Warehouse Automation and Smart Warehouse Operations: AS/RS, Robotics and Business Case

6 – 10 September 2027
London - Central London four-star



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Introduction:

Warehouse automation and smart warehouse projects commit large capital to cranes, shuttles, sorters and robot fleets, yet many distribution centres choose equipment from vendor presentations rather than from their own order profiles, and discover throughput gaps, integration delays and idle machines after go-live. This Core Concept course gives operations managers and logistics engineers a vendor-neutral method to match automation technologies to storage and picking profiles, specify the software control layers, test concepts with data and justify them financially. Participants produce a Warehouse Automation Concept and Business Case for a case distribution centre.

Course Objectives:

- Evaluate automation drivers and select a suitable mechanisation level for storage, picking, sortation and transport zones
- Match unit-load, mini-load and shuttle AS/RS, conveyors, sorters and goods-to-person stations to SKU, order and throughput profiles
- Specify AMR and AGV fleets, robotic piece picking and pick-to-light zones with realistic rate and uptime assumptions
- Define the split of functions between WMS, WES and WCS and the interface messages that connect them to equipment
- Apply RFID, IoT sensing, computer vision, digital twin models and AI slotting to raise visibility and utilisation
- Build an automation business case with capital cost, operating savings, payback and a phased risk-controlled rollout

Target Audience:

- Distribution centre and fulfilment operations managers responsible for throughput, service levels and labour cost
- Logistics and industrial engineers responsible for facility layout, material handling equipment and capacity plans
- Automation and engineering project managers responsible for tendering, installing and commissioning handling systems
- Supply chain network planners responsible for capacity and capital decisions across warehouse sites
- Warehouse systems and IT leads responsible for WMS, control software and equipment integration
- Maintenance and reliability managers responsible for uptime of conveyors, cranes and robot fleets

Course Outline:

Day 1: Automation Drivers, Levels and Profile Analysis

- Automation Drivers: Labour Availability, Order Growth, Space Cost and Service Cut-Offs
- Mechanisation Ladder: Manual, Assisted, Semi-Automated and Lights-Out Operation
- Order Profile and SKU Velocity Analysis for Automation Screening
- Throughput Design Day: Peak Hour Lines, Units and Pallet Movements
- Automation Readiness Assessment Matrix by Warehouse Zone

Day 2: Storage, Conveying and Picking Technologies

- Unit-Load AS/RS With Stacker Cranes for Pallet Storage
- Mini-Load and Shuttle AS/RS for Tote and Carton Storage
- Vertical Lift Modules and Horizontal Carousels for Small Parts
- Conveyor Types, Accumulation Logic and Sortation: Tilt-Tray, Cross-Belt and Sliding Shoe
- Goods-to-Person Workstations, Pick-to-Light and Put-to-Light Walls

Day 3: Mobile Robots, Robotic Picking and Control Software

- AGV Guidance Methods: Wire, Magnetic Tape, Laser Reflector and Natural Feature
- AMR Fleet Sizing, Traffic Management and Charging Strategy
- Robotic Piece Picking: Grippers, Vision Grasping and Exception Handling
- WMS, WES and WCS Control Hierarchy and Interface Message Design
- RFID Portals, IoT Sensors and Computer Vision for Inventory Visibility

Day 4: Digital Twins, AI Optimisation, Economics and Risk

- Warehouse Digital Twin for Layout Testing and Throughput Validation
- AI Slotting and Labour Demand Forecasting in Automated Zones
- Automation Business Case: Capital Cost, Operating Savings, NPV and Payback
- Implementation Risk Register: Integration, Ramp-Up and Single Points of Failure
- Robot and Machinery Safety Zoning, Guarding and Preventive Maintenance Regime

Day 5: Case Distribution Centre Automation Concept

- Case Distribution Centre Data Pack: Order Lines, SKU Mix and Growth Scenario
- Technology Shortlist and Concept Layout for Inbound, Storage and Outbound Zones
- Change Management and Workforce Transition Plan for Automated Operations
- Vendor Tender Requirements and Factory Acceptance Test Criteria
- Warehouse Automation Concept and Business Case Presentation and Peer Challenge

Skills You Will Gain:

- Order Profile Analysis
- Material Handling Technology Selection
- AS/RS Configuration
- Mobile Robot Fleet Planning
- Warehouse Control System Integration
- Automation Investment Appraisal
- Automation Rollout Risk Control
- Automated Operations Change Leadership

Why Attend This Course:

- Leave with a Warehouse Automation Concept and Business Case for a case distribution centre that can be adapted to a live site
- Challenge vendor proposals with your own throughput, rate and uptime figures instead of brochure numbers
- Avoid the integration and ramp-up failures that delay payback on automated storage and robot projects
- Compare automation choices with peers from retail, e-commerce, spare-parts, food and third-party logistics operations

Conclusion:

Automation pays back only when technology choice follows the order profile, control software is specified clearly and risks are planned before installation. The week moves from automation drivers and profile analysis, through AS/RS, conveyors, sortation and goods-to-person picking, to mobile robots, robotic picking and the WMS, WES and WCS hierarchy, then digital twins, AI optimisation, investment appraisal, safety and maintenance. The final day builds a Warehouse Automation Concept and Business Case for a case distribution centre and tests it through peer challenge.