution encompassing HVAC, Lighting and Access Control products, Bajaj Electricals offer dependable and user friendly building management systems and energy management systems (EMS) to commercial, healthcare, education and leisure buildings along with specialised applications for data-centres with energy management and energy reporting tools for energy efficiency.

Delta
C O N T R O L S

enteliBUS™
Modular Control System

Product Benefits

BACnet implementation paired with an ARM9 processor and large memory capacity means enteliBUS has the power and features to tackle even the most demanding building automation application.

- Expandable to over 500 I/O points
- BACnet IP & BBMD routing ability enables easy inegration with IT infrastructure
- Multiple communication options (up to 3 Ethernet ports. 2 RS-485 ports and 2 USB ports) supporting BACnet Ethernet, BACnet IP, MS/TP, Modulus & LINKnet

Features

- Powerful automation engine equipped with ARM9 processor
- Customisable touchscreen interface enables system interaction at the controller
- Diagnostic lights on each module provide system status at a glance
- Hot swappable individual modules without shutting down the entire system
- DIN rail design is compact and easy to install & maintain
- Unique HAO override switch order provides seamless transfer from auto to hand or off position
- Universal outputs include 0-100% manual adjust lever option

Controllers

- Native BACnet (BACnet/IP, BACnet MS/TP)
- 32- bit controller
- Real Time Clock
- Inbuilt MODBUS port (optional)
- Hot swappable modules for easy maintenance and expansion
- POE controllers – IT friendly and future ready with wireless and EnOcean products
- UL Listed, BTL Certified

enteliZONE Single Unit with Multiple Sensor Options

- Temperature
- Humidity
- Indoor Air Quality
- Occupancy

  Comes with customised colour display and is enabled with Near Field Communication (NFC).

7 inch high resolution LCD Touch Screen Display

- Small system interface – stand alone
- Large system local control & display
- Web server functionality & e-mail alarm transmission
- MS/TP sub-LAN & enteliMESH network management
- Temperature/ relative humidity/ occupancy options

COPPERCUBE

The CopperCube is an embedded industrial computer that connects to Building Automation Systems (BAS) through BACnet/IP or BACnet Ethernet protocols.

Each CopperCube locates all trend logs within the BAS and archives up to 5,000 individual trend logs on its local secure database. Trend log data is accessed through a built-in web interface, as well as through the CopperTree's Kaizen and Delta Controls' enteliWEB software.

Applications

The CopperCube is an on-site trend log archiver that manages up to 5,000 trend logs on a BACnet network.

The CopperCube includes several trend log archive maintenance tools. The autopruning feature deletes data after a set time period in order to free memory. You can also schedule backups to an external location. An optional SQL connector allows you to route the same trend log data to an external SQL database for use with third-party reporting tools while still maintaining the integrity of the original information.

Features

- Internal, local storage of trend log data
- Built-in web UI for feedback, operational status and configuration.
- Vendor independent
- Built-in connectivity to CopperTree's Kaizen and Delta Controls' enteliWEB software
- Native BACnet device
- Industrial embedded PC with an internal 60 GB solid-state hard drive
- Configurable auto backup to external storage device
- Firmware auto-update capability
- Optional SQL connector

Specifications

BACnet Protocols
BACnet/IP
BACnet Ethernet

Mounting
35 mm horizontal DIN rail
Includes rubber feet for flat surface mounting

Connectors
5 Screw-type terminal connectors
1 DC Power Jack, ID 2.5 mm, OD 5.5 mm

Wiring Class
NEC Class 2

Power
24 VAC, 50 VA
2-28 VDC, 30 W

Technology
Intel® Atom™ D2550 processor 2 GB SDRAM
64-bit operating system

Communication Ports
2 Gigabit Ethernet
4 USB 2.0, maximum 500 mA each

Ambient
0° to 55°C (32° to 131°F)
10-90% RH (non-condensing)

Compliance
CE-EMC Directive 89 / 336 / EEC
FCC Class B

Listings
C-UL Listed
UL 916 Listed

Sensor is a device, module, or subsystem whose purpose is to detect events or changes in its environment and send the information to other electronics, frequently a computer processor.

It is always used with other electronics, whether as simple as a light or as complex as a computer.

GREYSTONE
ENERGY SYSTEMS INC

Sensors and Transmitters for the HVAC Professional

- Temperature Sensors and Transmitters
- Humidity Transmitters
- Gauge Pressure Transmitters
- Differential Pressure Transmitters
- Static Pressure Transmitters
- Air Flow Switches and Transmitters
- Current Switches & Sensors
- Analog to Pneumatic (I/P) Transducers
- Signal Conditioning Interfaces
- Power Supplies
- Air Quality Monitors
- Carbon Dioxide Detectors
- Carbon Monoxide Detectors

MAGNUM
ENERGY SOLUTIONS

Sensors, Switches and Controls in the Wireless Range

- Wireless Motion / Lux Sensor
- Ceiling Mount Occupancy Sensor
- Wall Mount Occupancy Sensor
- Integrated Light Switch
- Wireless Switch
- Universal Voltage 1 channel Relay
- EnOcean - BACnet / IP Gateway (eBOX)
- Window Door Sensor
- Wireless Key Card Switch
- Wall Mount Remote Temp. Sensor
- 3 Channel Temperature Sensor
- 10 Channel Sensor Control Board
- 24V LCD Wireless Thermostat
- Line Voltage Thermostat
- 24V Thermostat
- Wireless Control Module with LCD
- HVAC Module
- Valve Actuator
- Single-Controlled Outlet, 15A
- Dual-Controlled Outlet, 15A
- Wall Mount Remote Temp. / Humidity Sensor
- Wall Mount Remote Temp. Sensor with Set Point Control

Monitoring Products

Control Products

Infrastructure Products

enteli**WEB**

Enterprise Facility and Energy Management Software

enteliWEB gives you a complete view of your building operations

enteliWEB gives you a single managment solution

enteliWEB effortlessly connects to all your facilities under one login. Bringing all your buildings, systems and energy analysis under one facility management umbrella saves engineering and maintenance time. Connected systems simply allow operators to work more efficiently.

enteliWEB helps you make sense of data easily and quickly

- Enterprise dashboards allow Facility Managers to quickly evaluate their systems based on KPIs.
- Personal dashboards provide an easy way for operators to view the building the way they want.
- System dashboards provide a much richer experience than graphics alone, by combining operational views such as graphics, alarms, point lists, charts and other tools all on one page.

How enteliWEB will help you

- Manage multiple sites from a single login. No need to worry about duplicate addresses or networking everything together. All you need is an IP address for each site.
- Manage integrated HVAC, lighting, energy and other systems with one operator workstation.
- Alarm Management is designed to quickly and efficiently manage alarms from different sites.
- Dashboards provide simple visual summaries of facility information that allow you to drill down and take action.
- enteliWEB comes with built-in developement support for custom applications, web services, mobile applications, dashboards and reports. Our partners can add functionality and customise the enteliWEB experience according to your organisation's needs.
- Mobile view is available for when you're on the move. Standard web technologies allow enteliWEB to be viewed on iPad and Android tablets.

enteliWEB has been designed to solve management challenges in almost every type of building. Whether it's installed in a school or a stadium, enteliWEB has specific features to make managing your building simpler.

HEALTHCARE

- Critical environment monitoring for your operating rooms
- Reduce energy costs throughout the hospital by turning off lighting in my unoccupied areas
- Mobile access makes it easy for your facility staff to service remote parts of the hospital

EDUCATION

- Public dashboards inform the community of what the facility is doing to save money
- Supervisory control of all your buildings
- Integrates occupancy schedules with your central room booking system
- Energy saving competitions between classrooms and buildings to encourage students to save energy

HOSPITALITY

- Raise your customer satisfaction scores by connecting your reservation system to enteliWEB
- Give your event staff, or even customers, mobile access to their room conditions for adjustments on the move
- Create public dashboards that show energy conservation that your hotel is making in real time

MILITARY

- LDAP user integration ensures secure passwords with user access being controlled by IT
- You can reduce your energy expenditures with Kaizen Energy for enteliWEB
- enteliWEB reduces the complexity of large facilities and organises information into task base dashboards and screens

COMMERCIAL

- Personal dashboards allow you to see your buidling
- Informs you when your facility is drifting away from specification
- Insight into your system streamlines your service making it easier to decide which faults need to be fixed
- Enterprise dshboards give you a top level view of each building remotely
- Allocate alarms to local building staff

DATA CENTRE

- Automatic alarms e-mails and applications notify you of critical failures
- Create a heat map of your data racks and view it in graphical form
- Compare energy consumption to environmental conditions
- All critical functions can be placed in one dashboards

An energy management system (EMS) is a system of computer-aided tools used by operators of electric utility grids to monitor, control, and optimize the performance of the generation and/or transmission system.

Energy management systems are also often commonly used by individual commercial entities to monitor, measure, and control their electrical building loads. Energy management systems can be used to centrally control devices like HVAC units and lighting systems across multiple locations, such as retail, grocery and restaurant sites.

