The Shift to Flexible Automation

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1. The consumer trends that are driving changes in warehouse design

2. How warehouses are changing to meet demands

3. The technologies used
The new consumer expectation

FREE 2 DAY SHIPPING

amazon.com Prime

FIND YOUR WOW
Consumers want more choices

Model T to Audi TT

- 2 Million Model T’s Produced in 1923
- 20 New Models Introduced in 2015 (not including colors & customizations)
Consumers want more options

15 Different Models of iPhone Live today
(not including colors)
Consumers want more customization

Nike - Factory-to-Shop time is less than a week.
Consumers demand more

This Single’s Day DC Processed 657 Million orders against a 50 Million Daily average.
Consumer expectations have outpaced warehouse evolution…

1960s
- Rise of consumerism

1980s
- Cost-conscious consumer
- Racking Increasing Storage

2000s
- Accessibility and variety increases
- Simple Flow Functions
- Sortation Systems

2005
- e-commerce boom starts
- Smaller frequent orders
- Complexity, faster and cheaper
- IT & WMS

2010
- Omni-Channel

Evolution of consumerism

Warehouse evolution

flexible warehouses

Increasing rate of change...

Changing Consumer Expectations

FIND YOUR WOW
Warehouse Design

What they were? 1950

- Fixed Configuration
- Non-adaptive

What they are today?

- Immobile
- 100% Pre-planned
INVESTING IN AUTOMATION IN A CHANGING BUSINESS-SCAPE

Warehouses are affected by change...

Change Vectors

- Scale
- Inventory Profile
- Material Handling
- Layout/Processes
- Location
CHANGES AFFECT PROJECTED ROI ON RIGID AUTOMATION

- Rigid Automation
- Automation Hardware

- Fixed Requirements
- Highly repetitive task
- Predicted needs

Returns Diminishing Investments + Incremental Investments → Unrealized ROI

Graph showing:
- Initial capex
- Expected saving
- Realized saving
- Incremental investment

Years 0, 1, 2, 3, 4, 5
FLEXIBLE AUTOMATION WILL BE THE GAME CHANGER…

Flexible Automation

Artificial Intelligence
Changing Requirements

A1
A2
An

Highly complex task

B1
B2
Bn

Optimized Results
Meeting Business Needs

BUILDING BLOCKS

Mobile System
Modular Design
Collaborative Operation
Connected Agents
Intelligent Software
Mobile robots moving material autonomously

• Automatically adapting to changes in material flows on the fly
• Centralized decision making so no bottlenecks
• Fleet can flex in and out on volume mix
Mobile Systems

- Autonomous
- Portable

Modular Design

- Independent
- Configurable

Adaptability

- Scalability

Infra-free investment

- Eco-system benefits
Inventory in modular storage units

- Flexibility to handle different load units
- Flexibility to configure storage to changing inventory profile
- Flexibility to change storage layout by moving mobile racks
Collaborative picking robots working with goods-to-person system

- 2X – 4X increase in picking productivity
- 24/7 operation during peaks
Mobile Systems
- Autonomous
- Portable

Modular Design
- Independent
- Configurable

Collaborative Operations
- Safe
- Responsive

Connected Agents
- Locally connected
- Distributed control

Adaptability

Scalability

Productivity

Infra-free investment

Eco-system benefits

Employee satisfaction

Synchronized

Continuous Improvement

FIND YOUR WOW
Connected robots with connected software

- Synchronized operation across the warehouse
- Coordinated and seamless movement and maximum order fulfillment efficiency
Bringing Flexible Warehouses to life with intelligent Software
Mobile Systems: Autonomous, Portable
Modular Design: Independent, Configurable
Collaborative Operations: Safe, Responsive
Connected Agents: Locally connected, Distributed control
Intelligent Software: AI Driven, Extensible

Adaptability
Infra-free investment
Eco-system benefits
Employee satisfaction
Continuous Improvement
Easy process configuration
Real Time-Optimization
End-to-end Optimization
Continuous improvement
Speed of reacting to change
Highest Resource Utilization
Higher return on automation investment...
Portfolio Snapshot

AI powered flexible & scalable solutions for supply chain automation

GreyMatter AI Powered Order Fulfilment Software

Autonomous Sortation
Goods to Person
Autonomous Picking
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