ACCELERATING DC METRICS IMPROVEMENTS BY LEVERAGING "LEAN" AND "MOBILE POWER" TOGETHER

INTRODUCTION

Being able to identify and remove waste within a facility's process is what separates today's DC professional from their competition. Read on to learn about the top DC metrics that warehouse professionals are focusing on today, and discover how adding mobile power to your existing processes can set you on the path to becoming a "Best in Class" operation.

WHITE PAPER

THE TOP 10 METRICS REPORTED FROM WAREHOUSE PROFESSIONALS

1 **On time shipments:** The percentage of orders shipped at the planned time.

2 **Internal order cycle time:** The average internal time between when the order was received from the customer and order shipment by the supplier.

3 **Dock to stock cycle time:** The dock to stock cycle time equals the time required to put away goods. The cycle time begins when goods arrive from the supplier and ends when those goods are put away in the warehouse and recorded into the inventory management system.

4 **Total order cycle time:** The average end to end time between order placement by the customer and order receipt by the customer.

5 **Order picking accuracy:** This measures the accuracy of the order picking process where errors may be caught prior to shipment such as during packaging.

6 **Average warehouse capacity:** The average amount of warehouse capacity used over a specific amount of time.

7 **Peak warehouse capacity used:** The amount of warehouse capacity used during designated peak seasons.

8 **Back orders as a percent of total orders:** The portion of total orders that are held and shipped late due to the lack of availability of stock – measured in PO's.

9 **Back orders as a percent of total lines:** The portion of total orders that are held and shipped late due to the lack of availability of stock – measured in line items.

10 **Percent of supplier orders received damage free:** The number of orders that are processed damage free as a percentage of total orders.

The top 10 DC metrics shown above were reported by warehouse professionals via the '*2015 Warehouse Education Research Council (WERC) Survey*'. The results of the survey show the average DC is about 246,000 sf, has 287 people and will get $266,000 in capital investment. These are fairly large facilities with many SKU's, people and systems that require robust processes to support the proposed growth that most facilities are faced with.

Warehouse managers fight to compete with little expectation of increased capital spending, technology upgrades, or additional staff, so it stands to reason that those who embrace what they have and do more with it will survive and surpass competitors who are unable to adapt.

By adopting some basic lean philosophies and simple technology, a DC can save hundreds of hours monthly, hundreds of thousands of dollars annually in labor costs, remove untold errors, increase inventory accuracy, reduce worker fatigue, increase inventory turns, and improve the overall flow of the warehouse.

What is "Lean"?

Manufacturing adopted lean principles as a means to compete better long ago, but the distribution sector has been slow to engage. There has been little support from management despite proven successes in leading e-commerce and distribution companies who employ these principles and gain huge competitive advantages.

Lean focuses on the identification and reduction of waste that exists in a company's process. A process can be defined by an area in a DC such as receiving, picking, packing, shipping, returns, cycle counting/inventory, etc. "Waste" is defined as "anything that adds no value to that process or actual work that a customer is willing to pay for" on the logic that customers are willing to pay for goods they purchase, but not willing to pay for any non-value added work that is involved in their ordering experience.

Waste can be broken down into (8) forms:

1. **Defects:** Efforts caused by rework, scrap & incorrect information

2. **Waiting:** Wasted time waiting for the next step in a process

3. **Over processing:** More work or higher quality than is required by the customer

4. **Over production:** Production that is more than needed or before it is needed

5. **Transport:** Unnecessary movements of products and materials

6. **Excess motion:** Unnecessary movements by people (ex. walking)

7. **Unused potential:** Under utilizing people's talents, skills & knowledge

8. **Inventory:** Excess products and materials not being processed

An Excess Waste Scenario

One example of excess waste that can highlight all of these variations might be when a delivery arrives at the DC without notification. Perhaps a buyer gets a great deal on Product A, so they overbuy even though there is no demand for the product. It will take six months to sell the inventory. [*Inventory*]

No one alerts the warehouse, so a truck arrives with goods that need to be off-loaded and stored temporarily – maybe in aisles causing a logjam. The pallets need to be moved several times so a material handler can get by. [*Transport*]

The load needs to be received but the desk/office is 100' feet away so the operator has to walk back and forth from the load to the PC multiple times. [*Motion*]

They need to label each case, but put the wrong labels on some of them [*Defects*] so now the inventory is off.

Six months from now someone will catch it and relabel them. [*Over processing*]

There is one customer will who take some product now but it takes 24 hours to actually receive the load so customer service is [*Waiting*] to process the orders.

In the meantime the handler finally puts the load into locations only to have to pick some of it a few hours later. [*Motion, Transport*]

Customer service tells them to pick 25 cases only to find out they needed 20 cases. [*Over production*]

The handler also doubles as a cycle counter and QA inspector but can't ever seem to find time. [*Unused potential*] Hopefully this doesn't sound like your warehouse.

Reducing just 50% of the waste in the above scenario will greatly increase the DC's efficiencies.

