Improving DC metrics

Best practices to optimize distribution center operations and lift truck fleet utilization

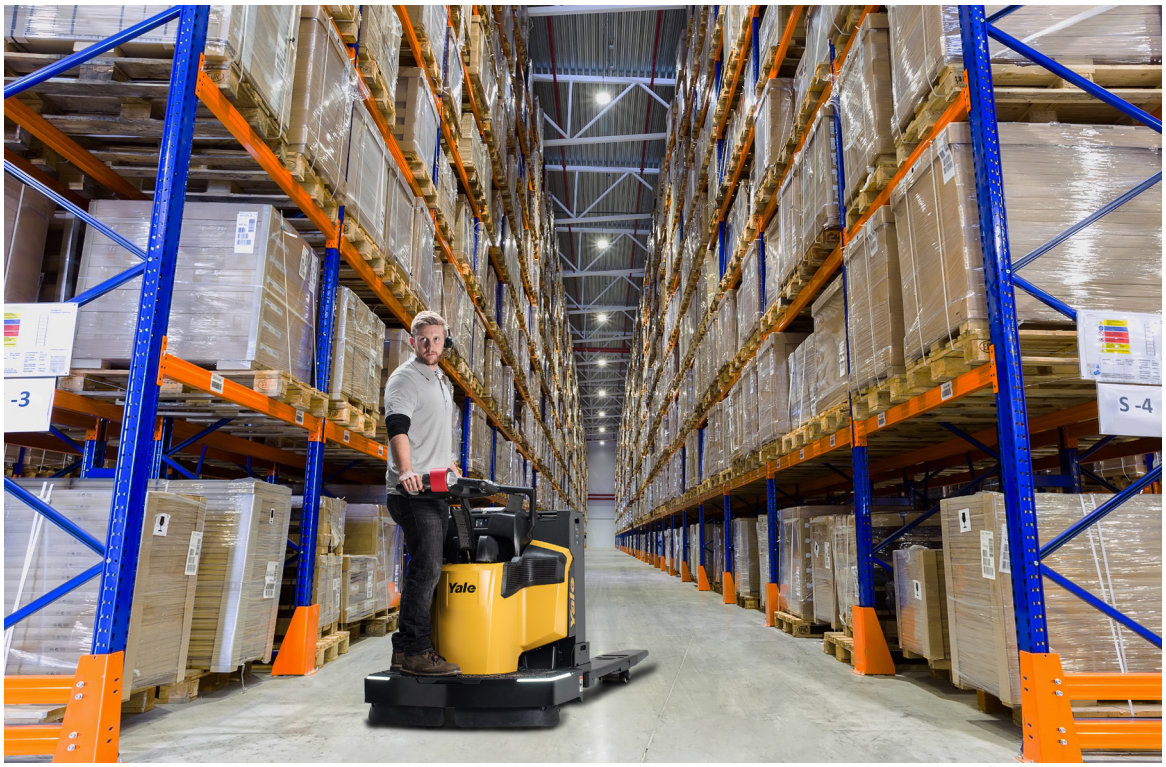
Yale Materials Handling Corporation

Whether replenishing retail locations or facilitating direct-to-consumer deliveries, you're tasked with moving inventory more efficiently than ever to meet growing demand, making accuracy and flexibility imperative.

And in order to perform as a modern supply chain operation, metrics are critical to help you identify latent inefficiencies and power through daily work and peak challenges. But what distribution center (DC) metrics are most valuable? What should you lean on to shape business strategy and ultimately drive customer satisfaction?

The top 12 DC metrics in the 2020 Warehousing Education and Research Council (WERC) DC Measures Report reflect the demands of customers in the era of e-commerce - and how distribution and fulfillment operations are serving them.

This white paper presents top metrics from the 2020 WERC DC Measures Report, and highlights best practices to help best leverage lift truck fleets for best-in-class performance.



The 2020 WERC Report revealed a new top 12 metrics reported from warehouse professionals.

Top 12 warehouse operational metrics

1. Average warehouse capacity used
2. Shipped complete per customer order
3. Order picking accuracy
4. Percent of orders with on-time delivery
5. Peak warehouse capacity used
6. Shipped damage free
7. On-time shipments
8. Correct documentation
9. Inventory count accuracy by location
10. Dock-to-stock cycle time
11. Order fill rate
12. Part-time workforce to total workforce

Order and customer-centric metrics like on-time delivery, complete orders shipped, damage-free orders and correct documentation were listed in the 30's last year, but have made their way to the top 12.

Lift truck operations and best-in-class

Lift truck operations identified several of the top DC metrics ranked as most important in the WERC Report, including average warehouse capacity used, on-time shipments and dock-to-stock cycle time. The table below summarizes what the 2020 WERC Report revealed as best-in-class performance for these metrics.

Metric	Description	Best-in-class measure*	Year-over-year trend
 Average warehouse capacity used	Average amount of warehouse space used over a specific interval, such as a monthly or yearly window.	>=90%	Slight decrease from previous year, indicating more challenges using warehouse capacity to its fullest potential.
 On-time shipments	Percent of orders shipped at the planned time, meaning off the dock and in transit to its final destination.	>=99.7%	Best-in-class performance remained consistent with previous year, indicating a continued focus on reaching goals for on-time shipments.
 Dock-to-stock cycle time	Time elapsed between the arrival of goods and when they are put away and recorded into inventory management systems.	<2 hours	Second straight year this metric made the list after a four-year absence, indicating a continued priority in today's industry climate.

