Deploying Automation to Successfully Manage Exploding SKU Growth as a Result of Increased Customer Demand

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Presenters

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Objectives

• This seminar will discuss the following objectives
  
  • Dealing with explosive SKU growth in the business
  
  • How automation improves customer satisfaction
  
  • Key facts you should consider when automated a facility to protect your self from market changes
Who is TVH?

- Worldwide leading supplier of:
  - quality replacement parts
  - safety equipment
  - accessories for material handling and industrial equipment industries

- Headquartered in Olathe, KS

- > 39 million products from 15 locations in the Americas and 72 locations globally
Growth in Customer Demands

- **Order structure**: customers are placing larger parcel orders today than they were 3 years ago.

- **Order lead time**: same day order same day ship → taking orders until 7pm.
The Growth of the Number of SKUs

• 2015: 70,000 active SKUs

• SKU growth: 5,000 SKUs/year

• Today: > 110,000 SKUs
Order Profile Growth

• In the past three years the number of orders has remained the same while the number of lines shipped per order have grown 7.5%

• We anticipate 3.5% growth for lines shipped in 2019
Existing Technology Limited

• 2015 TVH used a conveyable pick loop

• The loop had reached its limit with the 70,000 SKU in stock at the time

• Expanding using the existing technology was possible but added inefficiencies throughout the process
Labor Constraints

• Expanding the existing technology would have meant adding more labor in already tight labor market

• Using automation has allowed us to reduce our labor requirements while continuing to increase the volume shipped
Current Process

• Orders are pulled via **zoned Pick and Pass** and **Pick to Light** at carousels in the pick loop area

• Non-conveyable items are stored in bulk stock areas by pallet and hand stack
TVH Expansion Evaluation

• Partnered with TVH Belgium (our parent company)
  • understand experiences and knowledge of different solutions
• We solicited ideas from multiple integrators / solution providers
• No single perfect solution to handle all our products and determined the need for multiple solutions
Solutions Considered

• We considered
  • the existing Pick and Pass technology
  • horizontal carousels and pick carts
  • Crane AS/RS systems
  • An enclosed shuttle system
TVH AS/RS Solution

• Maximizes the **space efficiency** and the **speed** in which product is delivered
• Provides **fast and efficient throughput**
• Brings the **product to the person** rather than the product
  • Goods-to-Person (GTP) vs. Person-to-Goods
• Allows flexibility in the fulfillment and replenishment allowing for **later enhancements**
Flexible to changes in SKU range or behaviour
Latest cut-off times
Flexible labor requirements

Come Join Our Team!
Modular & scalable

LONG TERM

SHORT TERM
Dynamic order fulfilment solution

- Dynamic – high T'put & short order lead time
- Flexible – independent from order structure
- Scalable – easy to grow
- Modular – pre-engineered systems
- Ergonomic – sustainable high productivity
- Highly Automated – reduced labour
THE SOLUTION
What the Data Told Us

• The top 20% account for 68% of all the picking labor and 80% of units shipped

• The bottom 50% account for only 7% of picking labor
Shuttle Pick Engine

• 50,000 storage locations

• 1,1000 stores and retrievals per hour

• All products decanted into totes
Goods to Person Stations

- 6 PickCenter workstations
- 8 Target locations at each workstations
- 1,000 lines picked/hour
HOW THE SOLUTION FITS IN THE BUILDING
Shuttle storage

Goods to Person picking stations
THE RESULTS
Benefits

• Increased amount of volume through the facility within same constraints
• Reduction in staffing needs through higher pick rate
• Increased inventory accuracy
• Reduced the amount of replenishment tasks required
• Better space utilization for conveyable product.
How are we doing

• 26,000 SKUs are currently stocked
• 45,000 totes have inventory in the system
• TVH picks over 5,000 lines and 900 orders per day from the AS/RS
• We are currently picking 100 lines per man hour on average
• Goal is to achieve 40,000 SKUs and to average 150 picks per man hour
ASRS in Action at TVH
Summary

• Explosive SKU growth is not only the growth of the number of items but the number of SKUs and their churn

• Automation enables a faster turn around of orders and reducing lead time thus driving customer satisfaction

• Having a system that is not only SKU independent but also order independent is critical to our success
For More Information

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