



Distribution Center MANAGEMENT

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Managing people, materials and costs in the warehouse or DC

Human Resources

Dynamic labor balancing optimizes order fulfillment in a waveless environment

A distribution center is ultimately in the business of shipping orders, says Marc Austin, a senior account executive with Fortna Inc. You can't just focus on how fast you pick, pack, build pallets, or sort. You have to look at how quickly and accurately you can process a complete order.

That means you have to keep workers synchronized throughout the operation as a whole to complete those orders and reduce overall dwell time. In a typical wave processing environment, that's exactly what should happen. You build sophisticated rules and algorithms to ensure every order is processed in waves, completed, and sent out the door.

The problem is that real life rarely, if ever, lives up to that plan. "You start out building a wave or a batch, and 10 minutes later, when everything is out of sync, that plan is old news. But the WMS doesn't change anything," Austin says. "It just keeps trying to get back to the old plan."

When that happens, workers are often left standing around, waiting for a few orders to be completed before another wave begins. "Waiting for that wave to finish, workers end up doing about 80 percent of the work in the first 50 percent of the time. Then, in the last half, they do the remaining 20 percent of the work because they're waiting for stragglers." With high labor costs, can you really afford to have anyone sitting idly, waiting for an order?

That's why Austin recommends scrapping static wave processing in favor of a continuous, waveless environment. The key to making it work is something he calls dynamic labor balancing.

Deploy labor in real time to prevent bottlenecks

Dynamic labor balancing works within the warehouse control system (WCS) to monitor the facility in real time and make the best labor decisions based on the current situation. It dishes out tasks to workers in sequence, with the overall goal of processing orders as quickly and accurately as possible.

"It is a real-time execution layer," says Austin. "It allows the WCS to say, 'Okay, I'm going to take all the tasks and priorities and orders you have given me, and I'm going to go out and execute them in real-time the best I can to meet your demands.'"

For example, in a static wave environment, the supervisor gives a worker an assignment at the beginning of the batch. When the worker completes that task, he or she must wait for the next batch before beginning work again.

That can cause delays, Austin says, because

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supervisors don't always know exactly when the worker is finished. Not only that, but supervisors can bring emotion into the decision. "I've seen people say, 'We have to move Susie because this area is slowing down, but Susie doesn't like to go to that zone to work.' Well, hold on, what are we talking about here? We're talking about what's best for the business, and what's best is for us to stay balanced."

With dynamic labor balancing, the WCS will give workers their tasks through the picking system (which can be voice, RF, or pick-to-light) in real time, based on the tasks, priorities, and orders you have determined at the beginning of the shift.

When a worker has completed a task, it immediately gives him a new one. Instead of workers picking in specific zones or waves, they instead go wherever the work is most critical at the time.

Dynamic labor balancing also takes travel time and other factors into account, Austin says. It performs calculations to determine if moving a worker is actually worth the travel time. "Was the juice worth the squeeze?" Austin asks. "We always make sure we understand that if we have to make a change, what's the penalty? Sometimes it's not worth it, and the worker should stay put. But sometimes, the worker really needs to move."

The end result is improved productivity and picking efficiency. Austin says that one DC he worked with was able to improve overall picking efficiency by 15 percent. "It was because we kept people working all the time," he says. "We had a lot of people that would work ahead and pick like gangbusters, but then they would stop and take a break because the assignments were static. Now they got continuous assignments and their picking productivity came up."

Contact: Marc Austin, Fortna, 800-367-8621, www.fortna.com. 

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712 Main Street — Suite 187B • Boonton, NJ 07005

Telephone: (973) 265-2300 • Fax: (973) 402-6056 • Email: info@DistributionGroup.com • Website: www.DistributionGroup.com

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