



Distribution Center MANAGEMENT

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Managing people, materials and costs in the warehouse or DC

From the Golden Zone

Computer simulation is a practical operations planning tool

By Don Derewecki

With more and more companies turning to computer simulation to help plan or validate operational changes, it's time to stop looking at computer simulation as just an academic exercise or a technique that is justified only for multimillion dollar, highly mechanized/automated material handling systems.

The performance and flexibility of new simulation software has made it a cost-effective tool for testing a wide range of operations alternatives in any size DC. Now is the time to look at the potential applications for simulation in your facility.

Distribution centers around the country are successfully using computer simulation to:

- Test the impact of process and systems changes, as well as new wave creation/release criteria and work dispatch strategies.
- Evaluate workload balancing strategies, and
- Quantify fine-tuning tactics.

Simulation can also be used to resolve a broad range of operations issues. It can be used as a tool to:

- Optimize the performance of an existing operation without adding new equipment,
- Quantify the cost effect of working within the operational limitations of a baseline WMS vs. the operational benefits of customized software modifications,

- Determine the number of pickers and other DC functions needed after an acquisition, adding a new customer, adding a new product line, or opening new stores,

- Define new manufacturing or distribution processes to satisfy customer requirements, and
- Re-optimize a production schedule after a piece of equipment goes down.

Adjusting to changes in the DC

Simulation can also be used to help answer many of the everyday "what if" questions that come up.

- What if my business requirements change? For instance, what if my line count decreases? If my pallet and carton picking migrates to more piece picking? Or if my customers require more value-added services?

- What if my order volume, peaking, or seasonality changes?

- What if I change how I allocate my staff?
- What if I adjust the size of batch picks or alter the timing of the release of orders to the picking floor?

- What if I make significant product zoning adjustments?

- What if projections are wrong?

As an added benefit, the simulation effort

Simulation can be used to help answer many of the everyday "what if" questions that you deal with.

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requires a thorough process review. You have to define and measure all of the processes to be simulated. This:

- Forces you to step back and logically examine the process flows,
- Involves a review of all assumptions, and
- Requires quantification of all the elements and factors for all processes.

Simulation is critical when automating

Simulation is especially important when a company is installing a new handling system combined with new information systems support, particularly when there is a large capital investment and the technological risk factor is significant. When high volumes and tight scheduling windows are the design criteria and combinations of technologies have to be coordinated, simulation becomes critical. Simulation will allow you to:

- Validate that the planned combinations of new material handling system technologies can be synchronized,
- Determine if the system would fulfill design objectives and satisfy projected throughput requirements,
- Identify potential areas for system constraints or failure,
- Recognize cause and effect relationships, and
- Evaluate the benefit to the operation of remedying each identified constraint.

In summary, do not view simulation as an esoteric application only used in graduate level engineering courses, but as another tool to help you make decisions and manage operations more effectively.

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