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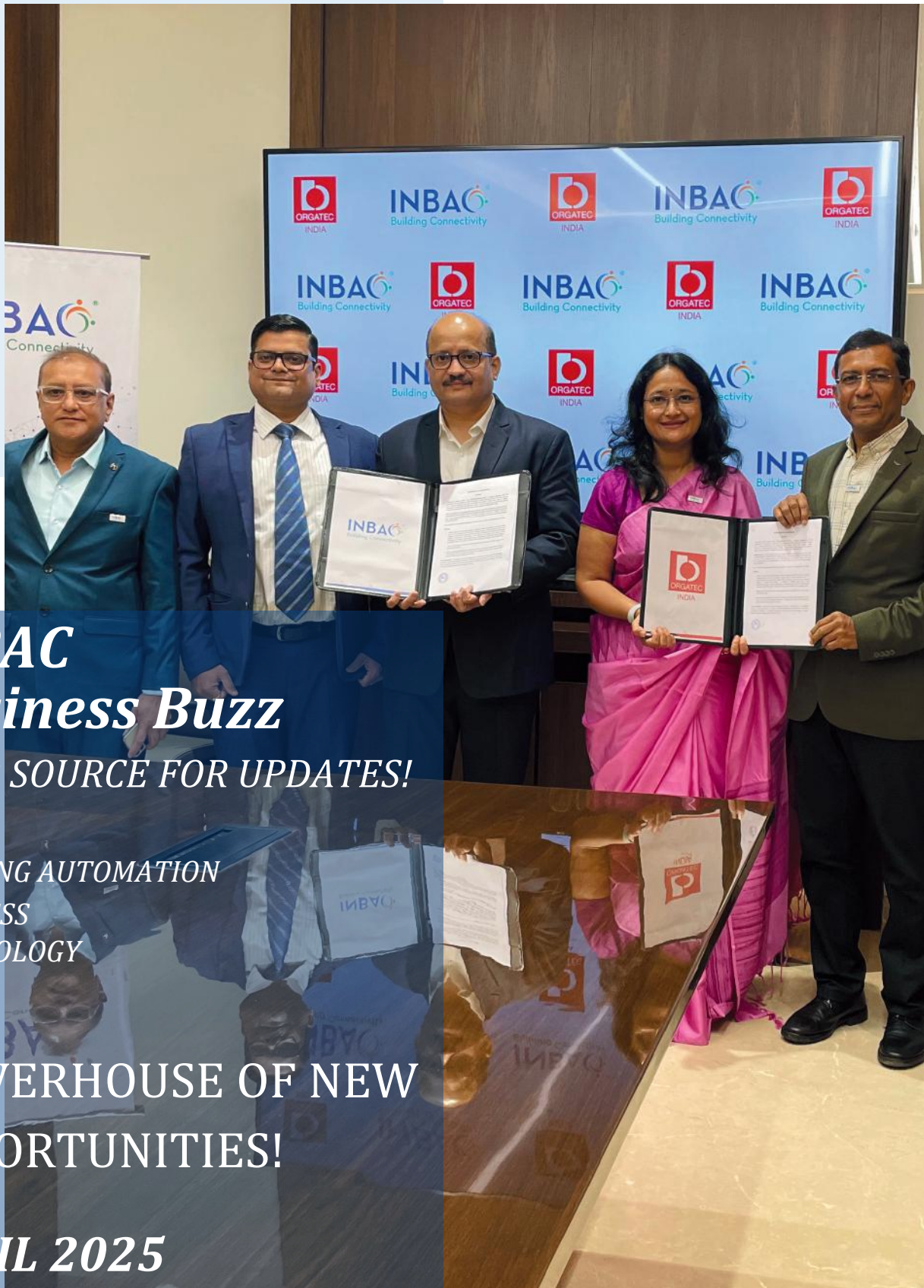

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THE EDITOR'S DESK

FRAMING THE FUTURE: INSIGHTS AT THE CROSSROADS OF BUILDING INTELLIGENCE AND AI

At INBAC, we take immense pride in how our community of seasoned authors continues to elevate the quality, depth, and influence of the magazine. Their expertise, honed through years of innovation and practical experience in building automation, enriches each edition with insights that are both visionary and grounded. Their contributions are not just articles—they are catalysts that push forward the conversation around intelligent buildings, energy optimization, and sustainable design, helping our readers stay at the forefront of a rapidly evolving industry.

As building automation systems increasingly converge with artificial intelligence, we are witnessing a pivotal transformation in how buildings think, adapt, and respond. AI is no longer just a tool but a core enabler, driving predictive maintenance, energy efficiency, occupant comfort, and even autonomous decision-making. From an editorial perspective, our aim is to spotlight these advances thoughtfully—balancing technical depth with strategic foresight—so that professionals can navigate this dynamic landscape with clarity, confidence, and purpose.

Sincerely,
Dr. Amit Chaudhari (CFPS, LEED AP, PMP, WELL AP)
Editor-in-Chief
Building Technology BizBits Magazine

BMS-GLOBAL CONTEXT AND INDIAN PERSPECTIVE

Integrated Building Management System (BMS) is a centralized system that monitors, controls, and optimizes the performance of a building's mechanical & electrical services. These services mostly include HVAC, lighting, security systems, fire safety, water, and energy management.

In the global context, BMS systems are becoming increasingly vital as cities and industries strive toward greater sustainability, energy efficiency, and automation. The rise of smart buildings and smart cities is driving the adoption of advanced BMS technologies, which are integral in controlling and monitoring everything from energy usage to security and environmental comfort.

Global Context of BMS Systems

- Energy Efficiency and Sustainability: One of the main drivers of BMS adoption globally is the push for sustainable buildings. BMS systems help monitor & control energy consumption, identify inefficiencies, and provide the data needed to optimize energy use. This aligns with the global move toward reducing carbon footprints and energy costs.

- Smart Buildings and Cities: With the growing integration of IoT (Internet of Things), AI (Artificial Intelligence), and big data, BMS systems have become more intelligent, allowing them to predict trends, optimize resources in real time, and adapt to changes in building occupancy or weather conditions.

