



PARA TECH EXPO STRUCTURED EXHIBITOR SEGMENTS

Professional | Automation | Robotics | Artificial Intelligence

PARA Tech Expo Segments: A Structured Approach to Industrial Automation Imprint. Automation India Magazine engaged the Exhibition Director of PARA Tech Expo 2025 to gain insights into how the expo and conference is structured to cater to the dynamic and evolving industrial automation landscape. Automation technologies are rapidly transforming manufacturing processes. PARA Tech Expo has strategically categorized its 23 exhibitor segments to provide a clear and comprehensive roadmap for industry professionals. The expo's segmentation is designed to help attendees navigate the range of automation solutions on display, ensuring a seamless experience for manufacturers, technology providers, and solution seekers alike. "We have meticulously classified exhibitor segments under seven overarching categories, which reflect Automation Ecosystem Domains. These domains provide a structured framework that reflects complimentary technologies whose integration results in innovative solutions". In this article, we take a closer look at the 23 exhibitor segments, categorized under these seven domains, offering a glimpse into the diverse and cutting-edge smart solutions that will be showcased at PARA Tech Expo 2025.

"AUTOMATION ECOSYSTEM DOMAINS"

The Seven are the overarching categories. Each domain reflects the structured organization of technologies and solutions within industrial automation. The Categorization of technologies and their functional

grouping is as follows:

1. Core Technologies,
2. Advanced Automation
3. Components and Hardware
4. Safety and Quality Assurance
5. Energy and Sustainability
6. Material Handling and Production
7. Integration and Efficiency.



EXHIBITOR SEGMENTS

1. Control Systems and Process Automation
2. Sensors and Instrumentation
3. IoT and IIoT Solutions
4. HMI and SCADA
5. Software and IT Solutions
6. Embedded Systems
7. Robotics
8. AI (Artificial Intelligence)
9. Machine Vision
10. Integrated PLM and Virtual Simulation
11. Additive Manufacturing
12. Vision Systems and Imaging
13. Electrical and Electronic Components
14. Motion Control
15. Power Electronics and Drives
16. Pneumatics and Hydraulics
17. Mechatronics
18. Safety Systems
19. Testing and Measurement
20. Energy Management and Power System
21. Conveyor Systems and Material Handling
22. Automation for Packaging and Logistics
23. Manufacturing Execution Systems (MES)

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Control Systems and Process Automation | Core Technologies | 1/23

This segment involves the use of advanced control systems to manage and optimize industrial processes. Technologies such as Distributed Control Systems (DCS) and Programmable Logic Controllers (PLC) are central to this domain. DCS integrates multiple controllers distributed throughout a system, providing centralized supervision and decentralized control, which enhances reliability and scalability. PLCs are specialized computers designed to execute control functions by processing inputs from sensors and delivering outputs to actuators, ensuring precise control over machinery and processes. Implementing these systems leads to improved process efficiency, reduced operational costs, and enhanced product quality by minimizing human intervention and errors.

SIEMENS

Sensors and Instrumentation | Core Technologies | 2/23

Sensors are critical components that detect physical parameters such as temperature, pressure, flow, and level within industrial environments. Instrumentation refers to the devices and systems used to measure, monitor, and control these parameters. Accurate sensing and instrumentation are vital for maintaining process stability, ensuring safety, and achieving high-quality outputs. Advancements in sensor technology, including the development of smart sensors with integrated processing capabilities, have enabled real-time data acquisition and analysis, facilitating predictive maintenance and process optimization.

Honeywell

Robotics | Advanced Automation | 5/23

Robotics in industrial automation refers to the use of programmable machines to perform tasks traditionally carried out by humans. Industrial robots are employed for various applications, including assembly, welding, painting, and material handling. These robots offer high precision, repeatability, and the ability to operate in hazardous environments, thereby improving safety and productivity. The adoption of collaborative robots, or cobots, has further expanded the scope of robotics by enabling safe and efficient human-robot collaboration on the factory floor.

FANUC

IOT AND IIOT SOLUTIONS | Core Technologies | 3/23

The Internet of Things (IoT) and its industrial counterpart, the Industrial Internet of Things (IIoT), involve connecting devices and systems to the internet to collect and exchange data. In industrial automation, IIoT enables seamless communication between machinery, sensors, and control systems, leading to enhanced monitoring, analytics, and decision-making capabilities. By leveraging IIoT, industries can implement predictive maintenance strategies, optimize resource utilization, and improve overall operational efficiency. The integration of IIoT solutions also supports the development of smart factories, where interconnected systems operate autonomously to adapt to changing production demands.

ABB

Software and IT Solutions | Core Technologies | 4/23

Software solutions in industrial automation encompass a range of applications, including process control software, data analytics platforms, and enterprise resource planning (ERP) systems. These solutions enable the integration of various processes, facilitate real-time monitoring and control, and support

decision-making through data analysis. The adoption of cloud computing and edge computing has further enhanced the capabilities of industrial software, providing scalability, flexibility, and improved data accessibility.

