Pick Face Replenishment Strategies

IF YOU SUPPLY THE SUPPLY CHAIN, YOU BELONG AT MODEX.

The greatest supply chain show on earth.

Presented by:
Ken Ruehrdanz

© 2016 MHI® Copyright claimed for audiovisual works and sound recordings of seminar sessions. All rights reserved.
Pick Face Replenishment Strategies

Abstract: Learn how to optimize pick face replenishment activities using system solutions built around process improvements, software and automation.

Session Description:
Distribution center designers often focus on solutions for order picking since this function is complex and labor intensive. Meanwhile, the pick face replenishment process may be underperforming in your operation. Replenishment is directly connected to order fulfillment success; there could be many opportunities for improvement. This presentation takes a look at ways to optimize the replenishment process and increase inventory accuracy. It will include a review of replenishment methods/designs, as well as solutions for effectively staging and sequencing inventory prior to order picking.

Ken Ruehrdanz, DEMATIC
Manager, Distribution & Warehousing Market
507 Plymouth Ave., NE
Grand Rapids, MI 49505
Kenneth.ruehrdanz@dematic.com

Track: transportation, distribution & warehousing
Activity Profiling

The systematic analysis of the items & orders handled in the DC determines the optimum design & operation

1. Orders per day
2. Daily unit volume
3. Units per order
4. Lines per order
5. Packing sequence
6. Unit cube & cube movement
7. Unit structure
8. Cartons per order
9. Total SKU’s
10. % daily SKU’s active
11. Order download
12. % volume cross-docked

- Review historical data
- Forecast future activity
Business Drivers

- Accommodate spikes in throughput (special promotions, seasonal, etc.)
- Accommodate more SKUs than competitors
- Perform order fulfillment on 1 shift of operation
- Expandability for future growth
- Maximize ergonomic design
- Extend order cut off time
- Initial investment cost
- Manageability
- Total labor
- Accuracy
- Security
- Space
- Speed
- Other
Top Issues

- Space
- Labor, Ergonomics
- Inventory, SKU Growth
- Accuracy
- Throughput & Processing Time
- Controlled Access
# Labor Department

## Stress and Strain

Musculoskeletal disorder incidence rates for selected private sector industries, 2014

<table>
<thead>
<tr>
<th>Industry</th>
<th>Incidence rate per 10,000 full-time workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation, warehousing</td>
<td>89.9</td>
</tr>
<tr>
<td>Healthcare, social assistance</td>
<td>46.9</td>
</tr>
<tr>
<td>Agriculture, forestry, fishing, hunting</td>
<td>39.0</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>36.3</td>
</tr>
<tr>
<td>Arts, entertainment, recreation</td>
<td>36.1</td>
</tr>
<tr>
<td>Total goods producing</td>
<td>34.6</td>
</tr>
<tr>
<td>Construction</td>
<td>32.7</td>
</tr>
<tr>
<td>Total service providing</td>
<td>31.1</td>
</tr>
</tbody>
</table>

Source: Labor Department

THE WALL STREET JOURNAL.
Issues with Replenishment

- Space
- Safety
- Accuracy
- Response time
- Labor
- Slotting
- Access
Space: Replenishment Aisles
Safety
Accuracy,
Response Time
Labor
Slotting
Access

• Pick face
• For replenishment
• During picking
Warehouse Labor by Process

Piece Picking

- Receiving & Putaway: 35%
- Replenish: 50%
- Pick: 15%
Picking Solutions

Picker to SKUs

Order Container to Pick Zones

SKUs to Picker

Picker to SKUs
Optimize

- Intelligence
- Agility
Optimize

Warehouse Execution Software (WES):
- Replenishment strategy
- Product groups
- Balance picking workload
- Balance storage workload
- Interface to host
Solution #1
Dynamic Slotting
Dynamic Slotting

Issues:
- Inefficiencies with labor & space

Solution:
- Dynamic pick face order fulfillment
- Miniload automated storage
- WES software

Results:
- Reduced footprint (ratio: 8 to 1)
- Reduced staff (from 5 to 1)
- From 50 cph to 220 cph per selector
- Reduced pick path
- Automatic pick face replenishment
Decanting
Picking
Value Analysis

Conventional Pallet Rack
12,000 sq ft
- 1 or 2 High Pick Faces
- Pick Face Width = 4’
- All Picking @ Floor Level
- Manual let down

Walk Path = 6200 ft

Dynamic Slotted
3500 sq ft
- 4 high pick faces
- 1600 Pick Faces
- Automatic let down
- Pick face width = product case

Walk Path = 650 ft
Dynamic Slotting
Pallet version

Replenishment Storage
upper levels

Dynamic Pick Faces
Case Pick to Pallet
Solution #2

Zone Route

- Order container to zones
- Pick from SKU totes
- Auto replenishment
Decanting
Automated Storage
Replenishment & Picking
Solution #3
Case Pick to Conveyor
Case Pick
Light & Voice Directed
Solution #4

Zone Route
Light Directed Picking
Shuttle Replen
Solution #5

SKUs to Picker

1. Travel time
2. Omit pick face
3. Omit re-slot
4. Accurate
5. Less space
6. Security
7. Optimized replenishment
8. Ergonomic
9. Engineered work stations
10. Speed
11. Productivity
12. Less labor
13. Staff accordingly
14. Sequencing
Store in Tote

- Put-away, de-cant
- Inventory buffer
- Put to order workstations
- Pack & ship
Decanting
Inventory Buffer

- Automated
- Compact
- Supports SKU to the picker
Put to Order Workstation
Solution #6

Storage to Put Station

Solution:
- Consolidate slow moving inventory
- Inventory buffer, miniload ASRS
- Light directed “put” to order stations
- Build store pallets

Results:
- Smaller footprint
- Increased capacity
- Increased labor productivity
- SKU to picker fulfillment
- Decant put away
- Store friendly pallets
Decanting

- Operator directed via flat screen
- All inventory into totes
- Automatic flow to ASRS
Inventory Staging ASRS

- 30,000 totes
- 9 aisles
- Connects to “put” stations
SKUs to Picker Put Wall

- Operator directed via flat screen
- Light directed “put”
- Allocate to store container
- Push back when compete
- Flows to rear of workstation
- 21 discrete put locations per station
Pallet Building
Back side of put wall

- RF devices
- Operator removes container
- Places on pallet
- Move pallets to shipping dock
Solution #7

Returns Processing

- Zone route conveyor
- Voice directed
Solution #8

Robotic Picking

- Pick from donor
- Put to order
Solutions for Replenishment

- Space
- Safety
- Accuracy
- Response time
- Labor
- Slotting
- Access
For More Information:

Speaker email: kenneth.ruehrdanz@dematic.com
Website: www.dematic.com
Or visit MODEX 2016 Booth #3047