- Regulations and Standards: Various global regulations and standards (e.g., LEED, WELL, BREEAM, ISO 50001 etc.) are pushing for the adoption of smart, energy-efficient systems. BMS helps the buildings meet these standards by continuously managing and improving energy usage and environmental conditions.

Global Trends Driving BMS Adoption:

1. Sustainability Initiatives:
   - Energy & Water management tools built into BMS reduce waste of resources and support the global movement toward net-zero buildings and cities.
2. Technological Advancements:
   - Integration of IoT, AI, and Machine Learning enhances the capability of BMS systems, making them more intuitive, predictive and interactive.
3. Cost Savings:
   - The adoption of BMS leads to reduced operational costs by enhancing resource efficiency and predictive maintenance.
4. Government Mandates & Green Building Certifications:
   - Many countries are adopting stringent energy-efficiency standards for buildings, and BMS systems help meet those requirements.
5. Security and Safety Enhancements:
   - BMS systems integrate security and fire safety systems, which helps protect people and assets, improving overall building safety.

Global Market Size:

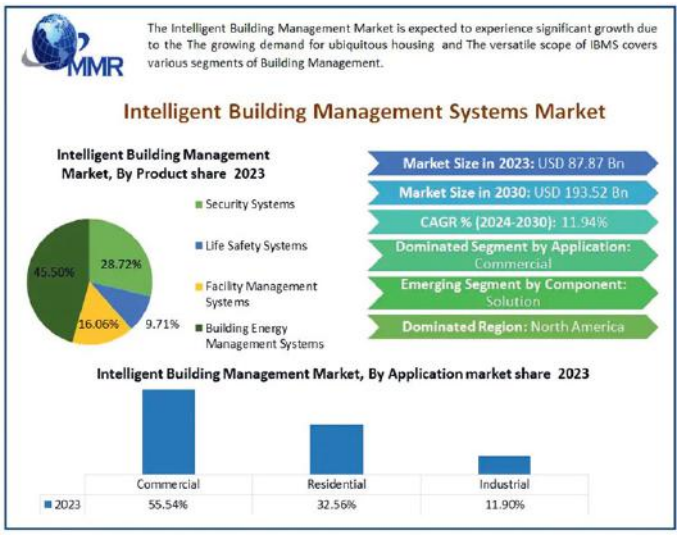
Courtesy-TBRC (The Business Research company) BMS Global Report 2025

The building management system market size has grown exponentially in recent years. It will grow from $18 billion in 2024 to $56 billion in 2029 at a compound annual growth rate (CAGR) of 24.8%.

This growth can be attributed to advances in data analytics, rising

energy costs, energy efficiency regulations, water scarcity, adoption of IoT and smart building technologies, rise of cloud-based solutions, demand for integrated system, enhanced security and access control.

Further in a research report published by Maximize Market Research (MMR USA) in June'24, the most dominant product in BMS is Energy management followed by Security systems.
In terms of segment wise domination commercial buildings leads the chart followed by Residential. Industrial and warehouse segment is also catching fast due to adoption of Industry 4.0 standards.



Here is a simplified understanding on how BMS system functions within a building:

1. Building Infrastructure: The physical setup of the building—HVAC, lighting, elevators, etc.
2. Sensors & Devices: Devices that collect data on temperature, occupancy, humidity, and energy usage.
3. Central Control System: Where the collected data is processed and analysed for optimizing performance.
4. User Interface: Dashboards or apps where building managers or users can monitor and control the systems.

- The Building System (HVAC, lighting, etc.) connects to Sensors & Actuators that gather real-time data.
- This data is sent to the Central Control System, which processes and analyses it.
- The system can optimize energy usage and system performance.
- The user interacts with the User Interface/Management Panel for control and monitoring.

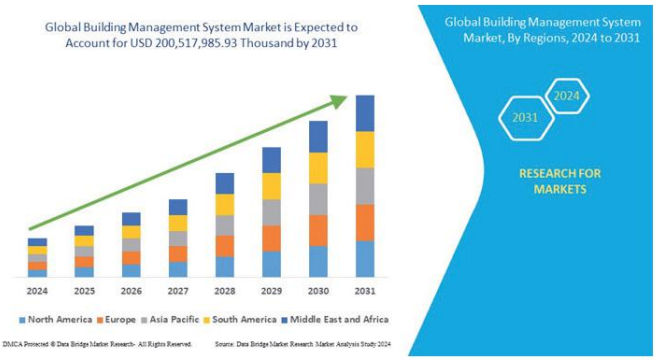
Region wise Trends:

A region wise penetration also shows an rising upward trends for BMS and highest being in MEA and Asia Pacific regions for next 8-10 years.

India Perspective:

Importance of BMS in India:

India's rapid urbanization, growing commercial real estate market, and increasing demand for energy-efficient buildings



have led to a significant rise in the adoption of Building Management Systems. The Indian government's focus on smart cities and energy conservation further boosts the demand for such systems. With increased attention to sustainability and the need for better energy management, BMS has become a crucial part of building infrastructure in the country.

Market Drivers for BMS in India:

1. Energy Efficiency and Sustainability:
   - Rising energy costs have made energy-efficient solutions increasingly popular.
   - With growing concerns about climate change, there is a heightened demand for sustainable building technologies.
   - The Indian government's initiatives like the Energy Conservation Building Code (ECBC) and National Action Plan on Climate Change have encouraged the use of energy-efficient systems.
2. Government Regulations and Incentives:
   - The Indian government has set regulations to promote energy efficiency in commercial buildings, with mandates for implementing energy-efficient technologies.
   - The Smart Cities Mission promotes the integration of advanced technologies, including BMS, for improved urban management.
3. Urbanization and Commercial Infrastructure Growth:
   - India is undergoing rapid urbanization, with a growing demand for commercial buildings, office spaces, and residential complexes.
   - As more buildings are being constructed, the demand for automation, energy management, and security systems rises.
4. Technological Advancements:
   - Advancements in IoT (Internet of Things), cloud computing, and AI (artificial intelligence) are making BMS systems more efficient, accessible, and affordable.
   - Smart buildings integrated with BMS provide real-time monitoring, predictive maintenance, and enhanced user experience.

