# *Justifying Order Fulfillment Automation Required for Peak via Off-Peak Utilization*

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**Sponsored by:**

OFS
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# *Justifying Order Fulfillment Automation Required for Peak via Off-Peak Utilization*

The stress of Peak Season on a DC is a universal challenge. This session will explore how automation can provide solutions to common order fulfillment issues, empowering you to reap the benefits of a system engineered for top peak season performance even in off-peak times.

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# What You'll Learn From This Session:

- Identification of biggest order fulfillment issues DC's face during peak season
- Develop an ROI model for the automation based on Peak AND Off-peak utilization
- How to solve these challenges with some level of automation
- Strategies for implementation within an existing operation

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# *What is the OFS - http://www.mhi.org/ofs*

**The Order Fulfillment Solutions (OFS) is dedicated to developing properly applied order fulfillment solutions.**

Order Fulfillment is the process of moving, storing/staging, protecting, and controlling material and information flows within a facility to fill orders.

- OFS develops and delivers educational and training resources for end users, educational institutions, allied organizations, and its own members to properly understand and apply order fulfillment solutions.
- OFS defines the terminology that applies to order fulfillment.
- OFS promotes career opportunities within the industry.

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*Identification of biggest order fulfillment issues DC's face during peak season*

# DEFINING THE PROBLEM

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# Defining the Problem

Historically Successful DC Operations are being Broken/Paralyzed by PEAK volumes

- Shrinking Order Size, Increasing Order Volume, & High Service Levels

The result is a breakdown of historically successful but rudimentary equipment and processes

- Higher labor content or even
- Expedited capitol expenditure on additional facilities
- And duplicated inventory.

But how do you balance Peak vs Avg??

# Defining the PEAK Problem

## E-comm/Omni Channel Operations:

- Peak season order fulfillment stresses/breaks most standard DC order fulfillment systems.
  - Peak to Average ratio 5-to1 upwards of 20-to-1 in some cases
- DC's being asked to handle much smaller orders at higher volumes and at much faster service levels than ever before.
  - E-commerce customers demand seemingly impossible service levels
  - 1 to 2 day SLA's common place – 4 to 5 day SLA = lost sales.
- E-Commerce and Online Retail expected to grow steadily over next 5 years – in turn, we will see steady Peak Season growth

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# Defining the PEAK Problem

## Store / Wholesale Operations:

- In the brick and mortar world, smaller backrooms create leaner in-store inventory
  - Demand for multiple smaller shipments per week
  - Demand for Point of Sale replenishment overnight.
- Pushes the risk of stock-outs to the distribution center's ability to replenish based on nightly POS data.
- Guaranteed free overnight home delivery of out of stock store items directly from the DC to the client
  - In essence saving an otherwise lost sale.

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Let’s Define several of the biggest common

***ORDER FULFILLMENT***

Issues DC's face during peak that can be solved with some level of automation

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# *Issues Caused by Peak Volume*

- Inability to ramp up receiving (and storage space) for the extra inventory
- Unable to meet 1 and 2 day service levels (e-comm) or 4 days (Retail/wholesale)
- Cannot get the Peak # of orders processed (too many 1 to 3 line orders)
- Cannot get the UPH throughput to get the peak volumes picked
- Inability to find/hire/train/retain peak labor
- Unable to pack/ship product to meet deadlines (Shipping dock bottleneck)

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# *Issues Caused by Peak Volume*

- Inability to prioritize orders for specific shipping requirements
- Higher number of orders than packing stations available causing bottlenecks in accumulation and reduction in order throughput
- Lack of labor utilization causing peaks and valleys in work force creating challenges in maintaining a consistent workforce.
- Cannot get the UPH throughput to get the peak volumes picked

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# So What Do We DO?

- How do we justify automation CAPEX $$ to solve the above Peak issues
- How can we leverage this into a competitive advantage?
- How will our normal day to day operation suffer/benefit from what we do for Peak?

