

INCREASING WAREHOUSE PRODUCTIVITY

WITH AUTOMATED DATA COLLECTION (ADC)



BY ALAN MCDONALD,
FORTE DOD EXPERT

Next to gaining greater control of inventory, the promise of increased labor productivity is the largest driver of warehouse management system (WMS) and ADC system implementation in warehousing and distribution; in fact, it is often the dominant consideration. “Get more done with fewer people” is the corporate mantra around the globe, and while working harder and smarter can sometimes get some of the job done, today’s logistics systems depend on ADC-based technology to realize breakthrough gains in productivity. Total labor savings are gained through the cumulative impact of a variety of improvements possible through the implementation of WMS and ADC systems. The key area of these labor savings are reviewed below. We begin with the most basic, involving primarily implementation of data collection hardware, moving to the more complex, involving implementation of WMS software combined with real-time, interactive RF/DC networks

- Elimination of paperwork and data entry:** This is the traditional argument for implementing data collection hardware. Scanners and portable data terminals free floor operations from handwriting various forms (e.g., receiving documents and pick sheets). The clerical staff is no longer required to later manually key enter this paper-based data into the host computer system. Additionally, here are also overall operational benefits from accuracy, which eliminates the trickle down impact of information errors on productivity.
- Reduced search time:** A stock locator system using RF technology that accesses a location database allows operators to record all put-away, move and pick transactions, posting to the database in real time and with near 100 percent accuracy. This eliminates the time lost searching for product to perform subsequent transactions. In a large facility, this savings can be significant.
- Reduction of “QA” processes:** Non-automated warehouses and distribution centers often use significant labor to check and recheck work to catch errors. This is primarily in the packing and shipping functions. ADC systems that validate order picking transactions improve the accuracy of picked orders enough so that redundant verification is no longer needed. Alternatively, verification can be accomplished by rapid scans of product rather than manual counting. For example, a shoe distributor, which found scanning during the picking process would unacceptably slow down picking speeds, now places picked boxes directly into shipping cartons. They are placed vertically in the carton with the U.P.C. codes all facing up, allowing order verifiers to easily scan each carton, validating against expected carton contents. In addition to significantly improving productivity vs. the previous manual verification process, the system also generates carton content data necessary for creating Advance Ship Notices, required by retail customers.
- System-directed activities:** In traditional systems, operators have significant flexibility to determine their own work tasks and paths. Today’s software systems direct operations to accomplish specific tasks in specific locations, allowing the computer’s processing power and logic to drive operations. For example, pickers are directed to the proper pick locations in the most efficient path possible. There are a wide number of other labor-saving cases in point; a put-away driver receives instructions via RF terminal for where to put away a pallet or carton, rather than trying to find an empty location. Or if the pallet is dropped at the end of an aisle, the system notifies the put-away operator that the load requires attention. When a forward pick location falls below system minimums, a task is generated and communicated through RF in time to ensure that pickers do not have to wait for the picking slot to be filled to complete the order.
- Task interleaving:** A more advanced implementation of directed activity is task interleaving. This capability involves combining different work assignments in a continuous flow that minimizes non-productive time, such as vehicle deadheading. WMS programs combine predefined tables of types of equipment and task capabilities with dynamic queues of available work, organized by type and priority of task. As a given task is assigned or completed, a second task that recognizes the operator’s current position and status is also assigned. One example would be combining a put-away with a cycle count of an inventory location in that same area. Task interleaving is a tremendously powerful concept that has been the catalyst for many companies to move from locator-level warehouse software systems to higher level WMS packages.
- Labor standards and reporting:** Higher level WMS systems maintain labor performance statistics and track productivity against these standards. Typically, the performance standards are developed based on historical data, then modified based on actual captured by the WMS and ADC systems. The WMS will maintain a complete audit trail of all transactions, time- and date- stamped by employee. This data is easily collected through the scanning process employed for all transactions, using RF terminals that operators have logged onto with their individual IDs. Typically, the WMS software will provide a variety of standard reports using this labor data. For other “views” or queries, the software will either provide



**THINK
INSIDE
THE BOX**

INCREASING WAREHOUSE PRODUCTIVITY

WITH AUTOMATED DATA COLLECTION (ADC)

“report writer” type functionality, or else allow the data to be exported to a spreadsheet or database for further analysis.

- **Work task management:** Related to the above, higher level WMSs determine the amount of labor required to meet various work requirements. This allow supervisors to ensure that the right resources are available to meet the work requirements at hand (e.g., to complete pick waves to fill scheduled carrier appointments); it is also a tool that can help balance interrelated activities to ensure that the flow is smooth and that operators are neither overwhelmed nor underutilized.

Alan McDonald is a DOD improvement advisor with FORTE, a distribution operations improvement firm specializing in the plan, design, implementation and optimization of automated distribution centers. FORTE can be accessed at www.forte-industries.com or by calling 513.398.2800.



**THINK
INSIDE
THE BOX**