Market Trends:

- Integration with Smart Technologies:
  - Smart buildings are a rising trend, where BMS integrates with IoT-enabled devices for better monitoring and management.
  - Cloud-based BMS allows remote access, real-time data analysis, and predictive maintenance.

- Artificial intelligence (AI) and machine learning (ML) are being utilized to optimize energy consumption and improve system efficiency.
- Demand for Retrofit Solutions:
  - Retrofit BMS solutions are gaining popularity as older buildings are being upgraded to meet new energy efficiency standards.
  - Retrofitting allows buildings to enhance operational efficiency without the need for a complete rebuild.
- Focus on Security and Safety:
  - With the increasing concerns over building security, BMS is integrating fire safety, access control, surveillance, and other security systems.
  - IoT-enabled systems are helping detect faults or hazards early, improving safety for building occupants.
- Rising Interest in Residential BMS:
  - Residential complexes and smart homes are gradually adopting BMS, especially in Tier 1 cities.
  - The demand for integrated home automation systems that control lighting, HVAC, and security is increasing.

Challenges in the Indian BMS Market:

1. High Initial Cost:
   - The initial investment for setting up a BMS system is relatively high, which can be a barrier for small and medium-sized businesses.
   - However, the long-term savings on energy bills and improved building performance can offset the initial cost.
2. Lack of Awareness:
   - Many building owners and developers especially in Tier-2 cities are still unaware of the benefits of BMS and its potential for energy conservation.
   - Education and awareness campaigns can help bridge this gap.
3. Interoperability Issues:
   - Integrating different systems (HVAC, lighting, security) from multiple vendors into one unified platform can be complex and costly.
   - Standardization of BMS protocols and systems is the need of the hour and will help alleviate this challenge.
4. Skilled Workforce Shortage:
   - There is a shortage of skilled professionals who can design, implement, and maintain BMS systems.
   - Training and skill development programs will be essential to meet this demand.

Key Players in the Indian BMS Market:

ABB Ltd.
Cisco Systems Inc.
Honeywell International Inc.
Johnson Controls
Lutron Electronics Co., Inc
Siemens Ltd.
Schneider Electric
Trane (Ingersoll Rand)
Cylon Controls
Carrier Global Corporation

Future Outlook for BMS in India:

- Growth Potential: The BMS market in India is expected to grow significantly over the next few years. As urbanization continues and commercial and residential spaces become smarter, the demand for BMS is likely to rise.
- Government Initiatives: The government's focus on reducing energy consumption and promoting green building standards will drive the growth of BMS. The Smart Cities Mission and Make in India programs will further support this growth.
- Technological Advancements: Integration of artificial intelligence, machine learning, and IoT into BMS solutions will provide greater automation, enhanced efficiency, and cost savings.
- Sustainability: As sustainability becomes a critical part of construction practices, BMS solutions that optimize energy use, reduce emissions, and promote eco-friendly living will play a central role in shaping India's future building infrastructure.

Building Management System (BMS) Market in India:

- Market Size and Growth: As per the forecast report from EMR (Expert market research) The India intelligent building management systems market stood at a value of around USD 8572.23 million in 2024.The market is expected to grow at a CAGR of 24.10% in the forecast period of 2025-2034 to reach a value of about USD 59846.68 million by 2034.

- Key Drivers:
  - Urbanization and Infrastructure Development: Rapid urbanization and the development of smart cities are increasing the demand for integrated building management solutions.
  - Energy Efficiency and Sustainability: There is a growing emphasis on energy-efficient and sustainable building practices, leading to the adoption of advanced BMS technologies.

These trends highlight the expanding penetration of BMS technologies in the Indian market, propelled by technological advancements and a focus on sustainability across various industries.

Conclusion:

The BMS market in India is at the cusp of significant growth due to factors like urbanization, government regulations, rising energy costs, and advancements in technology. While challenges such as cost, awareness, and workforce skills exist, they can be overcome with strategic initiatives. The future of the BMS market in India looks promising, driven by the need for energy efficiency, sustainability, and smart building technologies. With the right investments in infrastructure, training, and innovation, India will certainly witness the proliferation of advanced building management systems in both commercial and residential spaces.

BY MR. ANIRUDDH BAPAT
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PROPERTY LOSS PREVENTION FOR COMMERCIAL BUILDINGS THROUGH CLIMATE RESILIENCE ASSESSMENTS

Introduction

Commercial buildings face increasing risks from climate-related events such as cyclones, floods, and extreme temperatures etc. These hazards not only threaten the structural integrity of buildings but also disrupt business operations, leading to financial losses. To mitigate these risks, property loss prevention strategies are a must along with climate resilience assessments. These assessments help businesses identify vulnerabilities, implement proactive measures, and ensure operational continuity despite adverse weather conditions.

In today's evolving climate landscape, businesses can no longer afford to take a reactive approach to property loss. Instead, a comprehensive, proactive strategy focused on risk mitigation and climate resilience is essential. Through detailed evaluations and strategic interventions, commercial buildings can significantly reduce damage potential, operational disruptions, and financial losses. This article explores how climate resilience assessments and property loss prevention together contribute to outlining actionable strategies for building long-term resilience.

Understanding Climate Resilience Assessments

A climate resilience assessment evaluates the potential impacts of climate-related events on a commercial property and recommends measures to mitigate risks. This assessment involves:

1. **Risk Identification:** Examining historical weather patterns, local climate projections, and specific vulnerabilities of a building. Understanding past climate trends helps predict future risks and develop mitigation plans accordingly.

2. **Structural Analysis:** Assessing the building's ability to withstand extreme conditions, such as high winds, heavy rainfall, or seismic activities. Engineers and architects analyze the existing infrastructure to determine whether reinforcements or upgrades are needed.

3. **Infrastructure Evaluation:** Reviewing drainage systems, power backups, insulation, and HVAC systems to ensure they are climate resilient. Infrastructure resilience plays a critical role in ensuring that essential services remain functional during adverse events.

4. **Business Impact Analysis:** Identifying potential operational disruptions and their financial consequences. Businesses must assess the cost of downtime and develop strategies to maintain productivity even during environmental challenges.

