

## Welcome to Session 224

# *How Automatic Guided Carts Helped Macy's Inc. Improve its Warehouse Operations*

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Sponsored by:

**DAIFUKU WEBB** 

# Macy's Distribution Center

City of Industry, California

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- **BACKGROUND:**
  - 750,000 sq ft warehouse
  - Incoming and outgoing furniture moved throughout the warehouse using man aboard tuggers that moved trains of carts



# Macy's Inc. Distribution Center

City of Industry, California

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- **OBJECTIVE:**
  - This facility was tasked with improving its bottom line through LEAN warehousing goals



# Improving Warehouse Operations

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What You'll Learn From This Session

- **ACTION PLAN:**
  - How to Choose the best Material Handling System that achieves the company objectives
  - Do and Engineering Study on all available technologies for the application



# Improving Warehouse Operations

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What You'll Learn From This Session

- **ACTION PLAN:**
  - Complete the Study and Review the Report



## Material Handling Engineering Study

### STATEMENT OF WORK

#### Work to be Performed:

Company will perform an on-site engineering study for Macy's at the City of Industry facility to help determine the following pieces of information for Macy's.

1. Study the proposed floor layouts to determine potential paths for material handling products.
2. Determine which type of AGV system would be best for the application as well as the type of guidance Inertial Guidance or Laser Guidance or Tape. Then determine possible target locations or spot locations for the RF tags, and how many would be required.
3. Present possible solution for future WMS system.
4. Turn over all documentation and report findings to the Bidders Estimating department preparing formal quotes to Macy's. Engineering layout drawings will be provided to Macy's to support the quotes and field report as part of the price. The layout drawings can be used by Macy's to get additional bids if necessary.
5. Prepare a field report for Macy's, comparing the proposed AGV system to existing method of handling. Formal quotes for the system will be delivered to Macy's within 4 weeks.



# AGC Solution Chosen

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- After investigating alternate automation options Macy's chose an automatic guided cart solution
- AGCs offered increased flexibility, a more cost effective solution than conveyors and was easier to install and maintain



# Previous Delivery Method

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- With its old system, six associates used tuggers to manually move carts loaded with furniture product including sofas, chairs and mattresses to and from the dock doors.
- One of the biggest challenges was getting the empty carts back to where they needed to be. It required using three times the carts that are used today.



# Productivity

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- **AGC System Results:**
  - Eliminated  $\frac{3}{4}$  of the of trailers
  - Eliminated six manual operations
  - Reduced the number of manual tuggers required in the building
  - On-time order fulfillment increased to 99%
  - Overall Productivity increased 22%



# Reduce Resources

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- The AGC quickly cycles the empty carts from the last drop zone back to the loading/pickup zone
- The consistent recycling of carts enabled Macy's to eliminate two thirds of their carts from the active floor.



# Computer Controls

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- **Computer operator directs a SmartCart to one of six pick-up zones**



# Automatic Decouple

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- AGCs tow empty carts to drop zone. Fully stops, decouples and proceeds to the next pick up zone



# Automatic Coupling

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- AGC automatically engages the cart train hitch and proceeds to the first drop zone



# Automatic Charging

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- **AGCs can operate 24/7 with Automatic Charging**
  - **Vehicle opportunity charges during the 4 minute stops at 3 drop zones**
  - **Utilizes floor plate chargers that do not require worker interaction**
  - **Vehicle has spring loaded shoes that contact charger plate**



# Flexible Guidance Path

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- AGCs travel along a magnetic tape path that is approximately 4,500 feet long
- Magnetic tape enables increased flexibility due to quick and easy installation and modification
- In-floor magnetic bar is used in high traffic areas to avoid wear and tear.



# Final Drop Zone

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- Remaining product is removed from carts and the train of empties is returned to the loading bays.



# Operations Improvement

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- Reduced processing overtime
- Each shift gets out on time daily
- ROI will be achieved within 12 months of commissioning
- Helped achieve LEAN objectives



***For More Information:***

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