Energy management systems can also provide metering, submetering, and monitoring functions that allow facility and building managers to gather data and insight make more informed decisions about energy activities across their sites.
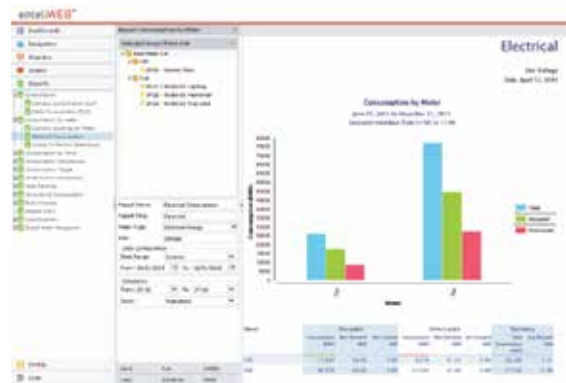
Energy Management

Energy management turns into a seamless process with CopperTree as a part of enteliWEB. Analyse your building metrics through your dashboards by monitoring your building through customised widgets. Go one step further by setting up notifications that monitor the HVAC and alarms throughout your building, letting you know if there are areas of concern.

Energy dashboards are automatically created when the meters are set up.

Reporting Tools

Create reports instantaneously using the enteliWEB reporting tool. Whether you need to present energy metrics in your weekly meeting or a company-wide presentation, enteliWEB is hassle-free way to report on the energy savings inside your building.

CopperTree Analytics

CopperTree is part of the Delta Control Group, which gives it 30 years of practical energy and building management expertise. This allows them to bring you Software as a Service (SaaS) to help you start saving energy. CopperTree gathers data from the BAS, storing it in secure cloud servers. It then analyzes your building's data continuously, highlighting anomalies and identifying inefficiencies.

enteliWEB and CopperTree Analytics software seamlessly integrate into one complete application that allows you to see energy trends, diagnose system faults, and make improvements and changes directly to your Building Management System.

Get Deeper Insight

- CopperTree pulls data directly from any BACnet BMS system and presents it within enteliWEB.
- Real time building data is securely stored for protection and analysed to identify faults and track energy usage.
- Reports, KPIs and dashboards show you exactly what is going on within your building.
- You can measure and track energy to a far precise level than was ever affordable before using virtual meters.
- A full CopperTree installation provides a unique "golden standard" features which protects your building settings at commissioning levels but lets you constantly evolve your building performance.
- CopperTree provides you insight into which fixes will make the most impact - which means now you can make the most of your staff and equipment.

Take Instant Action

- Set KPIs for individual staff with a full CopperTree Installation and incentivise them based on performance measures.
- Allocate work orders and alerts to team members to prioritise their activities.
- Make live (or scheduled) adjustments according to weather feeds or schedule requirements.
- Set VIP watch lists.
- Covers you from a single site to awhole campus or district.
- Drill down from a school district to a school gymnasium VAV in a few clicks.

Demonstrate your sustainability commitment by displaying energy dashboards throughout your building so your staff and occupants know how much energy you are saving.

FIRE &
LIFE SAFETY

Fire safety is the set of practices intended to reduce the destruction caused by fire. Fire safety measures include those that are intended to prevent ignition of an uncontrolled fire, and those that are used to limit the development and effects of a fire after it starts.

Fire safety measures include those that are planned during the construction of a building or implemented in structures that are already standing, and those that are taught to occupants of the building.

Threats to fire safety are commonly referred to as fire hazards. A fire hazard may include a situation that increases the likelihood of a fire or may impede escape in the event a fire occurs.

Fire safety is often a component of building safety. Those who inspect buildings for violations of the Fire Code and go into schools to educate children on Fire Safety topics are fire department members known as Fire Prevention Officers. The Chief Fire Prevention Officer or Chief of Fire Prevention will normally train newcomers to the Fire Prevention Division and may also conduct inspections or make presentations.

Cutting-edge security technology and state-of-the-art know-how and experience provide the sound foundations from which to solve even the most complex tasks. In difficult cases special fire alarm systems underscore our strengths. These alarm systems are used in special ambient conditions or spatial conditions that preclude the use of conventional fire detectors. They provide a powerful and convincing solution no matter how complex the problem.

Our products are as well suited as the areas of application are varied: fire detectors, smoke detectors, sensitive detectors, alarm systems, etc., combine to create efficient monitoring systems.

Securiton has decades of experience in the area of fire detection and fire alarm systems. Our close co-operation with fire specialists within the Securitas Group also drives our continual advances in the areas of R&D and production

SecuriFire

- The SecuriFire 3000 fire alarm control panel is suitable for connecting up to 16 addressable loops with up to 250 devices per loop
- Modular 100% fully redundant
- 5.7" TFT color display for displaying all system states in plain text
- Depending on need and application, the detector can be implemented as smoke, temperature or combined detector
- Each detector has an inbuilt fault isolator
- Loop powered hooter cum flasher which can be connected directly to the fire detector line along with other participants

Fire Alarm System Networking

Max. 14 Loops
x 250 Detectors

Repeater
Panels

Seconet

Max. 16 Panels per Ring
= 224 Loops

Failsafe Cabling:
Loop
Double Loop
Spider Net

Seconet

● TCP/IP
● Modbus [TCP or RTU]
● OPC (external device)
● BACnet
● ESPA
● ISP
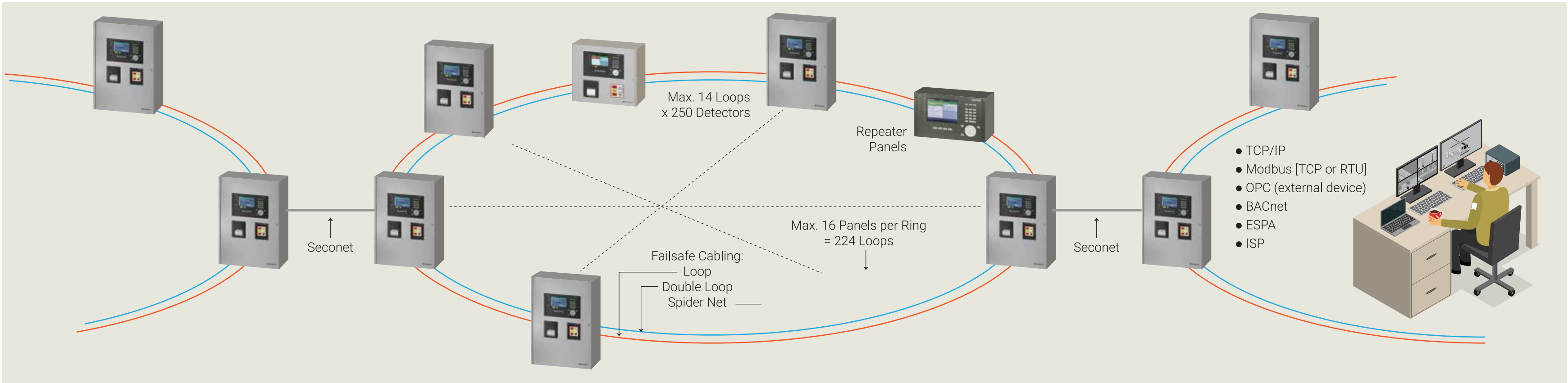
• Up to 16 SecuriFire control panels

• Up to 31 B5-MIC711 main indication and control maps (max. 32 partici-pants) When several FCP fire alarm control panels are combined, it is called a "SecuriLan". Straightforward operation is provided from one location. Despite its decentral design, from outside the fire detection system appears to behave as if it were a conventional "central" fire alarm control panel. The topology of the SecuriLan is freely selectable; the control panels and indication and control maps can be networked with one another, both as a mesh network with a redundant or single loop and as a stub line.

Detection zones, fire incident controls etc. can be connected to any FCP in the SecuriLan, whereby links between elements of various FCPs are

also possible (2-detector dependency, controls etc.). The SecuriFire FCP 500 / 1000 fire alarm control panel cannot be networked with other control units.

Connection to superordinate systems (e.g. management systems) and connection of the virtual MIC is possible with the integrated Ethernet interface. Each of these fire alarm control panels (FCPs) is responsible only for its immediate surroundings and communicates with the other fire alarm control panels (FCPs) via a redundant ring circuit which ensures unrestricted functioning of the system (wire breakage, short-cir-cuit etc.) with up to three faults. The continuous intelligent communica-tion between the control panels is achieved with maximum data security via a redundant (doubled) ring circuit

**Addressable loops with
up to 3500m loop length
up to 250 participants per loop
EN54 certified by VdS**

SecuriStar Point Detectors

MCD 573X	**CCD 573X**	**MCD 573X-S**	**MCD 573X-SP**
- Smoke - Heat	- Smoke - Heat - Co	- Smoke - Heat - Sounder	- Smoke - Heat - Sound - Speaker
- With Loop Switch - with /o Loop Switch - Pipe mount.	- For humid areas	- For flush mounting	- With light ring

MCP	Door Holders	Beam Detectors

Aspirating Smoke Detectors (ASD)

Aspirating smoke detectors from Securiton are among the most precise and most reliable early warning systems against fires. Securiton offers a complete range of models that makes the lightning-fast detection of fires both scalable and cost-effective for any monitoring area.