5. **Mitigation Planning:** Developing strategies to fortify the building against identified risks and ensure minimal downtime in case of an event. This includes identifying areas that require immediate attention and long-term investment in climate resilience measures.

Property Loss Prevention Strategies

Implementing effective property loss prevention strategies can help commercial buildings withstand climate-related hazards. Some key strategies include:

1. **Structural Reinforcements:**
a. Strengthening the building envelope with impact-resistant windows, reinforced roofing, and storm-resistant doors.
b. Elevating critical equipment above flood levels to prevent water damage.
c. Using fire-resistant materials in wildfire-prone areas to mitigate the spread of flames.
d. Retrofitting older buildings with modern materials that can better withstand harsh environmental conditions.

2. **Improved Drainage and Water Management:**
a. Installing flood barriers and sump pumps to prevent water infiltration during heavy rainfall or storms.
b. Implementing rainwater harvesting and sustainable drainage systems to improve water conservation and reduce strain on public drainage networks.
c. Conducting regular maintenance of gutters and stormwater drains to prevent blockages that could lead to localized flooding.
d. Designing landscapes that incorporate permeable surfaces to enhance water absorption and reduce runoff.

3. **Energy and Power Resilience:**
a. Installing backup generators and renewable energy sources (e.g., solar panels) to ensure continuous power supply in case of grid failures.
b. Using smart grid technology to optimize energy consumption and efficiency, ensuring that power is managed effectively even during disruptions.
c. Implementing energy-efficient building designs that reduce dependence on external power sources while maintaining internal climate control.
d. Ensuring that critical power supply systems, such as server rooms and medical equipment, have independent backups to prevent operational failure.

4. **Data Protection and IT Security:**
a. Utilizing cloud-based data storage to prevent loss of critical business information during disasters.
b. Establishing off-site data recovery centers for redundancy to ensure that data remains accessible even if primary systems fail.
c. Enhancing cybersecurity measures to protect against climate-induced power fluctuations that could compromise IT infrastructure.
d. Developing digital continuity plans that enable businesses to operate remotely if physical locations are compromised.

5. **Emergency Preparedness and Response Plans:**
a. Conducting regular emergency drills and staff training to ensure that employees are prepared for various disaster scenarios.
b. Developing a clear evacuation and communication plan that outlines procedures for different types of emergencies.
c. Establishing partnerships with emergency services for rapid response in case of a natural disaster.
Ensuring that essential supplies, such as first-aid kits, water, and emergency lighting, are readily available in commercial buildings.

Benefits of Climate Resilience in Commercial Buildings

Investing in property loss prevention and climate resilience assessments leads to multiple benefits, including:

·Reduced Financial Losses: Preventing structural damage and operational downtime minimizes insurance claims and repair costs, allowing businesses to maintain financial stability.

·Enhanced Business Continuity: A resilient facility ensures uninterrupted operations, safeguarding revenue and customer trust. Businesses that can quickly recover from climate-related incidents maintain their market position and reputation.

·Lower Insurance Premiums (largely dependent on local markets): Many insurers offer lower premiums for buildings with proactive risk mitigation measures. By demonstrating resilience strategies, businesses can negotiate better coverage terms and reduce overall risk exposure. However, this majorly depends on local insurance market dynamics.

·Increased Property Value: Climate-resilient buildings attract investors and tenants seeking secure, stable environments. A well-protected building is a valuable asset that enhances the long-term financial prospects of the business.

·Regulatory Compliance: Meeting environmental and safety regulations avoids legal liabilities and penalties. Businesses that prioritize climate resilience align with government policies and industry standards, positioning themselves as responsible corporate citizens.

·Sustainability and Corporate Responsibility: By implementing resilience measures, businesses contribute to broader sustainability goals. This not only benefits the company but also supports community resilience, environmental protection, and social responsibility initiatives.

Conclusion

Loss prevention strategies and Climate resilience assessments are crucial for commercial buildings to prevent property loss and business disruptions. By identifying vulnerabilities and implementing proactive strategies, businesses can enhance their facility's durability, maintain operations, and safeguard financial stability. As climate risks continue to escalate, prioritizing resilience measures is not just an option but a necessity for sustainable business operations.

Organizations that invest in loss prevention and climate resilience today will be better positioned to withstand future challenges. Through thoughtful planning, strategic investments, and a commitment to sustainability, commercial buildings can mitigate risks, reduce economic losses, and ensure long-term operational success. The key to resilience is preparation, and businesses that proactively address climate-related risks will emerge stronger and more competitive in the face of evolving global challenges.

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WHY INBAC?

- Lead smart infrastructure of Digital India
- Represent India on global platform
- Global collaborations and strong networks
- Drive the future of sustainable smart buildings

ABOUT US

We are a non-profit community of building automation stakeholders, with the vision to facilitate an ecosystem that supports efficient, safe, healthy and connected buildings through globally accepted ISO based open standards in India.
To see India as a leader on the Building Automation world map, is deeply embedded in the DNA of INBAC.

AUTOMATION IN ARCHITECTURE

Automation in architecture refers to the use of technology and algorithms to optimize and expedite design, planning, and construction, leading to increased efficiency, reduced errors, and better teamwork.

Artificial intelligence together with digitalization and automation process in Architecture has led to rapid innovation in the field and increased possibilities and creativity in architectural design. Automating repetitive activities, optimizing quickly and producing extremely complex designs are all possible with computational and generative design technologies.

Technology is providing Architects with strong tools to create like never before, from AI-driven rendering tools and parametric design software to project management automation, but with these advancements come challenges: the need to balance creativity with efficiency, ensure ethical AI usage, and address the shifting role of the architect.

Automation is changing the architecture world as we know it, making once painstaking tasks like zoning analysis, structural calculations, and project management faster and more accurate.
Here's a more detailed look at what automation means in architecture:

1. Design & Planning:

- Computational Design Software:

Architects can use software to generate and test building models, explore different design options, and optimize designs based on various parameters like structural integrity, energy efficiency, and cost. These technologies provide infinite and feasible design solutions through strategic permutations and combinations. On the computer, every input is translated into a computer-coded language to auto-generate building models and design analysis.
The various verticals of computational design include generative design, parametric design, artificial intelligence, algorithmic design, biomimetic design, machine learning, and digital fabrication.