SAP

Embedded Systems | Core Technologies | 7/23

Embedded systems in industrial automation refer to specialized computing units integrated into machines and equipment to control specific functions. These systems comprise microcontrollers, processors, and sensors that operate systems enable functionalities such as machine diagnostics, process monitoring, and data communication within industrial environments. They are widely used in robotics, automotive systems, and smart manufacturing applications. The growing trend of IoT and edge computing has enhanced the capabilities of embedded systems, allowing for faster decision-making and improved process efficiency.



Machine Vision | Advanced Automation | 8/23

Machine vision is a specialized branch of vision systems focused on enabling machines to interpret visual data and make automated decisions. It combines hardware components like cameras, lenses, and lighting with software algorithms to perform tasks such as pattern recognition, surface inspection, and dimension measurement. Machine vision plays a critical role in industries requiring precision, such as semiconductor manufacturing and packaging. Advances in deep learning and edge computing have empowered machine vision systems to analyze complex visual data in real-time, allowing for faster and more accurate defect detection and process optimization. By integrating machine vision, manufacturers can enhance productivity, ensure compliance with industry regulations, and minimize operational costs.



Electrical and Electronic Components | Components and Hardware | 9/23

This segment includes essential components such as circuit breakers, relays, switches, and connectors that form the backbone of industrial automation systems. These components ensure the safe and efficient distribution and control of electrical power within industrial facilities. Advancements in electronic

Human-Machine Interface (HMI) and SCADA | Core Technologies | 10/23

HMIs are user interfaces that allow operators to interact with machinery and processes, providing visual representations of system status and controls. Supervisory Control and Data Acquisition (SCADA) systems are used to monitor and control industrial processes, collecting data from sensors and equipment across large-scale operations. SCADA systems enable centralized monitoring and control, facilitating quick responses to process deviations and enhancing overall system reliability.



Integrated PLM and Virtual Simulation | Advanced Automation | 11/23

PLM systems provide end-to-end management of a product's lifecycle, from concept and design to production and disposal. They facilitate collaboration across various departments, ensuring data consistency and efficient workflow. Virtual simulation technologies, consistency and efficient workflow. Virtual simulation technologies, with automation technologies to ensure seamless production planning, resource allocation, and compliance management. By adopting PLM and virtual simulation, manufacturers can enhance innovation, sustainability, and operational excellence.



Additive Manufacturing | Advanced Automa- tion | 12/23

Additive manufacturing, commonly known as 3D printing, is transforming industrial automation by enabling the rapid prototyping and production of complex components with minimal material waste. This technology allows manufacturers to create customized products, material waste. This technology allows manufacturers to create customized products, optimize design iterations, and reduce lead times. Additive manufacturing techniques, such as selective laser sintering (SLS) and fused deposition modeling (FDM), are widely used in aerospace, healthcare, and automotive industries. The integration of automation in additive manufacturing processes enhances precision, repeatability, and scalability. As materials and printing technologies advance, additive manufacturing continues to play a significant role in modern production strategies.



components, including the development of solid-state devices and microcontrollers, have contributed to more compact, reliable, and energy-efficient automation solutions.



Vision Systems and Imaging | Advanced Automation | 13/23

Vision systems in industrial automation utilize cameras, sensors, and advanced image processing algorithms to inspect, identify, and guide manufacturing processes. These systems enhance quality control by detecting defects, verifying assembly accuracy, and ensuring product consistency. Imaging technologies, such as 2D and 3D vision, are widely used in applications like object recognition, barcode reading, and robotic guidance. The integration of artificial intelligence and machine learning in vision systems has further improved their accuracy and adaptability. These systems help manufacturers achieve higher efficiency, reduce human errors, and comply with stringent quality standards. With the increasing demand for automation in industries such as automotive, electronics, and pharmaceuticals, vision systems are becoming an indispensable component in smart manufacturing environments.



Motion Control | Components and Hardware | 14/23

Motion control involves the use of devices like motors, drives, and controllers to manage the movement of machinery and equipment. Precise motion control is crucial in applications such as CNC machining, robotics, and conveyor systems, where accurate positioning and speed regulation are required. Modern motion control systems incorporate feedback mechanisms and advanced algorithms to achieve high levels of precision and responsiveness, enhancing product quality and production efficiency.



Testing and Measurement | Safety and Quality Assurance | 15/23

Testing and measurement systems ensure product quality, performance, and compliance with industry standards by assessing various physical and functional attributes. These systems include tools for dimensional analysis, load testing, vibration analysis, and electrical testing. Automated testing solutions provide high accuracy, repeatability, and speed, enabling manufacturers to detect defects early in the production process. Advanced data analytics and cloud-based monitoring solutions allow for real-time insights and predictive quality control. Industries such as aerospace, automotive, and electronics heavily rely on sophisticated testing and measurement systems to maintain product reliability and customer satisfaction.