SecuriRas ASD 535

ASD 535 aspirating smoke detector consists of one or two independent sampling pipes

System limits according EN 54-20 for sampling pipe is 2 X 300 meters

With our unique software can use the product for asymmetric sampling topologies too

Dynamic temperature and dirt/soiling compensation

Auto learning

1	PVC (standard application)	2	ABS (halogen-free)	3	Stainless steel (for the food industry)
4	Copper (high temperatures and Explosion applications)			5	Various dust filters and dirt trap boxes
6	Water retaining box			7	Flame arresters

ASD Product Range

ASD 535-1
One channel

ASD 535-2
Two channels

ASD 535-3
One channel
Smoke level indicator

ASD 535-4
Two channels
Smoke level indicator

ASD 532
One channel
Smoke level indicator

ASD 531
One channel

Equipment
EUROPE (EN 54 / VdS)
USA & Canada (NFPA / UL)
China (CCC)
FM Global

Manufacturing
RoHS
ISO 9001

Strength	Benefit	Proof
Large Area Coverage	Less units, less installations and less battery backup, less maintenance ... for same achievement	Strong Aspirator + High Sensitivity
Silent	No noise wherever installed	Less than 43dBA
High Sensitivity	Maximum number of sampling points Earliest possible warning	0.002%Obs./m is top in this industry!
Operating Temperature	Less installation costs No heating of sampled air and the related mains or battery power	Operates at a temperature as low as -30°C
Robustness	Zero downtime Resists moisture / splashes	IP 54 Shocks of 5G MTBF > 10 Years
Networking	Easy to do maintenance Computer based tracking	Up to 250 units Up to 1km
Engineering	Less units for same achievement Free choice of tube topology	3D design software using scientific formulas for airflow calculations

Liner Heat Detection Systems

Detecting fires under extreme conditions

Fires occur more often in dangerous locations – with conventional fire detectors quickly reaching their limitations. The intelligent line type heat detector from Securiton works perfectly, even under the most difficult conditions. Whether the fully automatic monitoring of large areas, resisting corrosive gases, extreme humidity and high temperatures or differentiating between false alarms and real danger – the list of requirements for a state-of-the-art line type heat detector is both long and detailed.

ADW 535-1
1 Detector
2 Relays
(Alarm & Fault)

ADW 535-2
2 Detectors
4 Relays
(2x Alarm & Fault)

Strength	Benefit	Proof
Extremely Solid	Indoor and outdoor application Low demand for maintenance Long life cycle	Metallic or PTFE sensor tube IP65 enclosure Operating range -30°C to +70°C
Long Lasting	Low "Total Cost of Ownership" (TCO): Maintenance free and not needing any replacements – for decades	Metallic tubes Automated integrity check IP 65
Extremely Resistant	Can be used in dangerous / aggressive environment.	Works in any medium (solid, liquid, gas) Measures from -40°C to +180°C
Extremely Flexible	Can be used in Explosion Zones without need for barriers or Atex approval	Programmable response behavior Does Explosion without Atex certification Measures from -40°C to +180°C
Serviceability	Maintenance can take place without need to access the detection area	Sensor tube is maintenance free
Extremely Fast	Buy extra time for securing the zone	Fastest heat sensing technology available
Engineering	Reliability at performance extremes	HeatCalc 3D design software

Clean agent fire suppression systems have proven to be effective and reliable product that protect highly valuable assets without damaging the equipment

Benefits

- Reduces risk of downtime and helps maintain business continuity in the event of a fire.
- Clean, leaves behind no residue.
- Safe for discharge into occupied spaces.
- Cost effective engineered system, providing maximum protection.
- Sustainable technology providing an environmentally-conscious solution.

⚡ Kidde
United Technologies

Novec 1230

FM-200

Argonite

CRYPTZ⚡

HFC 227 ea

FK-5-1-12

(HFC 227 ea & FK-5-1-12 both 25 Bar & 42 Bar UL listed Seamless Cylinder)

UL listed Refill Station PESO Approved

Made in India

FírePASS®

FirePASS Fire Prevention system for Data Centre & Closed environments

- The fire strategy for any data centre or any closed environment should be to prevent a fire from starting, mitigate damage to sensitive equipment and reduce downtime.
- Whilst traditional methods can usually be relied upon to extinguish the fire, failures can occur, especially when not regularly inspected, tested and maintained. In addition,these systems require the fire to have started and progressed prior to release to allow evacuation.
- Data Centres can now offer their customers Fire Prevention certainty, by protecting their facilities with FirePASS revolutionary Oxygen-Reduction Fire Prevention Technology. FirePASS produces an atmosphere with a reduced oxygen concentration of 15%. Combustion, with the type of fuels that you would expect to find in data centres, cannot occur below 16%.
- Due to the nature of hypoxic air providing even distribution throughout the protected space it helps solve some issues compared to other systems including:
- Aisle containment partitions, where other system need to have special consideration to baffling additional nozzles to achieve even distribution.
- Bundled cable fires are difficult to extinguished once started as recent research from Factory Mutual (FM) has indicated which can threaten the entire data centres.

- Cabinet fires which can present unique difficulties for suppression and sprinkler systems.

How Does Oxygen-Reduction Fire Prevention Technology Work?

The FirePASS system uses hollow membrane technology to produce an oxygen reduced environment in the following way:

- Reduce ambient fresh air,
- Purifying the air by filtering and drying,
- Injecting the hypoxic air into the risk area until the FirePASS oxygen monitors sense the designed, low level of oxygen,
- The hypoxic air flow is then switched off by the FirePASS control unit
- The control unit continues to monitor the oxygen levels until inward leakage of ambient fresh air (approximately 20% per day) increases the oxygen to the designed high level,
- The injection of the hypoxic air supply into the risk area is then switched back on and the cycle continues. The operation audio/visual alarms are activated if levels are sensed outside of the design parameters. Alarms can also be sent to Building Management Systems.
- In this way, the FirePASS system will continuously produce a hypoxic environment between 15 and 15.5% oxygen, 24 hours a day, seven days a week. This means any damage inside the data centre is limited to the initial faulty equipment or event. Any consequential combustion that may have spread to other equipment, has been eliminated.
- Safe for people and safe for the environment
- FirePASS uses only ambient fresh air as its source to produce a precisely controlled, hypoxic atmosphere, that can be relied upon to stay within the design parameters. In the extremely unlikely event of equipment malfunction, warnings will be given. The great majority of people will not experience any adverse reaction or discomfort in a hypoxic environment at these design levels. It is considered that, if it would be safe for a person to travel on a commercial aircraft flight, this hypoxic environment will not pose any risk.

SECURITY & SURVEILLANCE

Modern high definition IP video surveillance systems generate massive amounts of critical, access-sensitive data. Capturing, protecting, accessing and mobilizing this data is paramount, and a very challenging task for traditional IT infrastructure.

Arxys has purpose-built networked storage solutions that deliver the performance, protection and resiliency that these hyper modern surveillance systems require. Our Surveillance DataServers empower you to ensure your client can capture and access hundreds of IP cameras simultaneously with maximum throughput and zero downtime.

The IP video server is the heart of any video surveillance project. It communicates directly with networks, monitors, cameras, and every part in between. Choosing the best video server for your security system project is essential and can affect the number of cameras, resolution, FPS (frames per second), and motion-based recording.

Arxys | Shield solutions combine best in class leading edge advancements, on a foundation of tried and true solutions, to deliver the highest performing, most highly available video surveillance storage available. White box video servers and storage solutions — including DAS (NVR), SAN, NAS — are not designed for write-intensive 24/7 IP video surveillance workloads.

A camera for every scenario

A broad range of megapixel cameras gives you the most options to reduce inventory shrinkage, monitor employee procedures and keep customers safe. Whether it's a parking lot or the inside of a busy retail environment, our cameras can provide better coverage in greater detail, with fewer cameras than ever before.

H4 Mini Dome Camera Line

avigilon
TRUSTED SECURITY SOLUTIONS

Ideal for high-detail coverage of hallways and entrances, with both indoor and outdoor options. Small Camera Footprint and Profile

- HDSM SmartCodec Technology
- LightCatcher™ Technology
- Wide Dynamic Range (WDR)
- OptionalAdaptive IR

The H4 SL camera line combines **exceptional image quality** with an innovative and modular design that is **easiest-to-install**. Reduce your bandwidth and storage requirements using our Idle Scene Mode and patented High Definition Stream Management (HDSM)™ technologies. The H4 SL camera is also video analytics-ready to support our patented analytics technology with a future firmware upgrade.

- Decreasing installation time by up to 50 percent.

- Available in bullet and dome formats, the H4 SL camera's modular design allows it to snap into the base of your choice.

BAJAJ

H4 PTZ Camera Line

Track moving objects and zoom in on facial detail from over 900 ft away.

- Self-learning video analytics
- Up to 45x zoom capabilities
- High frame rate
- Lightcatcher™ technology
- Ultra-Wide Dynamic Range (WDR) technology
- Bandwidth management

High Definition Stream Management (HDSM)™ technology and Idle Scene Mode technology to deliver exceptional image detail with reduced bandwidth.

H4 PTZ Camera Line

HD NVR Premium provides high-performance and high-capacity recording. It's engineered for consistent reliability, availability and scalability to enterprise video management environments.

- Self-learning video analytics
- High video capacity and built-in management
- Scalable and reliable recording solution
- Easy setup and maintenance

HD Multisensor Camera

HD Multisensor Camera delivering superior image detail while offering a flexible, new approach to monitoring environments that require coverage of multiple areas.

- Superior image detail
- Flexible installation
- Remote zoom and focus
- Wide Dynamic Range (WDR)
- ONVIF compliant
- Increased frame rate

HD Multisensor Camera

Up to 29 MP resolution provides maximum coverage of parking lot areas to keep customer belongings safe and secure.