- Building Information Modeling (BIM):

BIM software allows for the creation of a digital representation of a building, facilitating better coordination and communication among stakeholders, and enabling automated tasks like clash detection and quantity takeoff.

- Automated Zoning Analysis:

Zoning analysis is a prime example of a task that's ripe for automation. Traditionally, zoning involved combing through dense regulations and deciphering complex codes to ensure that a design was compliant—a tedious, time-intensive process. Now, automation platforms are making this process near-instantaneous. Tools like automated zoning analysis platforms can scan zoning documents, assess potential compliance issues, and even visualize building envelopes based on regulatory parameters.

- Generative Design:

Algorithms and computational methods can be used to explore a vast range of design possibilities and generate optimized solutions.

2. Construction:

- Robotic Fabrication:

Robots can be used to automate tasks like Producing accurate 3d models , creating construction parts, assembling pieces on-site , cutting materials, welding leading to faster and more precise construction.

The Institute for Computational Design (ICD) and the Institute of Building Structures and Structural Design (ITKE) at the University of Stuttgart have completed a research pavilion that is entirely robotically fabricated from carbon and glass fibre composites.

- 3D Printing:

3D printing technology can be used to fabricate building components, walls, and even entire structures, offering new possibilities for design and construction.

600 sq ft house built by Tvasta Manufacturing Solutions in collaboration with IIT Madras

- Construction Site Automation:

Robots and drones can be used for tasks like site surveying, material handling, and even construction tasks, improving safety and efficiency.

- Automated Scheduling and Task Management:

Software can be used to automate tasks like scheduling construction activities, managing resources, and tracking progress, reducing delays and improving project outcomes.

3. Benefits of Automation in Architecture:

- Increased Efficiency:

Automation can significantly reduce the time and effort required for various tasks, allowing architects to work faster and more efficiently.

- Reduced Errors:

Automated processes can minimize the risk of human errors, leading to more accurate and reliable designs and construction.

- Improved Collaboration:

BIM and other automation tools facilitate better communication and collaboration among architects, engineers, contractors, and other stakeholders.

- Enhanced Design Innovation:

Automation tools empower architects to explore new design possibilities and create more innovative and sustainable buildings. Architects can embed robots directly into the building itself that monitor temperature, lighting levels, air quality, motion, and more. These small robots, called edge monkeys, are installed in the building's facade and programmed to adjust thermostats, windows, blinds, lights, and doors to save energy.

- Cost Reduction:

Automation can lead to lower construction costs by reducing labor costs, material waste, and project delays.

- Improved Safety:

Automation can improve safety on construction sites by automating dangerous tasks and reducing the need for manual labor in hazardous environments.

As the architecture world embraces automation, roles are shifting, and workflows are evolving. Architects now have the freedom to reimagine their careers and focus on creating impactful spaces rather than spending their time on routine tasks. Automation is not about diminishing the architect's role but expanding it, giving them the time and resources to push the boundaries of design. The next era of architecture promises to be one where technology and human creativity are intertwined, where absolute precision becomes the norm, allowing us to efficiently build almost everything we can imagine.

BY NIDHI SINHA
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SMART PLUMBING PRACTICES THROUGH AUTOMATION

One of the essential elements in the universe is water. Water is a precious resource that can be intelligently managed. Effective water usage introduces a smart water management. Automation in building plumbing systems is increasingly vital as it enhances efficiency, reduces costs, improves safety, and supports sustainable practices. With the help of such advanced technology, we can reduce manual tasks, prevent issues and enhance control over plumbing systems achieving end user satisfaction in project.
Here are some keyways automations which can make plumbing work easier in buildings:

A. Water Flow Management:
Pressure & flow are important parameters of water supply.

Pressure Control Systems:
1. Consistent water pressure: Automated systems adjust water pressure based on demand, ensuring efficient water distribution throughout the building. This consistency prevents pressure surges that could cause pipes or fixtures to wear out faster.

2. Energy & cost saving: Automated pressure control reduces the energy costs associated with water pumping. When demand is low, the system can lower the pump output, saving electricity. Avoiding high pressure also minimizes water wastage, further reducing costs.

3. Enhanced Comfort and Usability: Automation ensures that water pressure is suitable for all users. For example, in high-rise buildings, the BAS can regulate pressure so that occupants on all floors have a consistent experience without pressure-related issues

4. Increased equipment Longevity: Continuous high pressure can damage pipes, valves, and fittings. Automated control keeps pressure within manufacturer-recommended limits, extending the life of plumbing infrastructure and reducing maintenance costs.

Through automation, Pressure Control can be achieved by using smart devices as below:

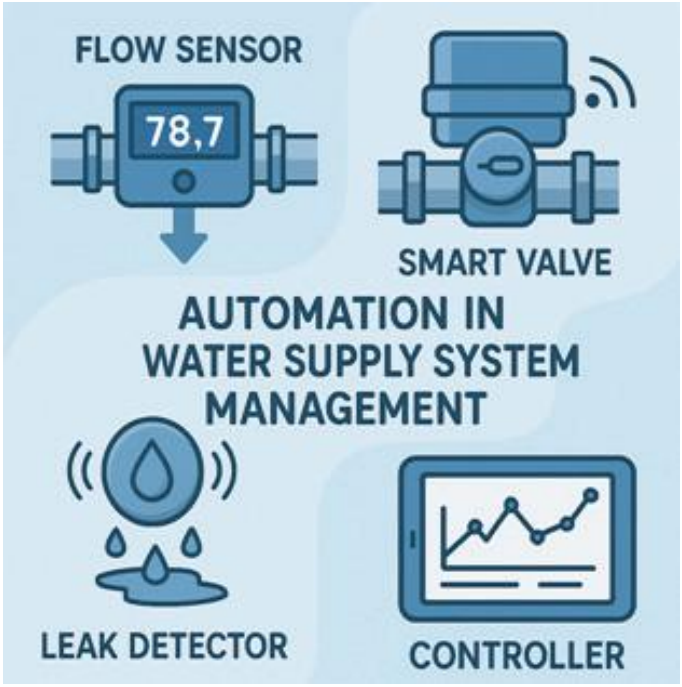
- Sensors: Pressure sensors throughout the building relay real-time data to the BAS.
- Pumps and Variable Frequency Drives (VFDs): VFDs adjust pump speed based on demand and pressure readings, ensuring only the necessary pressure is applied.
- Valves and Regulators: Automated valves can adjust water flow, maintaining consistent pressure throughout the building.

