Presenter

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NextShift Robotics
Business Drivers

E-Commerce Sales v. Department Store Sales

Warehouse and Storage Industry Workers (thousands)

Source: https://logisticsviewpoints.com/2019/03/20/warehouse-labor-gap-unsustainable/
Facility Demands and Challenges

Customer Expectations

Economic Pressures

Drive for Portability and flexibility

Scarce Costly Labor

Peak Season Pressure

Isolated Automation
Objectives – Convergences of Market Forces

Problem

Drive to eComm
‘Amazon effect’

Cost & Efficiency

Labor Pressures

Emerging Technology

Autonomous Mobile Robotics Workflows
Why Now?

- Attractive ROI
- Increase labor productivity
- Increase warehouse productivity
- Robots work 24 x 7 x 365
- Increases quality
- Rapid installation
- Flexible, scalable, and easily configurable
- Operates in existing infrastructure
- Operates without structural building reinforcement
What Automation Won’t Do…

• Fix BROKEN processes
• Remove too much dependence on one customer or business segment
• Lean your manufacturing processes

Good Business processes are enhanced by automation
Robotic processes vary…

**Logistics:**
- Order fulfillment across all channels: B2C, B2B, returns
- Replenishment
- Inventory Management

**Manufacturing:**
- Material transfer in Kitting
- Material movement between Step processes
Order Fulfillment – Multiple Options

• Goods-to-Picker
  • Multi-dimensional ASRS
  • Single Level ASRS or Shelf-less
• Automated Pickers
• Sortation
• Pickers-to-Goods
  • Robot – Worker Systems
  • Worker-Free Robotic System
Trade-offs

- Cost
- Through-put and Fast Delivery
- Scarce Labor
- Business Process Dynamics
  - Fixed
  - Mobile
- Rapid Deployment
- Vertical Density
Goods-to-Picker
Multi-dimensional ASRS

Factors:

• Green Space
• Requires staging and installation of a fixed structure
• High Density

• Examples:
  • Robotic – Symbotic, AutoStore, Alert Innovation, etc.
  • Shuttles – Opex, Dematic, Knapp, etc.
Goods-to-Picker
Single Level ASRS

Factors:
- Green Space
- Horizontal space
- ASRS - Requires shelving units to carry 1200 lbs (550 kg)
- Or Shelf-less

Examples:
- ASRS AMR / AGV – Grey-Orange, SwissLog, Fetch, Vecna, Prime, etc
- Shelfless – InVia, Arc Robotics
Automated Pickers

Factors:
• Green or Brown Space
• Uses special restocking and / or uniform inventory

• Examples:
• AMR – IamRobotics, Magazino, Fetch, etc.
Sortation

Factors:

• Green Space or Area within Brown Space
• Portability increase equal to that of single level ASRS

• Examples:
  • Tompkins with NextShift, Berkshire Grey, Sure Sort, etc.
Picker-to-Goods

Factors:
- Brown Space
- Rapid Deployment
- Zoned Bin Picking
- Full Software suite

• Examples:
  - Worker-Robot Systems – 6RS, Fetch, Locus, etc.
  - Worker-Free Robotics System - NextShift
Replenishment

Factors:
- Brown Space
- Rapid Deployment
- Interleaving of Picking & Replenishment Workflows

Examples:
- Placing to back of Flow-rack – NextShift, Conveyco, Vecna, etc.
- Placing in Picking aisles - Locus, 6RS, NextShift, etc.
Inventory Management

• Factors:
  • Inventory and Hardware System
  • Many use RFID tags

• Examples:
  • Drones – PINC, FlytWare, etc.
  • AMRs – Bossa Nova, Robi, Fetch, etc.
Key Logistic Robotics Considerations

System Trade-offs:

<table>
<thead>
<tr>
<th>Low Cost</th>
<th>High Vertical Density</th>
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</thead>
<tbody>
<tr>
<td>Rapid Deployment</td>
<td>Fixed Infrastructure</td>
</tr>
<tr>
<td>Bin Picking</td>
<td>Uniform inventory or shelf restocking</td>
</tr>
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<td>Zoned Bin Picking</td>
<td>Goods-to-Person</td>
</tr>
<tr>
<td>Optimized Robot and Worker Productivity</td>
<td>Robot Tethered to Person</td>
</tr>
<tr>
<td>Optimized Order Delivery</td>
<td>Completed Orders traveling Full Warehouse</td>
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Financial Trade-offs:

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<th>Robots-As-A-Service</th>
<th>Capital Expense</th>
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Robotics in Lean Manufacturing Principles

• Lean Manufacturing is Demand Driven
• Utilizes Flexible Methods to Match Supply to Demand
• Eliminate waste (idle time, travel time, and touches)
• Visible Kanban
• Focus on Six-Sigma Quality

• Pain Point - idleness
Manufacturing – Material Transfer within Kitting

• Factors:
  • Increase kitting cell productivity
  • Cell scheduling and load balancing
  • Simple user interface

• Examples:
  • AMRs: NextShift, MiR, Kuka, ClearPath, etc.
Manufacturing – Material Movement Between Process Steps

Factors:
• Matches supply to demand
• Keep labor focused on process
• Reduces idle time

Examples:
• AMRs: NextShift, MiR, Omron-Adept, Vecna, etc.
Key Manufacturing Robotics Considerations

System Trade-offs:

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<td>Optimized Robotic Material Movement</td>
<td>Workers Moving Material</td>
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<td>Quality Increase</td>
<td>Worker handling</td>
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POWERED BY POSSIBILITIES.
Key Business Considerations

Business Growth Outpaces Hiring

Piece Picking Demand Increasing Dramatically

Customer Expect Fast Delivery

Even in Peak Season

Falling Behind

Justifies Automation
Robotic Benefits

• Financial Benefits
  • 1-year ROI on first install, and less than 1-year on subsequent installs
  • Increases productivity and capacity
  • Reduces delivery time

• Soft Benefits
  • Builds employee retention and eases worker’s stress
  • Portable and configurable, right place at the right time
  • Flexibility supports dynamic business environment
Key Takeaways

• Market and Technology Drivers – now is the time for robotic automation

• Wide range of robotic options

• Adaptability in Hardware and Software, is the key to your competitive edge, now and in the future

• Bridge to dynamic business environments
  • Rapid Deployment and Reconfiguration

• Simple user interface and flexible software

• Your business processes drive your automation decisions
For more information:

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