- 4K (8 MP), 4.5K (12 MP), 5K (16 MP), 6K (24 MP) and 7K (30 MP) resolutions
- Self-learning Analytics
- H.264 Compression
- Focus and Iris control of SLR lenses
- Increased framerate
- Flexible lens options
- Onboard storage

Fixed Dome Network Camera

- 2-Megapixel CMOS Sensor
- 30 fps @ 1920x1080
- Real-time H.264, MJPEG compression (Dual Codec)
- Removable IR-cut Filter for day & night function
- Built-in IR Illuminators, effective up to 15 meters
- Built-in 802.3af compliant PoE
- Build-in MicroSD/SDHC/SDXC card slot for on-board storage
- Supports ONVIF standard to simplify integration and enhance interoperability
- 3D Noise reduction

Speed Dome Network Camera

- 1080p Full HD SONY CMOS Sensor
- 30 fps @ 1080p Full HD/ 60 fps @ 720p HD and 20x Zoom Lens
- Removable IR-cut Filter for Day & Night Function
- 360 Continuous Pan and 220 Tilt
- Real-time H.264, MPEG-4 and MJPEG Compression (Triple Codec)
- WDR Pro for Unparalleled Visibility in High Contrast Environments
- Weather-proof IP66-rated and NEMA 4X Housing
- 0 0 -40 C~55 C Wide Temperature Range for Extreme Weather Conditions
- Audio Detection for Instant Alerts and Auto Tracking for Moving Objects
- Built-in 802.3 at Compliant PoE Plus and built-in On-board Storage
- 3D Privacy Masks for Additional Protection

Bullet Network Camera

.nxt
next generation cameras
Powered by
VIVOTEK

- 2-Megapixel CMOS sensor
- 30 fps @ 1920x1080
- Removable IR-cut filter for day and night function
- Built-in IR Illuminators, effective up to 20 meters
- Real-time H.264 & MJPEG compression (Dual Codec)
- Weather-proof IP66-rated housing
- Mounting bracket with vable management for protected Installation
- Built-in 802.3af compliant PoE
- Built-in MicroSD/SDHC/SDXC Card Slot for On-board storage
- 3D noise reduction

5 Megapixel Fisheye zNetwork Camera

- 5 Megapixel
- 1080p full HD
- 1.5 mm fisheye lens
- Day & night
- H.264, MPEG-4, MJPEG
- IK10 Vandal-proof and IP66 eeather-proof
- 802.3af PoE
- On-board storage
- Local or client dewarp

Organizations today face a myriad of security challenges at their facilities. Managing the access of authorized personnel into a facility is a major concern. The primary challenge for many organizations is to secure their facility from unwanted personnel while also allowing a free flow of people who have a legitimate purpose in engaging with the organization.

Visitor Management System

Automated visitor management systems lend a more professional appearance to check in systems, enhance security and meet compliance mandates for the collection and auditing of visitor data.

- Enhance the professionalism of the enrollment process and visitor check-in with a digital check in system
- Provide additional safeguards by screening against felony and sex offender watch lists if applicable
- Improve security by identifying who is in a facility quickly and accurately, especially in emergency situations
- Conduct analysis/reporting on visitor data, quickly and easily via visitor management software

Bio-metric Authentication

Biometric authentication solutions from HID Global bring multispectral imaging technology to any identity application where knowing "who" matters. Biometric authentication offers this assurance with secure, convenient and reliable solutions for reading fingerprints.

- Enhanced with security features including data encryption and tamper detection/response
- Multispectral fingerprint plus contactless card authentication on a Single device
- Superior performance and liveness detection with enhanced accuracy and image capture speed
- Compact, durable module for integration, with multispectral usability and liveness detection

Multi-factor PKI Authentication Solutions

- Enter buildings and restricted areas equipped with a broad selection of contactless, contact plus contactless and biometric readers
- Log in to computers and secure networks – on site and remotely
- Securely access applications and data – even in the cloud
- Digitally sign and encrypt documents and emails
- Perform multi-factor authentication to meet all necessary authentication modes and assurance levels specified in NIST SP 800-116 and the TWIC Reader Specification

Multi-factor Authentication

HID Global's multi-factor authentication solutions are providing easy-to-use, hard-to-lose security for businesses, governments, and organizations around the world. See why they trust us with their trusted identities.

- Mobile authentication
- Authenctication server
- OTP tokens
- Smart cards

VIDEO ANALYTICS

Video analytics technology is a sophisticated search engine for video data. It sorts through hours of footage with ease, to quickly locate a specific person of interest across an entire site.

This technology can dramatically improve incident response time and enhance forensic investigations by allowing operators to build robust video evidence and create a powerful narrative of events.

Key Features

- Quickly search for a person of interest
- Refine searches based on time and camera location
- Playback, bookmark and export tools
- Self-learning video analytics-enabled
- Integrated with Avigilon Control Center (ACC) software

Benefits

- Enables operators to quickly comb through hours of recorded footage, efficiently grouping video data to help track an individual's route, identify a previous and last-known location and assist investigations.
- Accurately provides results relevant to the time and place of an event.
- Allows the flexibility to simultaneously compile a comprehensive set of video evidence from multiple video sources.
- Works with Avigilon video analytics cameras to generate, record and classify video data for effective searches.
- Provides advanced video search capabilities to enhance the user experience of the complete Avigilon solution.
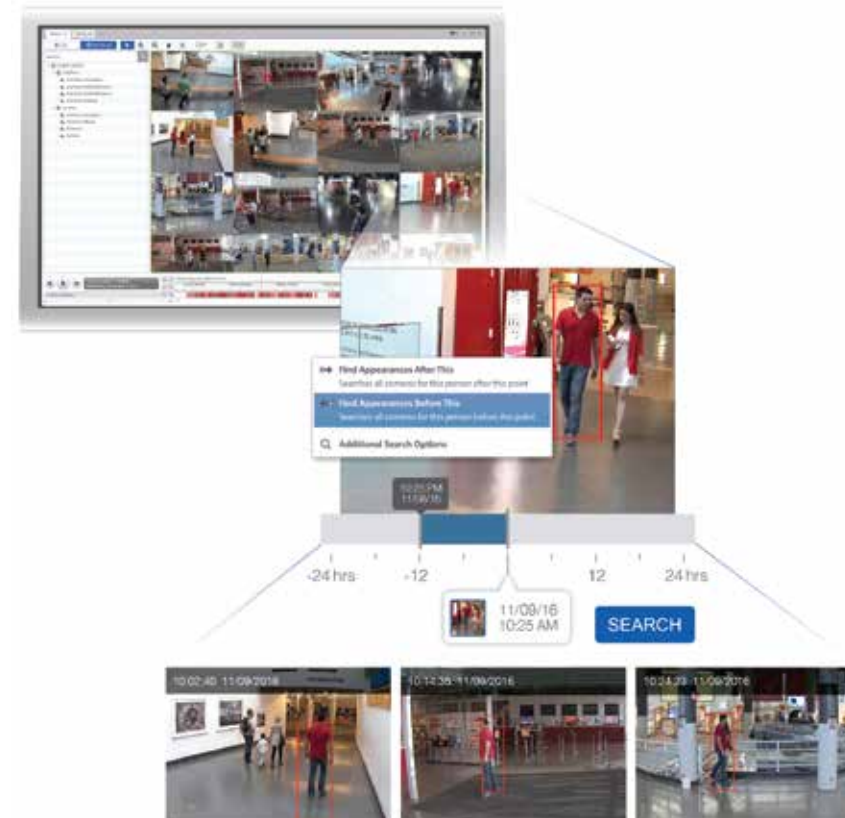
COMMAND CONTROL CENTRE &
DATA CENTRE SOLUTION

*No two command control centres
are the same*

Command Control Centre will bring all the key data one
needs to know, to the organization. Nothing gets lost, but
we filter out the background noise, triage, prioritize and
analyze data and turn it into knowledge you can act upon.