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*Develop an ROI model for the automation based on Peak AND Off-peak utilization*

# EXTENDING THE ROI MODEL

# Problem with Peak ROI Justification

**Historical ROI Model:**

- Generally seeks to solve a throughput issue based on labor reduction.
- Focused on the 2-3 month Peak period
- Ignores potential Off-Peak benefits

***NEW* ROI Model:**

- Quantifies benefits such as Accuracy, SLA, Ease of Training
- Adds ROI for Off-Peak benefits: cost per piece, single shift, labor flex, alt uses
- Captures value of flexibility – Off-Peak alternative uses, CAPEX spread, etc

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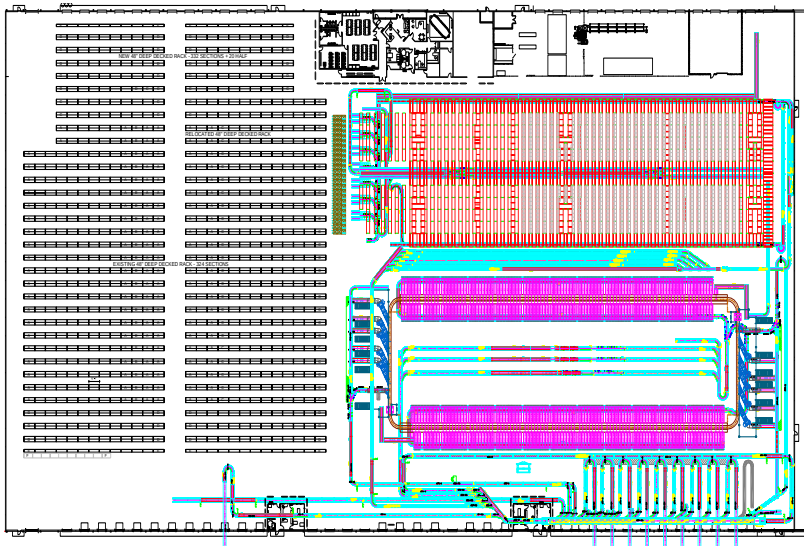
# *Define your Options to Solve PEAK problems:*

## 1) Create your "Utopian Greenfield" automation solution

- What is the optimal automated solution to meet your needs:
  - Storage space / process
  - Picking / Packing
  - Shipping



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## *Define your Options to Solve PEAK problems:*

2) Then determine which of your current manual processes are better than automation

- You have honed these over years – maybe they are good enough or better

3) Determine the absolute minimum automation you would need to just solve your problems

- e.g. you can't get a single order or more out the door without a shipping sorter

# *Define your Options to Solve PEAK problems:*

## 4) NOW apply your constraints:

- CAPEX Budget
- IT/Data capabilities and/limitations
- Your Peak growth timeline – do you really need all this in year 1?

Create the Base short list of peak automation options, and score card them

| Category | Highest Potential Score | Meets Expectations Score | Solution 1 | Solution 2 | No Change |
|---|---|---|---|---|---|
| Category 1: Core Functionality | 25.0 | 15.0 | Incomplete Weight or Score | #REF! | #REF! |
| Category 2: Systems | 20.0 | 12.0 | Incomplete Weight or Score | #REF! | #REF! |
| Category 3: Maintainability | 15.0 | 9.0 | Incomplete Weight or Score | #REF! | #REF! |
| Category 4: Qualitative | 10.0 | 6.0 | Incomplete Weight or Score | #REF! | #REF! |
| Category 5: Commercial Terms | 5.0 | 3.0 | Incomplete Weight or Score | #REF! | #REF! |
| Category 6: Schedule | 10.0 | 6.0 | Incomplete Weight or Score | #REF! | #REF! |
| Category 7: Price | 15.0 | 9.0 | Incomplete Weight or Score | #REF! | #REF! |
| Grand Total without Price | 85.0 | 51.00 | Incomplete Scoring | #REF! | #REF! |
| Grand Total with Price | 100.0 | 60.00 | Incomplete Scoring | #REF! | #REF! |

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# Modeling Off-Peak ROI

1) Model your current operation into these Peak systems

- What are the advantages of this automation off peak? e.g. speed of automated picking allows for 1 order processing rather than batches of 5 or 6 orders that are post sorted for peak. 100% scan = perfect order

2) What other off-peak processes could utilize this automation

- E.g. use Put-to-light system to build pre-packs or size/color musicals, or for e-commerce just the opposite
- Utilize a unit sorter for returns processing on off peak hours

# Modeling Off-Peak ROI

3) Quantify these Off-peak solutions into ROI that can be combined into the Peak automation score carding

- E.g. Can off peak become a single shift operation?