Some hallmark signs of a lean DC are:

• Very clean and organized (5s)
• Safety is important
• The pace of work is brisk but not hectic
• KPI Signage and visuals are everywhere for people to see – Employees know the score
• Work standards are applied - there is a right way to do things
• Less standing inventory
• More annual inventory turns
• Work Flow is smooth and level – there are less bottlenecks
• Docks are clear at the end of the day

FIVE PLACES TO START TODAY

Mobile powered solutions specifically target the top 5 DC metrics as ranked most important in the survey by removing motion, defects, transport and processing.

	METRICS	BEST IN CLASS
1	On time shipments	99.875%
2	Internal order cycle time	< 3.8 HRS.
3	Dock to stock cycle time	< 2 HRS.
4	Total order cycle time	< 7 HRS.
5	Order picking accuracy	99.84%

On Time Shipments

If an order involves cases or full pallets the load is often touched by several workers to verify, print packing slips, print labels, enter data, and skid the load. Often the worker is forced to walk a significant distance to print documents and labels. This motion is much more than most DC's recognize and can add minutes to every shipment. Multiply this by the number of loads and hours easily accumulate. Perhaps worse is having to match labels and paperwork by processing multiple orders at once – this is a perfect scenario for customers getting the wrong items and forcing a return.

Deploying a mobile workstation allows workers to process the load "one" at a time on the dock eliminating the motion and the additional time it requires. Orders get brought to the dock and less handling and processing is required, speeding up the process [*Velocity*]. Imagine what impact removing just 50% of your motion and half your touches can do for you?

Best in class is 99.875%, while median is at 99%, so trimming seconds is required to compete at the highest level.

Internal Order Cycle Time

Dock to stock times have potential to be cut in half with mobile workstations. Where cross-docking is utilized, loads can be received and re-shipped within hours. Pickers using mobile powered pick carts are able to batch pick multiple orders at a time or pick and pack directly onto a cart eliminating pack stations which are often a bottleneck.

Processing shipments on the dock reduces errors and speeds up the total time required. Trim a little on the inbound, picking and outbound side and the cycle time improves by hours or days. Lean companies handle more orders faster and more accurately than competitors.

Best in class is less than 3.8 hours, far surpassing the median which is 10 hours, so making this leap on this metric results in significant savings and increased velocity. Look at your entire end to end process from receipt of an order to shipment to highlight the largest bottlenecks and waste producers. You may find hours can be trimmed from the total process.

Dock to Stock Cycle Time

Goods sitting on a dock [*Waiting*] are assets that can't be sold, so improving overall dock to stock shortens the time from paying for inventory to being paid for it. Much like shipping, most DC's have way too much motion. Workers walk back and forth [*Motion*] to loads multiple times to enter data, print labels and inspect the load.

A simple spaghetti chart (see page 5) can illustrate the amount of steps being taken. Mirror an employee and chart the steps needed to process a receipt. This will highlight the biggest waste offenders which is often motion, transport and processing time.

Companies can easily fix this by having workers using mobile powered stations and processing loads order by order on the docks. Less touches [*Handling*] are required, loads get received faster, paperwork is reduced, labels are applied accurately, docks aren't clogged and flow is greatly improved.

Some case studies show companies eliminating entire inbound shifts or overtime.   This is often the low hanging fruit any company with WiFi can accomplish. Simply take existing technology and make it mobile – cut the cords the worker is being tethered to. Lean companies get product in and out of their DC's far faster than their competition.

Best in class is less than 2 hours. Median is 6.5 hours so hours are needed to be trimmed to compete. Often 50% of the inbound motion is waste, so if motion can be cut in half, productivity doubles. Try to encourage handling product only once before put away.

Total Order Cycle Time

This simply adds travel time for the order from the supplier to the customer. By improving all of the above metrics with mobile power the pressure on freight is far less; Less expedites, less returns, less overnights, less stress.

Lean companies seem to have a cadence that never seems hurried because they know their process is robust enough to handle any situation. Orders flow through the system better and the total customer experience is painless. Lean companies walk, process, and handle orders less.

Best in class is less than 7 hours. Median is 24 hours so 17 hours needs to be eliminated to be at world class. If internal processes are as lean as possible, the transit time won't be the factor that causes success or failure. Plus your control over carriers is far less than your internal process – start there always.

Order Picking Accuracy

Where manual picking is required for smaller items, "eaches" and slower moving sku's, adding power to your pick cart with a pick-to-light system can greatly increase picks per hour and increase accuracy to roughly 99%.

Intelligent software plans the shortest route of travel and the pick zones need to be laid out to keep the highest moving sku's easily accessible. Lean companies are more accurate as a rule. Their process prevents errors. **Best in class is 99.84%.** Median is 99% so even picking several more orders correctly each day will help.

What it Takes to be Best in Class

To get to best in class requires extreme commitment and resources, but lean is about continuous improvement so if you can cut waste in half it will have an incredible effect on the DC's performance. Top DC's want to constantly improve velocity and accuracy daily and create a culture of getting better at identifying waste and removing it.