Pneumatics and Hydraulics | Components and Hardware | 16/23

Pneumatic and hydraulic systems use compressed air and pressurized fluids, respectively, to transmit and control energy. These systems are widely used in industrial automation for tasks requiring high force and rapid movement, such as clamping, lifting, and actuating mechanisms. Pneumatics offers advantages like cleanliness and simplicity, making it suitable for industries like food processing, while hydraulics provides higher power density for heavy-duty applications.



Energy Management and Power Systems | Energy and Sustainability | 17/23

Energy management and power systems play a crucial role in industrial automation by optimizing energy consumption, ensuring uninterrupted power supply, and enhancing operational efficiency. These systems encompass a wide range of technologies, including smart meters, energy monitoring software, power distribution units (PDUs), and renewable energy integration. Effective identifying inefficiencies, and implementing strategies to reduce costs and environmental impact. Industrial facilities rely on power management solutions such as automated load balancing, demand response systems, and power factor correction to maintain stable and efficient operations. Advanced power management systems integrate with Industrial Internet of Things (IIoT) platforms and cloud-based analytics to provide actionable insights, predictive maintenance, and energy forecasting. With rising energy costs and sustainability goals, industries are increasingly adopting smart energy solutions to reduce their carbon footprint while maintaining productivity. Energy management involves tracking energy usage in real time, By implementing comprehensive energy management and power systems, manufacturers can achieve regulatory compliance, lower operational expenses, and improve their overall energy efficiency.



Safety Systems | Safety and Quality Assurance | 18/23

Safety systems are designed to protect personnel, equipment, and the environment from hazards associated with industrial processes. These systems include safety relays, emergency stop devices, and safety interlock mechanisms that ensure machinery operates within safe parameters. Compliance with safety standards and regulations is essential to prevent accidents and ensure a safe working environment. The integration of safety systems into automation solutions not only safeguards human life but also minimizes downtime and liability risks.



Power Electronics and Drives | Components and Hardware | 19/23

Power electronics involves the control and conversion of electrical power using devices such as inverters, converters, and rectifiers. Drives, particularly variable frequency drives (VFDs), are used to control the speed and torque of electric motors. By adjusting motor operation to match process requirements, VFDs contribute to significant energy savings and improved process control. Advancements in power semiconductor technology have led to more efficient and compact power electronic systems, facilitating their widespread adoption in industrial automation.



Conveyor Systems and Material Handling | Material and Production | 21/23

Conveyor systems and material handling solutions are essential for optimizing logistics and workflow within manufacturing facilities. These systems transport raw materials, components, and finished products efficiently, reducing manual labor and operational costs. Automated conveyor systems, equipped with sensors and control mechanisms, enable precise sorting, routing, and tracking of materials. Common types of conveyors include belt, roller, and chain conveyors, each suited for specific industrial applications. Integration with robotics and automated storage systems further enhances the flexibility and scalability of material handling operations. These solutions improve production efficiency, reduce downtime, and contribute to lean manufacturing practices.

Mechatronics | Components and Hardware | 20/23

Mechatronics is an interdisciplinary field that integrates mechanical engineering, electronics, computer science, and control systems to create intelligent automated solutions. Mechatronic systems, such as robotic arms, CNC machines, and automated guided vehicles (AGVs), combine mechanical components with electronic sensors and software for precise operation. These systems enhance manufacturing flexibility, efficiency, and customization capabilities. With the advent of Industry 4.0, mechatronics is evolving to incorporate AI, IIoT, and cloud computing, enabling smart and connected automation solutions. By leveraging mechatronic systems, industries can achieve higher productivity, reduced downtime, and enhanced product quality.

Automation for Packaging and Logistics | Material Handling and Production | 22/23

Automation in packaging and logistics streamlines operations by integrating smart machines, robotic solutions, and software for efficient product handling and distribution. Automated packaging systems include filling, sealing, labeling, and palletizing solutions that enhance speed and consistency while reducing waste. Logistics automation involves warehouse management systems (WMS), automated guided vehicles (AGVs), and autonomous mobile robots (AMRs) to optimize material movement and inventory management. These solutions contribute to higher throughput, reduced operational costs, and improved supply chain visibility. As e-commerce and demand for customized packaging grow, automation in this sector continues to evolve rapidly.

Manufacturing Execution Systems (MES) | Integration and Efficiency | 23/23

Manufacturing Execution Systems (MES) bridge the gap between enterprise resource planning (ERP) systems and the shop floor by providing real-time monitoring, control, and data tracking of manufacturing processes. MES solutions facilitate production scheduling, resource allocation, and quality management, ensuring optimal operational performance. They enable manufacturers to track work-in-progress, identify bottlenecks, and maintain compliance with industry standards. Integration with IoT and cloud-based technologies allows MES to provide actionable insights, enabling proactive decision-making and continuous process improvement. By implementing MES, manufacturers can achieve greater transparency, traceability, and efficiency across their production lines.

