



Arena of the Future

— INNOVATION CHALLENGE —

MODULE 3 Introduction to Automation Technologies

3.1 Introduction to Automation

Automation technology refers to the use of various tools, software, and systems to perform tasks or processes with minimal human intervention. It involves the use of machines, robots, computer software, and artificial intelligence to automate repetitive, mundane, or complex tasks.

Automation technology aims to increase efficiency, productivity, and accuracy by reducing human error, improving speed, and eliminating the need for manual labor. It can be applied in various industries and sectors, such as manufacturing, logistics, healthcare, finance, and customer service.

Some examples of automation technology include robotic process automation (RPA), which uses software robots to automate repetitive tasks; industrial automation, which involves the use of machines and control systems to automate manufacturing processes; and artificial intelligence (AI), which enables machines to perform tasks that typically require human intelligence.

Overall, automation technology plays a significant role in streamlining processes, improving productivity, and transforming various industries by reducing costs, enhancing accuracy, and enabling organizations to focus on higher-value tasks.

3.2 Types of Automation that can be used in buildings

Automation technologies can be used in buildings to enhance efficiency, convenience, and sustainability. Here are some ways automation can be applied:

1. Energy Management: Automation systems can monitor and control energy usage in buildings. This includes automated lighting systems that adjust brightness based on occupancy or natural light levels, smart thermostats that optimize heating and cooling based on occupancy and ambient conditions, and intelligent power management systems that minimize energy wastage.

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2. Security and Access Control: Automation technology can enhance building security by integrating access control systems, surveillance cameras, and alarms. Automated access control systems can use biometric authentication or smart cards to grant access, while surveillance cameras can be connected to automated monitoring and alert systems for enhanced security.

3. Building Management Systems (BMS): BMS integrates various automation technologies to centralize the control and monitoring of building systems. This includes HVAC systems, lighting, fire alarms, elevators, and more. BMS enables remote monitoring, scheduling, and optimization of these systems, leading to energy savings, improved comfort, and proactive maintenance.

4. Smart Lighting: Automation technology allows for intelligent lighting systems that can adjust lighting levels based on occupancy, time of day, and natural light availability. Motion sensors can be used to turn lights on or off when rooms are occupied, and daylight sensors can dim or turn off lights when sufficient natural light is present.

5. Occupancy and Space Management: Automation systems can monitor occupancy levels in different areas of a building, allowing for efficient space management. This includes optimizing meeting room bookings, adjusting HVAC settings based on occupancy, and providing real-time occupancy information for workspace allocation.

6. Facility Maintenance: Automation technology can assist in building maintenance by monitoring equipment performance, detecting faults, and scheduling maintenance tasks. Predictive maintenance algorithms can analyze data from sensors to identify potential issues before they cause disruptions and breakdowns.

7. Voice Control and Virtual Assistants: Automation can incorporate voice control features, allowing occupants to interact with various building systems through voice commands. Virtual assistants can provide information, control devices, and perform tasks, enhancing convenience and accessibility.

Brainstorm Session

Using the information from this lesson, come up with innovative ideas for the arena of the future.

Examples of Automation