It is very important to understand the current condition and where you stand today. Many companies have no idea how long it takes for an order to move through the system, receive a truck, how many trucks they need to unload every hour or how accurate they are.

Doing some very basic time studies, value stream maps and spaghetti diagrams can highlight and reduce a lot of the waste in the process. There are local lean consultants that can help, but they will never know your process like you do. It's a good idea to have them come in for a one day event to facilitate things.

The basic rules would be: Analyze the current process and quantify - Form a team to highlight waste (Kaizen) - Reduce that waste - Set a new standard - Maintain that standard for a while - Repeat process. Keep getting better.

Good luck in meeting your goals and chasing best in class status.

If you would like to know more about Newcastle Systems and how we have helped many of those best in class companies, visit our website at **www.newcastlesys.com**.

Spaghetti Chart
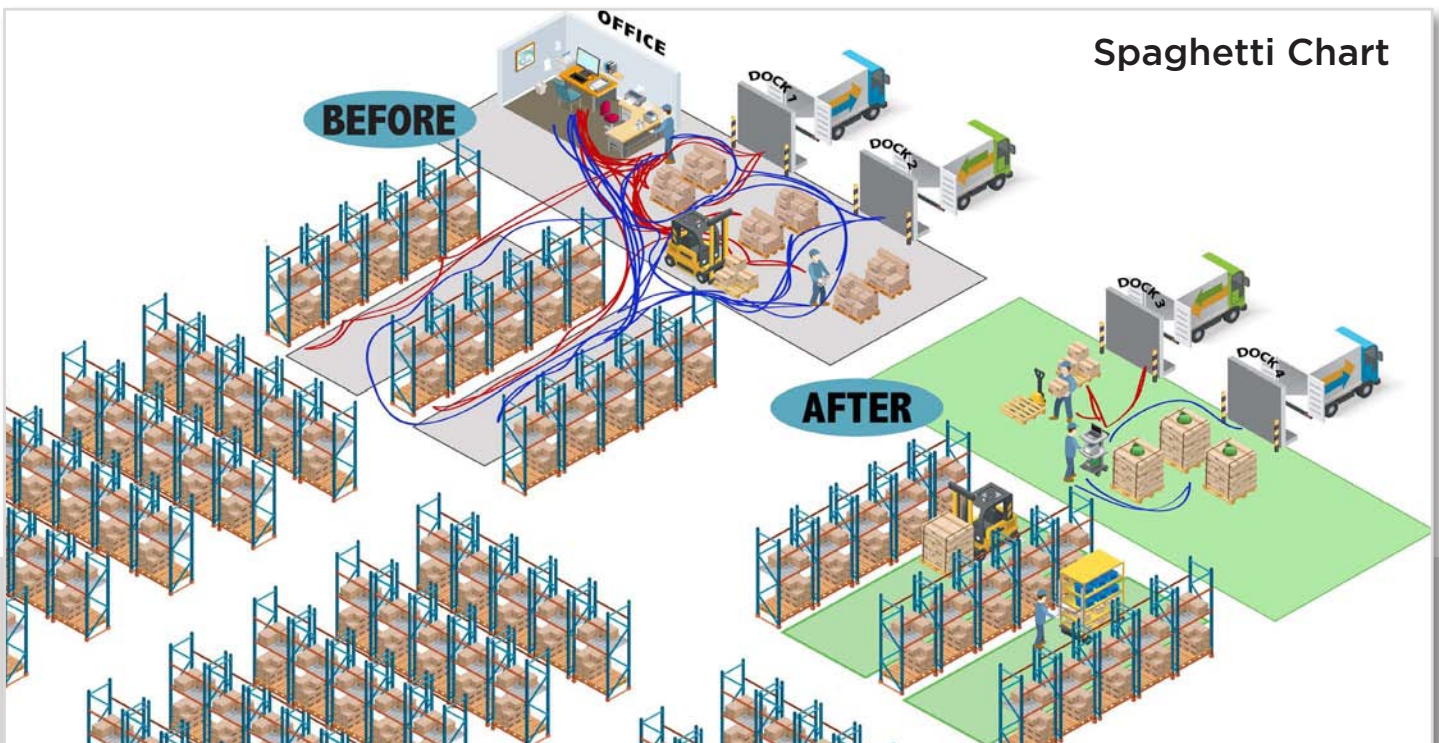
THE POWER TO MOVE YOUR WORKPLACE

ABOUT NEWCASTLE SYSTEMS

Newcastle Systems is committed to providing innovative solutions that help make Auto-ID technology and other hardware truly mobile and information more readily available across an entire enterprise.

Loss of productivity and inefficiencies such as wasted steps to the printer, inaccurate inventory counts, improper labeling, time delays, manual processing and incorrect shipments are just some of the challenges that are alleviated with a mobile powered workstation.

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