Flow management Systems:
Flow management in plumbing through automation involves using smart devices and sensors to monitor, control, and optimize the flow of water throughout a building. Few of them are as listed below.

·Flow Meters and Monitoring Systems: Smart flow meters track water usage patterns and report any unusual activity, which helps in early detection of issues or excessive consumption.

·Leak detectors: Leak detectors play a crucial role in automated water flow management, acting as the first line of defence against water loss, property damage, and inefficient system performance. Leak detectors continuously monitor for unusual water flow patterns or moisture presence that indicate a leak. Water Usage optimization can be achieved by tracking leaks.
Leak detectors contribute to more efficient flow management by reducing wastage, lowering water bill & by improving overall system performance.

·Motorised valve: Motorized valves play a central and critical role in the automation of water flow management. They serve as the physical actuator that allows a control system to start, stop, or regulate water flow based on sensor data and automation logic. It allows Start/stop flow without manual intervention. It makes easy to regulate water supply based on time, demand, or emergency. Enabling zone-based control (irrigation, greywater, heating) becomes possible & easy with this. Example: If we want to open garden irrigation line at 6 AM based on a smart timer or moisture sensor.



Selection of CP-Sanitary:

·Sensor-Based Faucets: Reduces water wastage significantly in commercial and residential setups. These are ideal for smart homes and mainly hotels, malls, hospitals, and public places where behavior of crowd cannot be controlled.

·Smart showers with digital thermostat: Maintain preset water temperature. It helps in efficient water usage.

·Automatic Flush Systems: Infrared sensor detects when a person leaves the toilet & triggers auto-flush for urinals and WCs. Prevents manual contact, enhances hygiene.

B. Drainage system management:

While automation in water supply plumbing is more common, the drainage system can also benefit from automation especially in large buildings with smart homes to prevent blockages, overflows, contamination, and structural damage.

Few areas where smart devices can be used are as below:

·Sump Pump Automation: Automatic pumps & sensors (float switches, water level sensors) detect when water collects in basements or low areas and activate only when needed.

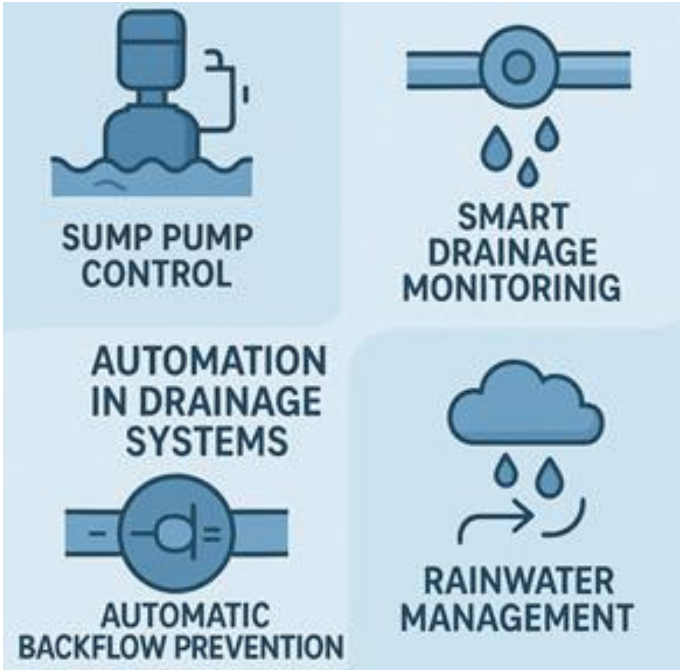
·Smart Drainage Monitoring Systems: Ultrasonic or radar sensors to monitor flow level inside drainage pipes can be used.

·Clog detection algorithms: Detect buildup or blockage risk by analyzing flow speed and volume.

·Temperature sensors: In colder climates to prevent freeze-related blockages.

·Backflow Prevention with automated valves & sensors can be used. It helps to prevent contamination of clean water with sewage or greywater.

·Rainwater & Stormwater Management: Smart storm drains with level sensors detect flooding risk. Automated diverter valves redirect water to retention tanks.



Automation in plumbing and drainage systems is no longer a luxury—it's a necessity in modern building infrastructure. From ensuring optimal water flow and leak prevention to smart wastewater management and flood control, automation brings efficiency, safety, and sustainability to the forefront. By integrating sensors, smart valves, controllers, and real-time monitoring, facility managers and homeowners alike can reduce water wastage, minimize manual intervention, and respond swiftly to potential issues. Ultimately, automated systems not only protect property and conserve resources but also pave the way for smarter, future-ready buildings. Plumbing and drainage are no longer just about pipes—they're about precision.

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ATTUNE TO AUTOMATION FOR HAPPIER TOMORROW

The National Gallery, London, Room No. 29 has collection of lot of paintings from for Classical Great masters. It is very interesting to know that it has a skylight which was originally designed to have ample light in the gallery. Which was recently renovated again with New Glass in the skylight with sun barriers and Artificial museum lights which are automated to synchronize with the amount of Daylight the room receives and ensure the painting receive the right intensity and temperature of light for best viewing experience for the viewers. This is a good example of automation that enhances experience.

CCTV surveillance earlier used to record throughout the day, With basic addition of movement sensors ensures the recording is done only when there is movement in the frame. This simple change has reduced huge amount of burden on keeping the data for future usage and Reduces the overall cost of technical vertical. Door locks with passwords which can be changed as many times required through a Smartphone can add great Security to the premises against conventional systems, Both of above examples add value in the process in terms of Safety and cost saving.

The New York city underground Pneumatic mail system started in 1897 used vacuum tubes and canisters to transport parcels and letter within the city. Updated version of the same today we use advanced and automated pneumatic tube system particularly in hospitals for sending lab samples and reports. This reduces time required for sample to reach the lab within the building and eliminates delay and error that can occur due to manual transportation. It also reduces the fatigue of the healthcare worker eliminating physical movement. This example of automation reduces the time required for an essential service.