The ECC will allow operators to react quickly, in the right
manner, but also allow the opportunity to be proactive in
improving the enterprise infrastructure.
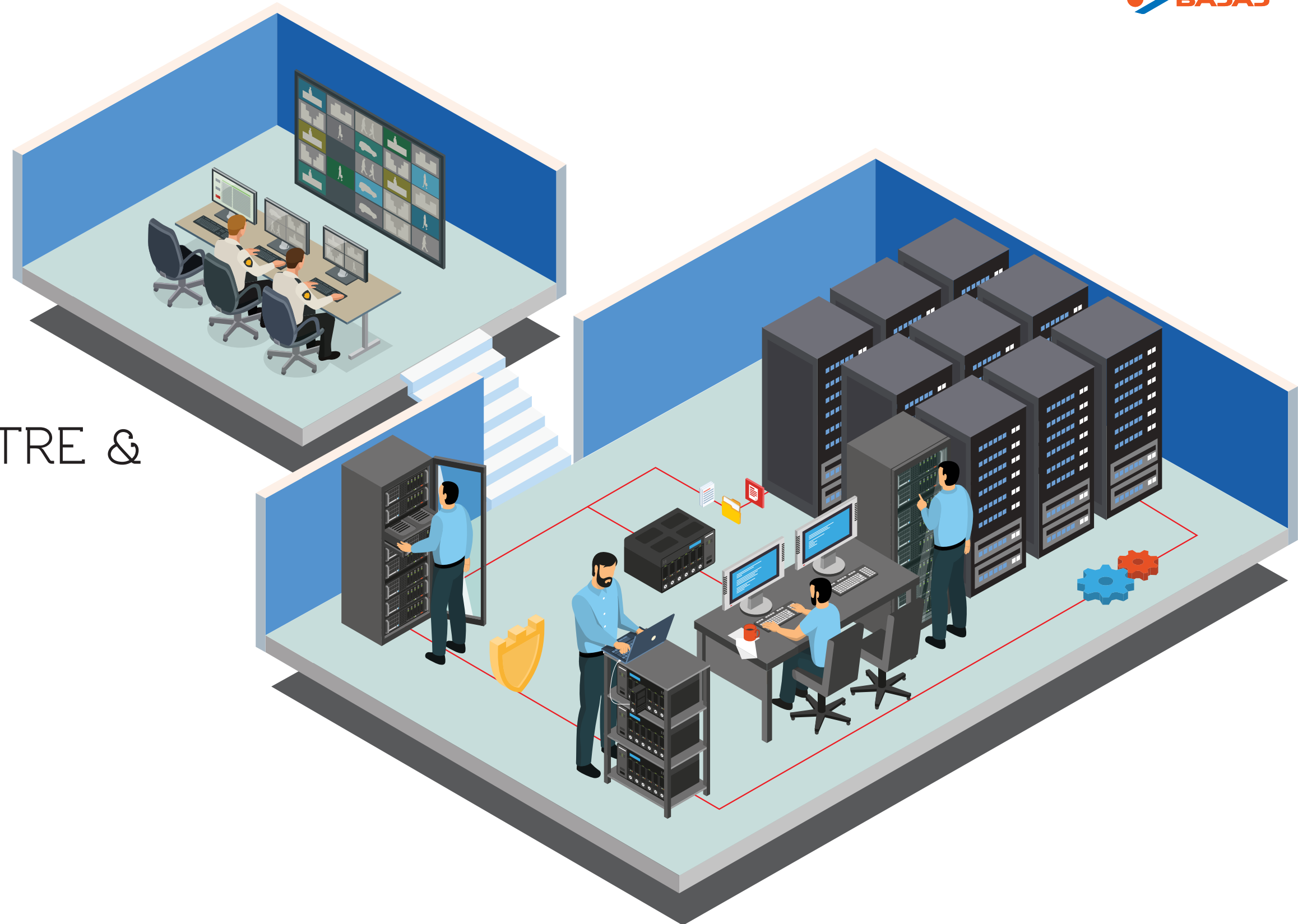
COMMAND CONTROL CENTRE SOLUTIONS

The creation and development of Command Control Solutions is collaborative. It's about discovering what matters and what works. And what works for one person may not for another. In addition to System Dashboards, we have Personal Dashboards set up the way people want to visualize and interpret their data, based on their roles and personal preferences. This is a modular system. Operators don't need to learn a complete system, and they certainly don't need to learn the modules they won't be using. Operators get to learn and become experts in their particular modules within the Command Control Software.

MSI MODEL RFP : ICT components

Smart Solutions

| City back bone Network | City Wifi | City Surveillance | Smart Lighting | ICT Enabled Solid Waste Management |

| Smart Traffic | Smart Parking | Environmental Sensors | City Bus Intelligent Transport System | Smart Governance and Citizen Services |

Key ICT components

- Data center
- Disaster recovery site
- High availability of DC
- Integrated command and control center

Key features

- Technology neutral and vendor independent
- Performance linked features like payment plan, Outcome based schedule
- Integrated and scalable solutions provisioning
- Optimum use of resources like sharable infrastructure
- Qualification criteria suggestion for batter technology evaluation
- RFP vetted and reviewed by C-DAC and DEITY

Command Control Centre
Architecture Overview

Central Command
Centre Operator

Domain wise
Operators

Asset Information System	

Command and Control Center

Events
Monitoring

Standard
Operating
Procedures

Dashboards

Correlation

E-Governance and Citizen Services	

GIS	

SMS Gateway	

Email Gateway	

City Wifi
City Surveillance
Smart lighting
ICT Enabled Solid Waste Management
Smart Traffic
Smart Parking
Environmental Sensors
Intelligent Public Transport System
ERP and other system

Middleware / Data receiver

Water Management	Energy Management		Emergency Management	Smart Pole

Central Data centre with Data Recovery

DATA CENTRE SOLUTIONS

Continuous and comprehensive monitoring and management of constantly changing and expanding facility and IT infrastructure is key to ensure uptime and safeguard uniterrupted operations round the clock

Keeping environmental conditions in a defined range and minimizing energy consumption at the same time is one of the major ongoing challenges in a data centre. To meet these requirements, the design for such solutions requires a comprehensive consideration of all operational processes in a structured approach.

Increase Flexibility - with Data Centre Management, Automation and Control

Bajaj Electricals' building automation and control system (BACS) portfolio offers a complete range of field devices, controllers and an integrated building management system (BMS) that set new standards for technology, efficiency and user-friendliness. Energy Monitoring Software (EMS) combined with low voltage protective devices provide a complete energy management solution. The EnOcean range of wireless and battery - less sensors ensures that we can have movable racks which is the need of the hour.

Our data centre management solutions will help you anticipate the future - to guarantee uptime and stay one step ahead of the competition. This ensures safe, secure and reliable operation of your data centre.
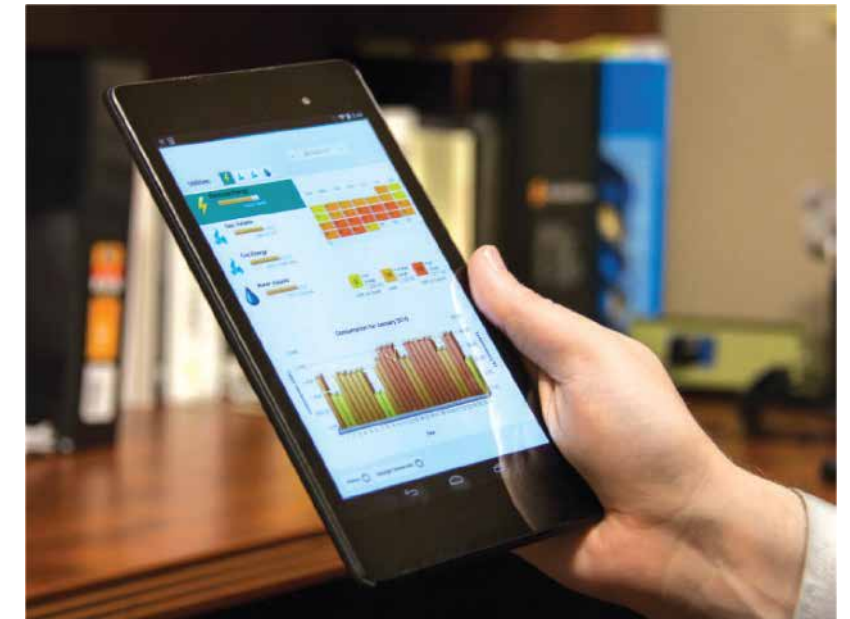
Benefits

- **Wireless and battery less sensors ensures flexibility and helps to design movable racks**
- Complete data centre management solution offering
- Use of latest technologies and open standards protects your investment
- Minimization of human errors by automating processes
- Automatic alarms, emails and applications notify you of critical failures
- User-friendly supervision with the help of 3D visualizations
- All critical functions can be placed in one visualization
- BMS and EMS applications for reliable facility infrastructure management
- Create heat maps of your data racks and view it in graphical form for predictive analysis to idenity possible hot/cold spots

Safe and Reliable System
Integration Monitoring and Controlling

- Unified Platform for building automation, access control solution and lighting controls

- An enterprise platform with multisite management tools

- High level third party systems integration

- Web-based application that combines the power of enterprise dashboards with easy-to-use tools

- Customizable Energy Management dashboards and powerful energy reports give managers the tools to reduce consumption and drive down costs

- Task-driven alarm management and system dashboards allow operators to quickly visualize and prioritize their work, keeping the facility running comfortably and efficiently

- Drilling down from high-level operational views to specific parts of the system is simple and intuitive

- Efficient, comprehensive and scalable: With all systems being interconnected there can be a lot of data. enteliWEB collects and organises this information, displaying it through a custom dashboard. Dashboards can be customized to your needs in every level of enteliWEB. We have more than four types of dashboards available through one enteliWEB solution:

  - *Enterprise dashboards allows Facility Managers to quickly evaluate their systems based on KPIs*

  - *Personal dashboards provide an easy way for operators to view the building the way they want*

  - *Systems dashboards provide a much richer experience than graphics alone. They combine operational views such as graphics, alarms, point lists, charts and other tools all on one page*

  - *Energy dashboards allow you to monitor how much energy your datacentre is using in once quick glance. You have the ability to choose the appropriate systems, and have their energy usage displayed in one easy to understand interface*

- Power metering and monitoring devices plus energy power monitoring software help detect malfunctions and lower energy consumption. All findings are included in customer specific reports