4) Finally – apply weights to CAPEX spends on automation that can be spread over years

- Favor automation that you can grow into, but be sure the building blocks are there on day 1.
- Consider  flexible and portable automation over fixed automation

# PEAK & Off Peak ROI Model Score Card

NOW – apply your Off-peak operations and numbers to these Peak automation Scenarios to expand the scorecard.

| Category | Highest Potential Score | Meets Expectations Score | Solution 1 | Solution 2 | No Change | | Solution 1 | Solution 2 |
|---|---|---|---|---|---|---|---|---|
| Category 1: Core Functionality | 25.0 | 15.0 | 20.0 | 25.0 | 2.0 | + | 8.0 | 2.0 |
| Category 2: Systems | 20.0 | 12.0 | 18.0 | 12.0 | 5.0 | + | 0.0 | 1.0 |
| Category 3: Maintainability | 15.0 | 9.0 | 12.0 | 10.0 | 12.0 | + | 0.0 | 0.0 |
| Category 4: Qualitative | 10.0 | 6.0 | 6.0 | 8.0 | 7.0 | + | 4.0 | 1.0 |
| Category 5: Commercial Terms | 5.0 | 3.0 | 3.0 | 5.0 | 1.0 | + | 0.0 | 0.0 |
| Category 6: Schedule | 10.0 | 6.0 | 6.0 | 8.0 | 10.0 | + | 0.0 | -2.0 |
| Category 7: Price | 15.0 | 9.0 | 10.0 | 12.0 | 15.0 | + | -1.0 | -1.0 |
| | | | | | | + | | |
| Grand Total without Price | 85.0 | 51.00 | 75.00 | 80.00 | 52.00 | + | 11.0 | 1.0 |
| Grand Total with Price | 100.0 | 60.00 | 80.00 | 80.00 | 52.00 | + | 91.0 | 81.0 |

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*How to solve these challenges with some level of automation*

# SAMPLE SUCCESSES

# Originally Defined Order Fulfillment Issues Caused by Peak

1. Inability to ramp up receiving (and storage space) for the extra inventory
2. Unable to meet 1 and 2 day service levels (e-comm) or 4 days (Retail/wholesale)
3. Cannot get the Peak # of orders processed (too many 1 to 3 line orders)
4. Cannot get the UPH throughput to get the peak volumes picked
5. Inability to find/hire/train/retain peak labor
6. Unable to pack/ship product to meet deadlines (Shipping dock bottleneck)
7. Inability to prioritize orders for specific shipping requirements
8. Higher number of orders than packing stations available causing bottlenecks in accumulation and reduction in order throughput
9. Lack of labor utilization causing peaks and valleys in work force creating challenges in maintaining a consistent workforce.
10. Cannot get the UPH throughput to get the peak volumes picked

# Solving Order Fulfillment Peak Issues

## *Receiving/ Storage*

- **Inability to receive fast enough**
  - Non-compliant vendor barcodes – consider Print and Apply
  - Seasonal product altering normal cube algorithms – Cubiscan
  - Automate Prep and/or VAS processes – difficult area for temps

- **No space to product for Peak**
  - Can you justify an AS/RS system – possibly start with only high volume SKU's in 1 or 2 aisles
  - No space or low capital – add pallet flow rack over receiving, or temporary carton flow rack.

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# Solving Order Fulfillment Peak Issues

## *WCS / WMS Software*

### ❑ Order prioritization:

- Designate orders that require special consideration in priority (i.e. must hit cut off for UPS/Fedex, overnight delivery)
- Helps meet the volume requirements during peak times, but also relieves potential stresses that exist in off peak.
- The ability to analyze the order profiles enables an operation to more effectively monitor the orders that require special handling and therefore increases the efficiency of the operation.
  - **JAX customer uses separate color coded totes for orders that are designated by their WCS as needing special priority. These orders are then routed first to meet shipping deadlines.**

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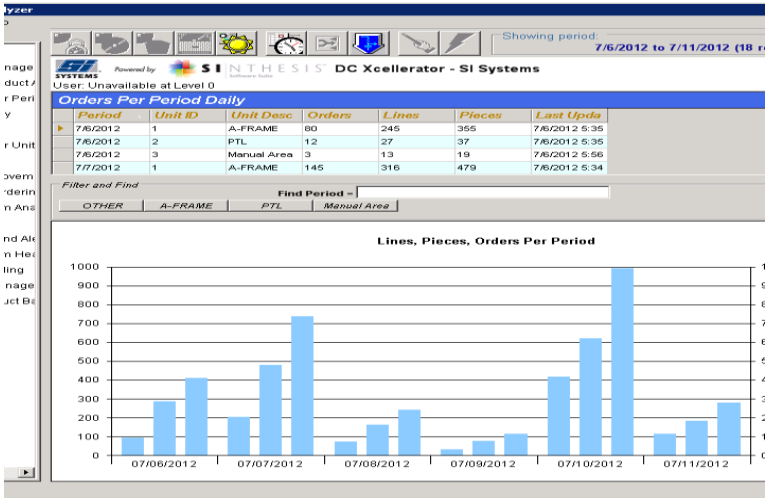
# Solving Order Fulfillment Peak Issues