It is said that the only profession that is trying hard to kill itself is healthcare, there is and has been rapid advancements in terms of technology usage and acceptance in social structure is much faster against other profession,

Ensuring that we a humans do not fall sick and have longer lives, Thus It becomes very necessary to inculcate automation in Designing of healthcare facilities.

For larger health care facilities, automation becomes extremely necessary aspect of facility, planning as well as planning of engineering services as the quantum of engineering installations and complexity of the same increases for bigger facilities it could become excessively cumbersome and expensive to operate everything in a manual way. Example could be for a large clinical floor of a lab which demands higher Lux level in the work area which also can become energy intensive affair. The same can be optimized with sensors, ensuring all the high wattage illumination is kept on only during human movement in the zone.

The same is very regularly implemented in simpler part of infrastructure like parking lots. Where only during the movement of vehicles the area gets more illuminated, of course beyond basic emergency illumination in the area.

Earlier, Facility planning was driven by the operating practices of various users. When we design any hospital it is necessary to understand the workflow, standard practices and planning standards. Also, each project is tailored for particular client and their derivation of the workflow and functioning habits, it also depends on the locality, local behavioral habits. Thus Introducing automation can also be challenging, For Example, we had introduced digital attendance device in a healthcare facility which was functioning for last 30 years with Manual master for staff attendance. It took almost a month for the entire staff to get habituated to the change.

Automation has become part of our everyday life where we receive automated reply from the employee being on vacation. Or, with current state of communication, Automated Response on WhatsApp by the Business owner to the Customer ensures there is necessary first cut information shared in no time.

Off course Automation will ease our lives but it also need change in our habits, On a lighter note following cartoons Can you give throw light of current situation of integration and automation in our lives.

Automation also comes with their own challenges due to different habits and situations, Any new two wheeler does not start because of the side stand is not put up, a damaged sensor with this stand will ensure that you won't be able to start your two wheeler without help of a mechanic.

In Home automation sector, with Smartphone integration, a maid mopping the floor will have to call the owner of the house to turn on the fans for drying the floor, or a malfunctioning automated curtain will open automatically making a guest chuckle for the situation which won't be under control till the technician reaches the site in next 2 hours if traffic is less.

In conclusion , Automation is our present and future, To ease our lives, Save our money and make our environment safer we need automation, Changing our habits to attune to new automation is the key to happier tomorrow.

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AUTOMATION IN BUILDINGS

In an era where technology seamlessly integrates into daily life, automation in buildings is revolutionizing the way people interact with their environments. From high-rise offices to residential homes, automation is redefining efficiency, security, and convenience. With advancement of the Internet of Things (IoT), artificial intelligence (AI), and machine learning has propelled smart buildings into the mainstream, making them an essential part of modern infrastructure.

What is Building Automation

Building automation refers to the use of technology to control and manage building systems, including heating, ventilation, and air conditioning (HVAC), lighting, security and energy management. Through interconnected devices and centralized control systems, smart buildings optimize energy consumption, enhance occupant comfort, and improve security.

Types of Building Automation

Automation in buildings can be classified in several key areas:

1. HVAC Automation

HVAC systems are critical in maintaining indoor air quality and temperature control. Smart thermostats, such as Google Nest and Ecobee, learn user preferences and adjust temperatures accordingly, leading to reduced energy consumption and cost savings.

AI-driven HVAC systems analyze occupancy patterns to optimize heating and cooling schedules automatically. App based AC control available remotely.

2. Lighting Control Systems

Automated lighting systems adjust brightness based on occupancy and natural light availability. Motion sensors reduce energy wastage. Many brands offer smart lighting solutions that can be controlled remotely via smartphone apps or voice assistants like Alexa and Google Assistant. Mood lighting can be set with touch of a button.

3. Security and Surveillance

Modern building security integrates smart locks, biometric access controls, and AI-driven surveillance cameras. Some companies provide real-time security monitoring with cloud-based storage, facial recognition, and remote access control. Automated alarm systems ensure swift responses to security breaches, enhancing overall safety.

4. Energy Management Systems (EMS)

Building energy management systems monitor and optimize energy usage by integrating smart meters and AI-driven analytics. These systems provide insights into consumption patterns, enabling businesses and homeowners to reduce their carbon footprint. Some companies offer comprehensive EMS solutions for commercial and residential properties.

5. Smart Elevators and Escalators

Advanced automation in elevators and escalators improves efficiency and reduces wait times. AI-powered systems analyse traffic patterns within a building and adjust operations accordingly. Companies like Otis and KONE have developed predictive maintenance technology that detects faults before they occur, ensuring uninterrupted operation.

6. Automated Fire and Safety Systems

Fire and life safety automation includes intelligent smoke detectors, emergency lighting, and sprinkler systems. Intelligent smoke detectors from major brands provide real-time alerts to building managers, ensuring quick emergency responses.

Real life Applications

The adoption of building automation is visible in various sectors, from commercial real estate to residential housing and industrial facilities.

Commercial Buildings: Office buildings utilize automation for climate control, security access, and workspace management. Smart desks and conference rooms adjust lighting and temperature based on occupancy, improving productivity and employee comfort.

Smart Homes: Home automation systems, such as Samsung SmartThings, allow homeowners to control lighting, security, and appliances remotely, enhancing convenience and energy efficiency.

Hospitals: Automated systems regulate hospital HVAC, lighting, and security to ensure optimal patient care. For example, smart lighting in operating rooms can be adjusted based on surgical requirements.

Hotels: Guest experience is enhanced through smart room controls, where visitors can adjust room temperature, lighting, and entertainment systems via a mobile app or voice command.

Industrial Facilities: Automation ensures efficient operation of machinery, predictive maintenance, and optimal resource utilization. Smart factories integrate IoT sensors to monitor equipment performance and reduce downtime.

Benefits of Building Automation

Energy Efficiency: Automated buildings consume less energy by optimizing heating, cooling, and lighting, leading to lower electricity bills and reduced environmental impact.

Enhanced Security: AI-driven surveillance and smart locks improve building security and enable remote monitoring.