- The high quality of our products and systems pave the way for smooth data center operation while significantly extending the maintenance and service intervals, which in turn reduce life cycle costs. Tailored to the process requirements of our customers, we develop a system or overall solution that focuses on reliability and availability
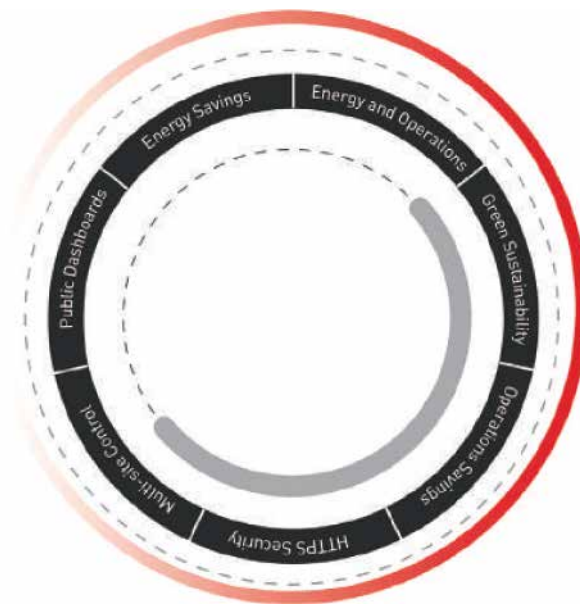
Benefits

- **Controllers with options of POE for better uptimes and hot swappable modules for quicker serviceabili**ty

- *Consistency:* Improved system planning and commissioning, easy integration of building automation

- *One-stop shop:* One contact partner for all products, systems, solutions and services results in considerable cost savings during installation and operation

- *Safety*: Perfect protection of personnel and equipment through optimized protection and switching devices

- *Efficiency:* Higher system availability and maximum energy efficiency thanks to monitoring and protection against overload and short-circuits

- *Scalability:* Can be scaled from a small system of 200 points to unlimited 10 points

Ensure maximum uptime with
Fire Safety

The risk of fire in a data centre is particularly high due to heavy power loads, a constant ignition source, combustible materials, extensive cabling and high air velocity for cooling. Bajaj Electricals' fire safety solutions are precisely tailored to your data centre's requirements and comply with the highest safety standards and regulations.

The solutions offer you maximum safety against all risks of fire and ensure uptime and availability of service. They reduce the risk of wide-spread fire, combining highly accurate smoke detectors with fire panels that have hot redundancy along with aspirating smoke detection with asymmetric piping guarantees the highest detection speed and accuracy, coupled with preventive maintenance, improving the response effectiveness. **The detection technology used is LED based and provides long life and reliability.**

The silent discharge nozzle technology ensures quiet and effective extinguishing, minimizing the risk of data loss due to hard disk drive failure. As in any fire situation, ensuring that people are alerted immediately and know what to do is the top priority. Reliable alarming devices and the voice evacuation system ensure that people are able to evacuate the danger area quickly and safely.

Benefits

- **Fast and highly reliable fire detection thanks to unique aspirating smoke detectors**

- **Efficient and effective fire extinguishing using clean agents like FHT (Firefite Hypoxic System - Firepass) Novec 1230 & FM 200**

- Complete integration of fire detection, extinguishing and evacuation solutions

- Bajaj Electricals fire safety products and solutions comply with the highest safety standards and regulations

- Reliable alarming and fast evacuation when needed

Ensure business continuity with
Security & Carbon Footprint Analytics

Threats to data centres in this modern day and age come in many forms, from the intruder trying to gain physical access to the facility and ultimately the servers, or safety incidents and natural disasters to cyber attacks and hackers trying to gain access to the network and the data stored on the servers.

Bajaj Electricals provides a layered and integrated approach on data centre security after identifying all the possible threats and their impact on a data centre's infrastructure and assets. From perimeter protection, gate control, intrusion detection to access control and visitor management, incoming and outgoing goods, access to specific security zones, such as power distribution and UPS rooms, and to the computer room itself. Intelligent video surveillance solutions help with event investigation and - in combination with all other security measures - ensure highest protection.

The management system that integrates all security disciplines allows increased visibility, response agility and control and ensures your facility remains secure 24x7. By adopting an integrated approach aimed at protecting all the operational processes of a data centre, our solution ensures business continuity in compliance with customer security policies and procedures. We also offer ROG - Remote Operation Center as a service model.

Benefits

- As the access control is seamlessly integrated with BMS we can provide carbon foot printing of the data centre

- Data, people and assets remain secure 24/7

- Risk mitigation prevents loss of reputation and business disruption

- Tailor-made integrated security solution following security policies and procedures

- Early detection of unauthorized people on the data centre premises

- Protection of operational processes and data ensures business continuity

- User-friendly security management system supporting security guards and operators

SAFE CITIES

Integrated city surveillance

The safe city concept is based on a consolidated ICT (information and communication technologies) platform which combines public-safety information of different types and from different sources, obtained through sensors and multiagency collaboration.
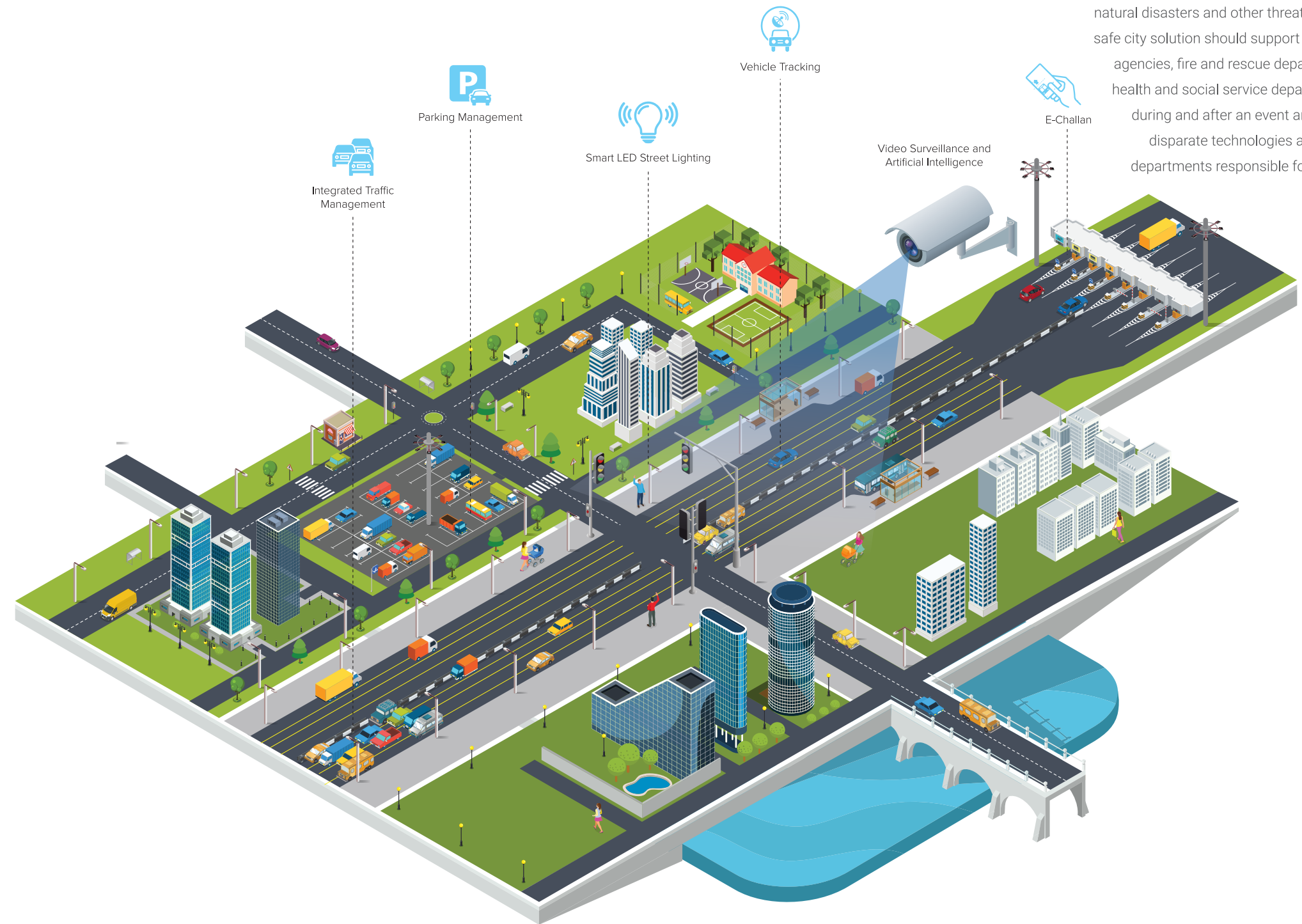
Safe cities are an essential pillar supporting the development of smart cities throughout the world. They provide the security and safety required to protect citizens from crime and terrorism as well as mitigate, as much as possible, the impact of natural disasters and other threats. A successful safe city solution should support a city's security agencies, fire and rescue departments, public health and social service departments before, during and after an event and integrate the disparate technologies and government departments responsible for citizen safety.

Vehicle Tracking

Parking Management

E-Challan

Smart LED Street Lighting

Integrated Traffic Management

Video Surveillance and Artificial Intelligence

PREVENTION

Provide reliable and comprehensive security measures to predict threats and hazardous situations. City authorities must be able to take measures to prevent threats from occurring in the first place.

Simulation and forecasting technology, based on big data mining, can help the relevant authorities to predict public threats and support police and military assets to prevent the event before it begins.

DETECTION

Aid public-safety organizations in collecting, sharing and analyzing data more effectively to provide early warnings and raise situational awareness. Sensor systems in the city will proactively gather information. These sensors may include video surveillance cameras, CBRNE (Chemical, biological, radiological and nuclear) sensors, gunshot-detection sensors, and weather sensors.