## *WCS / WMS Software*

- **Group smaller orders together**
  - In peak times will eliminate the needed investment to add pack stations.
  - During off peak times pack stations can be fully utilized more efficiently and not have idle stations that were added during the peak.
  - Having the analytics to group the orders may also assist year round in achieving increased picking efficiencies through batching orders.

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# Solving Order Fulfillment Peak Issues

## *Cross Trained Labor*

- **Cross Training Labor**
  - **In peak times having a cross trained labor force allows an operation to utilize the current level of work force or at least minimize the requirement for hiring temp labor.**
  - **On off peak times it will level the workforce and therefore reduce cost associated with hiring and training new employees.**
    - **Inherently this will increase accuracy and speed in the operation through having a better trained and experienced work force.**
- **Additional Supervisor Labor**
  - **Unsupervised labor is extremely inefficient – leverage interns, corporate employees, and super users.**

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# Solving Order Fulfillment Peak Issues

## *Easily Trainable Automation*

- ❑ Favor processes and technology that are easy to learn.
  - E.g. Voice technology over RF Terminals to lessen the training time for the temporary workforce
  - Many companies are finding the speed, accuracy and productivity achieved through voice technology is worth the investment, but certainly to assist during the peak volume
  - During off peak times voice can speed up the picking can lend opportunities to reduce or redeploy labor and reduce errors and therefore reduce cost for correction.

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# Order Fulfillment Peak Issue:

## *Choose Flexible/Portable Equipment*

- Consider  flexible and portable automation over fixed automation
  - e.g. Portable extra print and apply lines
  - E.g. Portable A-frame dispensers versus extended fixed frames
  - E.g. Portable inbound identification and inspection stations

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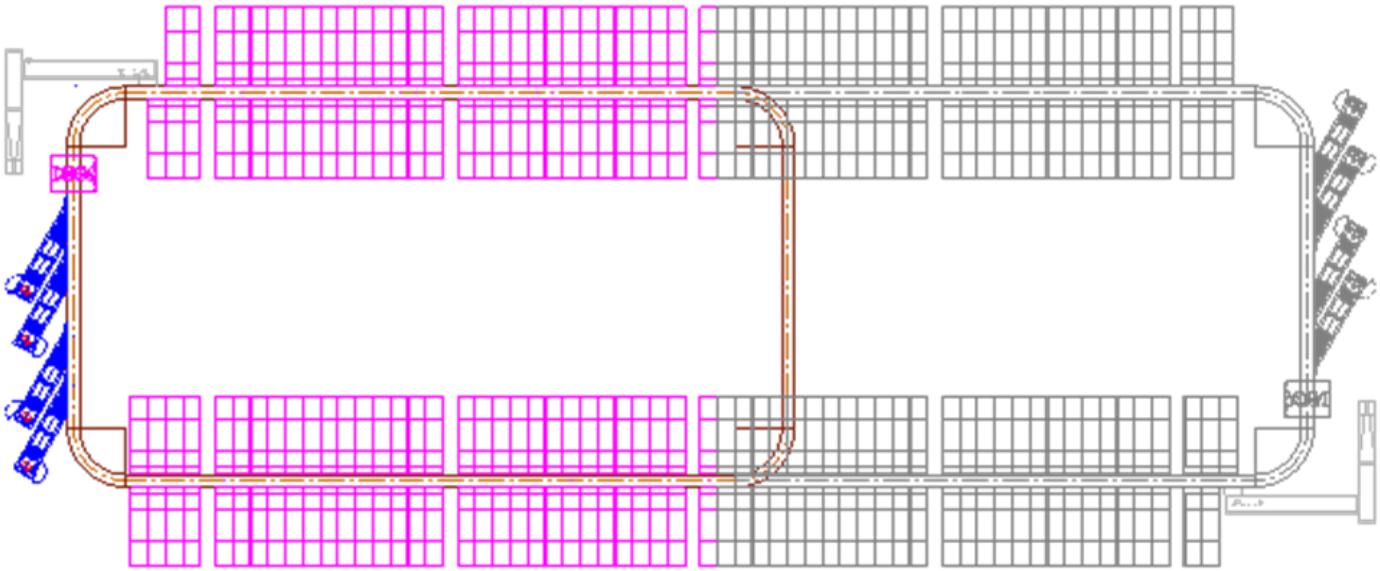
# Order Fulfillment Peak Issue:

## *Growth Plan for High CAPEX Automation*

- **Consider growth stages for fixed automation**
  - Obtain throughput & process on day 1, spread capital expense out to design year.