**Best-in-class operations exhibit a level of performance that falls within the top 20% of all respondents.*

Metric one: Average warehouse capacity used

Best-in-class operations, on average, utilize 90% of available warehouse space. Optimized lift truck fleets integrated with optimized slotting and inventory strategies, can provide maximum utility and flexibility to respond to shifting business conditions. Best practices that support optimization include:

- Implementing slotting and storage strategies
- Using cross-docking

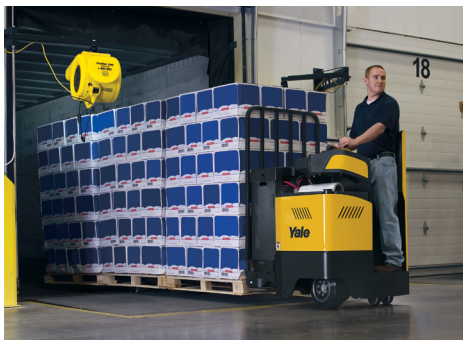
Implementing slotting and storage strategies

Growing SKUs and order counts can complicate efficient use of space. These conditions can force DCs to expand their picking footprint, reduce slot sizes and reduce inventory in each pick slot, risking decreased efficiency and productivity. Conducting a slotting analysis can determine the optimal storage space and location for each item – some of which might be at height. The conversation then shifts to enlisting the right equipment, with appropriate speed, dimensions and vertical heights to access the loads.

For instance, a multi-level order selector can raise operators vertically to expand the “golden zone” of the pick face. This can enable new slotting strategies to help increase pick positions up to 400% and slot capacity 140% within the same footprint.

Using cross-docking

Cross-docking involves transferring incoming merchandise from receiving directly to shipping – without spending time in storage. This workflow can help move goods more rapidly, reducing inventory levels and permitting for more efficient use of existing warehouse storage capacity.



Metric two: On-time shipments

Best-in-class operations ship more than 99.7% of orders on time, meaning off the dock and in transit to the customer. To reach this level of efficiency, operations must make sure lift truck fleets are running at peak efficiency, with minimal downtime. Three factors that can contribute to peak efficiency include:

- Using best-fit power solutions
- Delegating repetitive tasks to robotics
- Ensuring proper maintenance and parts availability

Using best-fit power solutions

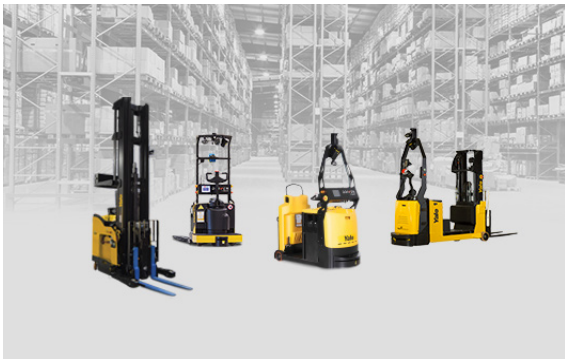
Lift truck power options are now more robust than ever, with newer technologies like lithium-ion batteries and hydrogen fuels cells proving their worth. By implementing the right lift truck power source, operations can unlock greater productivity.

Traditional lead-acid batteries can suffer performance degradation during the second half of their charge, leaving operators with a less-capable lift truck. This can result in shipments leaving later than expected and other performance metrics to suffer.

Lithium-ion batteries and hydrogen fuel cells deliver consistent, maximum performance until full depletion, while offering fast refueling and flexible charging. Hydrogen fuel cell-powered lift trucks take just minutes to refuel, while lithium-ion batteries power longer and charge up to two times faster than lead acid.

Delegating repetitive tasks to robotics

Advances in sensor technology and processing power permit robotics to pick up, transport and drop off pallets independently and reliability. By providing smooth, consistent operation of repetitive tasks, robotics allow for extended run times between charges, helping increase operational uptime and productivity, while reducing errors associated with misplaced or damaged goods.



Ensuring proper maintenance and parts availability

Factory-trained, certified technicians offer superior product knowledge to help keep lift trucks running and shipments moving. The combined geographic footprint of the lift truck original equipment manufacturer (OEM) and dealer network, affects service capacity and how quickly unscheduled service issues can be taken care of. The larger the dealer network, the faster the response, the less downtime.

Additionally, telemetry systems with fault-code monitoring can automatically contact the service organization to initiate maintenance if a fault code is triggered. This can prevent minor issues that may not be apparent to operators from escalating into more serious problems.

Metric three: Dock-to-stock cycle time

According to the WERC Report, best-in-class operations are able to move inventory from the receiving dock to storage, and record it in inventory management systems in less than two hours. But operations are challenged with two major trends: accommodating growing SKU counts and deliveries, and labor shortages, leaving warehouse positions unfilled and turning over regularly. Best practices to enhance put away include:

- Automating high level put away with robotics
- Eliminating unnecessary product touches

Automating high level put away with robotics

Robotic lift trucks are ideal for facilities challenged with inventory growth as well as labor challenges. They not only help maximize vertical storage and allow for autonomous put away at locations over 30 feet high, but offer smooth, consistent operation, providing for extended run times between charges, translating into greater uptime and productivity. And with the ability to service double-deep pallet storage, robotic lift trucks can handle more pallets at a time, while systematically keeping product moving.

Additionally, robotic lift trucks allow labor to be reassigned to more meaningful tasks, helping increase operational efficiency, and reduce turnover and onboarding costs.

Eliminating unnecessary product touches

Unnecessary product touches and movements are wasteful and slow cycle times. Using telemetry systems, operations can track movements to eliminate unnecessary steps, minimizing product touches and reducing put away times.

Rising to best-in-class DC performance

Achieving best-in-class performance requires both the attention and resources for continuous improvement. Top DCs strive to constantly improve velocity and accuracy, while fostering a culture of self-examination that enables warehouses to identify and remove inefficiencies.

For a deeper conversation about achieving best-in-class performance, contact a solutions expert at your local Yale® dealer.