The type of sensor used is determined by the scope of the safe city project and how much interoperability is required. Information can be used to provide early detection and alerts when events occur. Increasingly, sensors include "listening" to social media for relevant postings by netizens.

RESPONSE

Enable the key organizations in the city to react to security threats in real time. City authorities must be able to prevent an adverse event from escalating. Safe city projects enable an effective response by using a consolidated ICT platform to provide a common operational picture to all relevant agencies, including law enforcement, public health, fire and rescue services; and to allow the critical communication systems of these agencies to interoperate.

This helps to raise the situational awareness for each of the responding agencies, and their command, control and coordination.

RECOVERY

Provide post-event examination and analysis, identify victims and provide assistance in rescue actions. After an event, city authorities must be able to quickly examine and analyze all data received from the relevant sensor systems. This supports the subsequent search for suspects as well as the process of building a case based on incriminating evidence. Information can also be used to facilitate rescue actions, and the identification and assistance processes for both victims and survivors.

Key elements of a Safe City include:

Integrated System: A shared infrastructure with common sensors connected by a shared network. Evolved from a disparate set of sensors with no interoperability.

Multi Agency Collaboration: Moving beyond shared infrastructure to sharing intelligence, operational procedures and planning. For example, in the event of a disaster how does communication work? who takes direction from who?

Situational Awareness: Real time information, with traffic data, sensor positions, resource locations, weather and other intelligence

Video Data & Analytics: Information collated from an array of city sensors and databases combined with video analytics, LPR, face recognition, behavioural analysis

Automated Processes: All camera information is generated on one screen, alerts are registered, and the right operational procedure is generated

Video Surveillance and Artificial Intelligence

Adding vehicles to our Appearance Search technology means users can quickly search through recorded footage to determine critical information about where and when a vehicle might have been before and after an event.

An appearance search for a person can be followed up with an appearance search for the vehicle that a person gets in or out of. This allows users to complete an entire investigation that spans indoor and outdoor spaces, saving valuable time and effort during critical investigations.

As the surveillance industry has evolved, stadiums and other large venues have benefited from a greater adoption of higher resolution cameras that provide both broad coverage and excellent image detail. This shift was an evolution from the industry's previous reliance on networks of hundreds of analog or low-resolution IP cameras, which often forced security personnel to make a tradeoff between field of view and image detail.
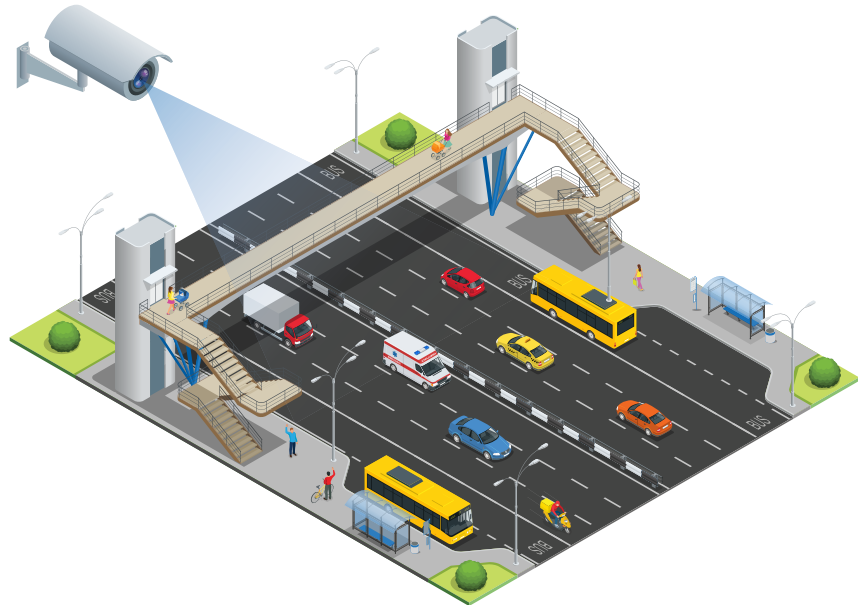
Integrated Traffic Management & E-Challan

Smart traffic management module, which will focus on reducing traffic congestion and improve journey experience of the citizens. The projects will include implementation of traffic signalling with area-based traffic control, monitoring traffic network flow, variable signage, red light violation detection systems at major intersections and an e-challan system. To work it efficiently, the administration plans to provide access points.

The smart tracking management application will have a track and monitor mechanism and will look after functions of about public service vehicles. Citizens will also be able to get bus-related information on their mobiles through an app.

Apart from that it also calls for Emergency Management and Incident Response System will support monitoring of day to day operations of the city and supplement citizen safety.

Parking Management & Vehicle Tracking

Based on the occupancy status determined with the help of sensors, the system can guide the enforcement authorities to potentially offending vehicles with expired time limits or illegal parking. A downloadable mobile app provides users with information about available parking spaces and parking fees at any given time.

Based on this information, users can easily locate the parking space closest to their destination without having to circle around the streets to find parking space. Wireless sensors are embedded in each parking space to identify its occupancy status in real time.

The information from parking sensors is updated to a central system that keeps track of parking status across the entire street or block of that area.
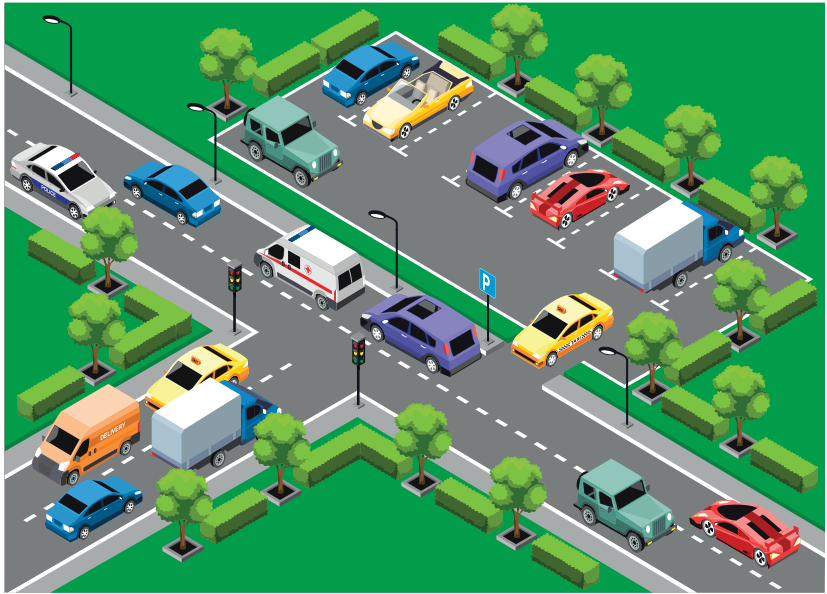
Environmental Monitoring System & Smart LED Street Lighting

Today, the opportunity has fallen to us that we can try to get the necessary information on the overall situation by means of modern remote sensing methods. This information will be useful even if these remote sensing information sources do not provide as much detail as wanted.

The advantage of this kind of environmental data supply is that information is obtained worldwide by a single standard, and at regular, short intervals, applying comparable measures. The regularity and global aspect of the data supply promise enormous benefits even if the information given is not as detailed as wanted.

Using this data, we could, for instance, illustrate the effects of the expansion of the mega-cities over several years or decades by means of time-lapse comparisons, the reduction in the rain forest stand, the air pollution, desertification, desiccation of lakes, and many other environmental processes.

SMART INDUSTRY & CONTROL ENVIRONMENT SOLUTIONS

Often revolutions look like evolutions to those who are involved at the time. Only with the perspective of history is it clear that a "revolution" happened.

At BEL we believe that "Smart Industry" is an (r)evolution that builds on the many different technology advances over the past decades (evolution) but which will fundamentally change the way factories and workplaces function (revolution). For us "Smart" means doing things more efficiently, more flexibly and in a more environmentally friendly manner. It also means the manufacturing will be safer for people working there.

Management System

Video surveillance

Cloud computing

Fire and safety

Smart logistics

Asset tracking

Autonomous

Automation

BAJAJ

In many facilities, visitors are still registered using a handwritten paper log. While this method is perceived as quick and easy, it provides virtually no security and leaves visitor information available for anyone to see. Automated visitor management systems lend a more professional appearance to check in systems, enhance security and meet compliance mandates for the collection and auditing of visitor data.

Visitor management is the recording and collection of visitor data, either manually or through automated check in software, for the purpose of knowing who is in the facility, who they are visiting and how long they spent there.

We offer highly secure and reliable visitor pass solutions and check in software to meet the needs of small or large organizations.

Key Features

- Enhance the professionalism of the enrollment process and visitor check-in with a digital check in system

- Provide additional safeguards by screening against felony and sex offender watch lists if applicable

- Improve security by identifying who is in a facility quickly and accurately, especially in emergency situations

- Conduct analysis/reporting on visitor data, quickly and easily via visitor management software

This Employee attendance management system is used for keeping the record of an employee in an organized organization such as a school, college, university, etc. Our project aims designing an employee attendance system which could effectively manage attendance of employee at institutes, organisation, etc.

This application maintains a database which has the details of the employees such as their name, unique ID, image, designation, date of joining etc. This application must be placed in the head office of any organizations. Employees, instead of signing in the attendance Register, they can simply use this mobile application and enter their unique id. Once ID is given, the front camera of the android mobile phone captures the image of the employee. The captured image is compared with the image in the database for a valid user and attendance is updated automatically.