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# Solving Order Fulfillment Peak Issues

## *Pack Stations*

- During peak volume establish a “super pack station” to group smaller orders together to be sorted and packed by designated stations
  - UK customer has many orders with only 1-3 line items, but needs more pack stations during peak.
  - They do not want to invest in additional pack stations for peak season so they have 1-2 “super pack stations”


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# Solving Order Fulfillment Peak Issues

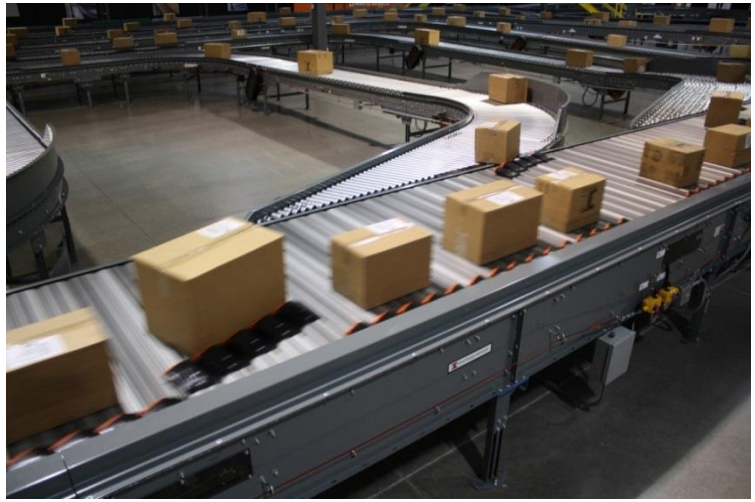
## *Shipping Dock Solutions*

### ❑ Inability to Meet Outbound Peak Carton Rate

- Invest in Line sorter, Tilt Tray, Pop-up Wheel, Etc
- Understand your Peak – do singles/bag spike?  Large items?
- Add gaylord destinations for bags – roll directly into truck

### ❑ Palletizing & Shrink Wrap

- Add a palletizer for standardized pallet shipment
- Central Stretch Hood or local stretch wrapper



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*Strategies for implementation within an existing operation*

# IMPLEMENTATION & CHANGE MANAGEMENT

# Implementation, Ramp-up, Change Management

- These have real risks, costs, and paybacks associated with them
- Roll these issues/solutions back into your ROI calculations
- Plan the transitions and process changes that will become yearly occurrences as you prep for and transition to and from Peak season
- Prepare repeatable training programs that are easy to administer to temporary resources

# Implementation within Existing Operation

- These have real risks, costs, and paybacks associated with them
- Roll these issues/solutions back into your ROI calculations
- Plan the transitions and process changes that will become yearly occurrences as you prep for and transition to and from Peak season
- Prepare repeatable training programs that are easy to administer to temporary resources

# Don't forget to Plan the implementation, Ramp-up, and Change Management

1. Establish a realistic and manageable timeline
2. Over communicate to employees the “why’s” for change (allow 2 way communication)
3. Highlight the benefits to the individuals in the new systems (i.e. higher throughput = better work conditions)
4. Develop a comprehensive training program
5. Offer check-in and follow up during the implementation

# Session Summary

- Everyone's situation is different, and everyone requires a unique solution for Peak
- Leverage the “Perfect Order” off peak to help justify the ROI for Peak automation
- Focus on easy to learn, scalable systems that have the horsepower for peak, but the flexibility for alternate off peak usage
- Remember Peak systems double as disaster recovery plans for multi site DC networks.

# OFS Member Companies at Modex

| COMPANY NAME | BOOTH # |
|---|---|
| BEUMER Corporation | 4523 |
| CubiScan by Quantronix, Inc. | 4318 |
| Dematic Corp. | 5723 |
| Elite Storage Solutions, Inc | 1718 |
| FOX IV Technologies | 5115 |
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| Grenzebach | 7913 |
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|---|---|
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| Schaefer Systems International, Inc. | 5423 |
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# Q&A – Thank You

***For More Information:***

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