Convenience and Comfort: Automated systems provide seamless control over indoor environments, improving user experience.

Cost Savings: Lower maintenance costs, energy efficiency, and predictive maintenance reduce long-term expenses.

Sustainability: Green building certifications, such as LEED encourage the use of automation for sustainability goals.

Challenges and Future Outlook

While automation in buildings offers numerous benefits, challenges remain. High initial installation costs, cybersecurity concerns, and system integration issues pose hurdles to widespread adoption. However, technological advancements and increasing demand for smart infrastructure are driving innovation in this field.

Looking ahead, AI and IoT will continue to shape the future of building automation. The integration of digital twins—virtual replicas of buildings—will enable real-time monitoring and predictive analytics. Furthermore, as cities strive for sustainability, smart grids and renewable energy integration will play a crucial role in shaping intelligent urban landscapes.

Conclusion

The future of smart buildings is here, transforming traditional infrastructure into efficient, secure, and intelligent spaces. Whether in homes, offices, or industries, automation is not just a luxury but a necessity for a sustainable and connected world. As technology evolves, the possibilities for building automation will expand, setting new standards for comfort, security, and efficiency in the built environment.

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ORGATEC INDIA AND INBAC FORGE A STRATEGIC PARTNERSHIP TO REVOLUTIONIZE SMART BUILDING AUTOMATION

In a landmark development for India's workplace and building automation sector, ORGATEC India and the Indian Building Automation Community (INBAC) have officially signed a Memorandum of Understanding (MoU), setting the stage for a transformative shift in how workspaces are designed, managed, and optimized. The agreement, formalized in the presence of key industry leaders, policymakers, and business decision-makers, cements a shared commitment to advancing smart office solutions, promoting standardized automation protocols, and driving innovation in commercial infrastructure.

The signing ceremony was led by Sakhee Chandrayan, Founder & Director of INBAC, and Kaustubh Potdar, Financial Controller of Koelnmesse India, and was attended by esteemed industry experts including Joseph Martin (CIO, Hiranandani Group), Vijaykumar Sanap (Director, TechBean Systems Pvt. Ltd.), Shailendra Sharma (Managing Director at Azbil India Pvt Ltd.), Dr. Amit Chaudhari (Associate Director, KPM Engineering), Chintak Dalal (Vice President, Secure Connection Ltd. by Honeywell), Gaurav Karale (Chief Marketing Officer, Acceron Infosol Pvt. Ltd.), and Akash Kothari (Partner & Business Strategist, NEXUS Intelligence).

This collaboration marks the beginning of a new era in India's commercial infrastructure, where workplaces are no longer just functional spaces but are optimized for efficiency, sustainability, and user experience. As a Supporting Partner of ORGATEC India, INBAC will play a crucial role in bridging the gap between cutting-edge workspace innovation and intelligent building management.

ORGATEC India: A Platform Redefining Workspaces

Scheduled to take place from November 4-6, 2025, at the Jio World Convention Centre, Mumbai, ORGATEC India is set to be the country's premier exhibition dedicated to workplace innovation, office design, and smart facility solutions. Inspired by its globally renowned counterpart, ORGATEC Cologne, the event will showcase the latest advancements in workspace technology, furniture, and sustainability practices, tailored to India's rapidly evolving market.

With the backing of INBAC, ORGATEC India will place a strong emphasis on smart building automation and digital transformation, offering attendees insights into the future of AI-powered office environments, energy-efficient infrastructure, and sustainable workplace ecosystems.

The INBAC-ORGATEC India Synergy

INBAC, a non-profit organization dedicated to raising awareness about interoperability and standardization in building automation, has been at the forefront of integrating smart infrastructure solutions in India. This partnership with ORGATEC India underscores the necessity of harmonizing workplace innovation with intelligent automation systems, ensuring that businesses can seamlessly adopt global best practices.

"With workplaces evolving at an unprecedented pace, automation and data-driven infrastructure management have become essential components of modern office design. Through this partnership, we aim to drive meaningful conversations, showcase pioneering solutions, and set new benchmarks for workplace efficiency in India," said Milind Dixit, Managing Director, Koelnmesse Pvt. Ltd.

A Holistic Approach to Workplace Innovation

Unlike traditional exhibitions, ORGATEC India adopts an integrated approach to workspace transformation, covering key aspects such as furniture, automation, architecture, and sustainability. The exhibition will serve as a meeting ground for corporate decision-makers, architects, facility managers, real estate developers, and technology innovators looking to redefine the future of work, making it a one-of-a-kind platform in the industry.

From AI-driven facility management to IoT-powered office environments, attendees can explore the latest technologies and strategies shaping tomorrow's workspaces. With topics spanning smart office solutions, workplace flexibility, energy optimization, and ergonomic design, ORGATEC India will provide a 360-degree view of modern workplace evolution.

Who Will Benefit from ORGATEC India 2025?

Exhibitors: The event will host a diverse range of exhibitors, including building automation and smart security providers, facility management experts, office furniture manufacturers, workplace automation and technology innovators, co-working space providers. Companies offering solutions in AI-based security, intelligent access control, energy management, and digital workplace transformation will find a strategic audience eager to adopt the latest advancements.

Visitors: ORGATEC India is designed for professionals leading workplace transformation, including corporate leaders, HR professionals, facility managers, architects, real estate developers, technology providers, and co-working space operators. These stakeholders will gain valuable insights into workspace efficiency, automation trends, and investment opportunities in the smart commercial infrastructure sector.

Shaping the Future of Smart Workplaces

With this strategic partnership, ORGATEC India and INBAC are set to redefine the Indian workplace landscape, ensuring that businesses have access to the latest in smart building automation and workplace innovation. As companies continue to seek ways to enhance employee productivity, optimize operational costs, and implement sustainable practices, ORGATEC India 2025 will serve as the ultimate catalyst for change.

For more details, visit www.orgatecindia.com and join us from November 4-6, 2025, at Jio World Convention Centre, Mumbai, as we pioneer the future of intelligent workspaces.

BY MILIND DIXIT
ORGATEC INDIA

ORGATEC
INDIA

4-6 November, 2025
Jio World Convention Centre (JWCC), Mumbai

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