The generated report will be automatically mailed once the time limit exceeds. This image comparison helps in avoiding proxy attendance by other.

Advantages:

- Help in maintaining the computerized employee details
- Calculate the salary
- Easy attendance marking
- More efficient and reliable
- Less time consuming and easy to use
- Avoid human error and effort for maintaining daily data
- Huge data storage with less computer memory
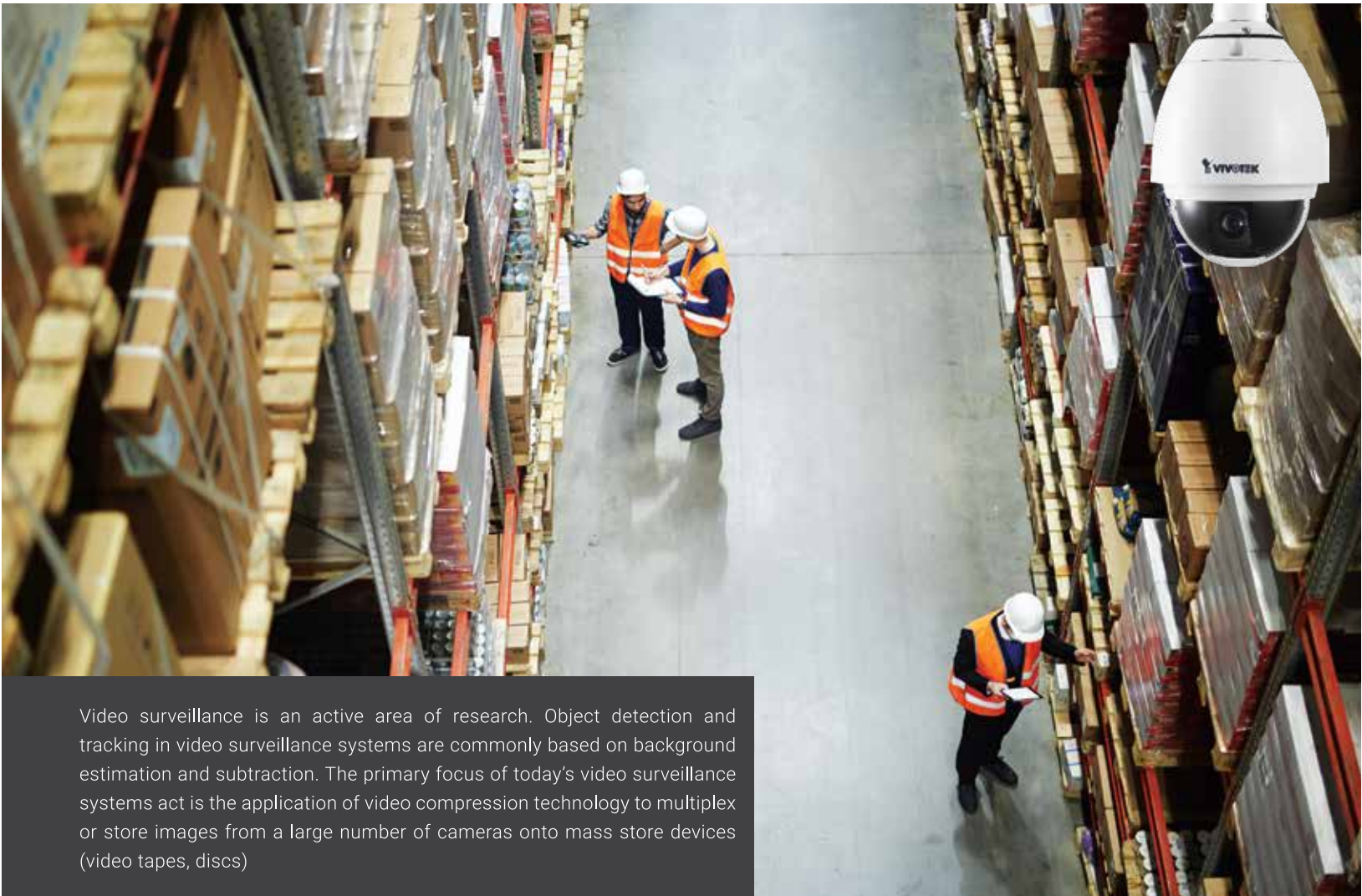
Video surveillance is an active area of research. Object detection and tracking in video surveillance systems are commonly based on background estimation and subtraction. The primary focus of today's video surveillance systems act is the application of video compression technology to multiplex or store images from a large number of cameras onto mass store devices (video tapes, discs)

Claim	Benefit	Proof
Most reliable and early detection	Early Warning despite stratification	Actively sampling the air on different levels
Most efficiently serviceable system	High returns during maintenance	Avoiding the need to test every sampling point with smoke has tremendous cost savings, especially in areas of difficult access.
Only way to a stage a incident control	Pre-alarms without the risk of unwanted release of extinguishing	Four sensitivity levels allowing for Alert, Action, Alarm and Extinguishing Release
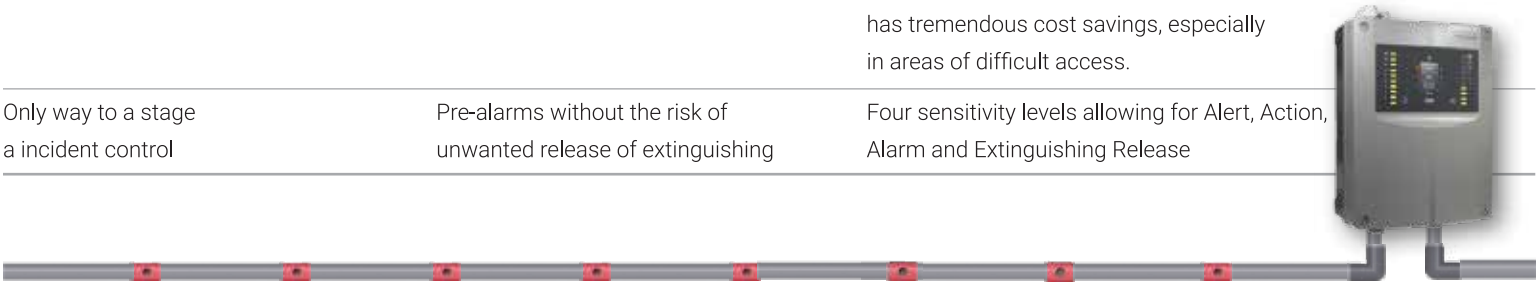
From the perspective of real-time threat detection, it is well know that human visual attention drops below acceptance levels, even when trained personnel is assigned to the task of visual monitoring. On the other side, video analysis technologies can be applied to develop smart surveillance systems that can aid the human operator in real-time threat detection [2]. Specifically, multiscale tracking technologies are the next step in applying automatic video analysis to surveillance systems.

Application of visual surveillance include car and pedestrian traffic monitoring, human activity surveillance for unusual activity detection, people counting, etc. A typical surveillance application consists of three buildings blocks: moving detection, object tracking and higher level motion analysis. Multimedia systems can provide surveillance coverage across a wide area, ensuring object visibility over a large range if depths and can be employed to disambiguate occlusion.

Video surveillance has been a key component in ensuring security at airports, banks, casinos, and correctional institutions. More recently, government's agencies, businesses, and even schools are turning toward video surveillance to increase public security.

With the proliferation of inexpensive cameras and the availability of high-speed, broad-band wireless networks, deploying a large number of cameras for security surveillance has become economically and technically feasible.

Building Automation Control is the automatic centralized control of a building's heating, ventilation and air conditioning, lighting and other systems through building automation system (BAS). The objectives of building automation are improved occupant comfort, efficient operation of building systems, reduction in energy consumption and operating costs, and improved life cycle of utilities.

Building automation is an example of a distributed control system – the computer networking of electronic devices designed to monitor and control the mechanical, security, fire and flood safety, lighting (especially emergency lighting), HVAC and humidity control and ventilation systems in a building.

BAS core functionality keeps building climate within a specified range, provides light to rooms based on an occupancy schedule (in the absence of overt switches to the contrary), monitors performance and device failures in all systems, and provides malfunction alarms to building maintenance staff.

A BAS should reduce building energy and maintenance costs compared to a non-controlled building. Most commercial, institutional, and industrial buildings built after 2000 include a BAS. Many older buildings have been retrofitted with a new BAS, typically financed through energy and insurance savings, and other savings associated with pre-emptive maintenance and fault detection.

Advanced RFID tags and components are essential to optimizing automated asset tracking and logistics systems. Our transponders help ensure seamless traceability and reduce losses, while enhancing stock management and processing speed. Passive contactless RFID tags improve data collection speed and accuracy, making tracking more cost-effective while increasing accuracy.

Asset tracking uniquely identifies any object without line of sight by affixing or embedding a RFID tag. Tracked assets enable workflow optimization, real-time inventory or location services and help reduce human error.

Key Features

- Hundreds of standard configurations and thousands of applications

- Proven performance in low frequency, high frequency and ultrahigh frequency (UHF). Select from a broad range of form factors, chip configurations and memory capacities for the optimal technology that meets your needs

- Rugged RFID tags are designed to withstand the natural elements, from sub-freezing cold temperatures to tropical heat, rain, heavy snow, and UV rays

NOTE