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WAREHOUSE MANAGEMENT FOR MANUFACTURERS:

Why Extended ERP Might Be The Right Choice

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04.01.2016



Providers of enterprise resource planning (ERP) integrators have seen many approaches to distribution automation. Adding a warehouse management system is a logical option for many manufacturers, but this article provides insight into another option: extending ERP distribution capabilities to take advantage of a single receiving, inventory, shipping database.

Any manufacturer that has a substantial number of shipments from a distribution facility has likely considered bringing a degree of automation to its warehouse and shipping functions. For some companies, a full-blown *warehouse management system* (WMS) is a necessity, particularly if their operation relies on electronic store fronts, high speed cross docking, truck capacity planning, robotic picking, automated racking and retrieval systems, and other pure distribution center requirements.

However, for the vast majority of manufacturers—even those that complete a large number of shipments every day—a WMS that is separate and distinct from their other business systems will be counterproductive. Even a full integration of WMS with an enterprise application like *enterprise resources planning* (ERP), designed to eliminate entry of the same data into two different systems, will result in redundant systems and data along with the associated reconciliation issues. Moreover, WMS-ERP integrations that rely on batch updates will create opportunities for inaccurate information and will often slow operations down rather than expedite them. Dual systems can also come at a substantially greater expense than a unified system would for many obvious reasons, the impact of less than ideal decisions notwithstanding.

This article explores the drawbacks of integrating stand-alone WMS and ERP systems, and makes a case that, for many companies, it makes more sense to extend the manufacturing application used by the organization as a whole as opposed to integrating with an entirely new technology stack. Also offered is advice on selecting and implementing a warehouse automation solution that works well with a client's manufacturing enterprise suite.

BASIC WAREHOUSE MANAGEMENT VERSUS WMS

At a certain point in a manufacturing organization's development, management will begin to look for ways to automate the movement of materials from manufacturing to distribution, and into the customer's hands. A broad spectrum of WMS can in fact help manufacturers to better use their workforce by

automating the picking, staging, and shipping processes. The ultimate goal, of course, is to increase the speed and reduce the cost of getting the right product to the right customer at the right time.

The primary business trigger that often prompts a company's management to begin considering some type of WMS solution is the sheer number of shipments the company has to handle each day. As the number of shipments increases, it becomes more attractive to move the distribution process from an order-by-order environment toward an arrangement that makes better use of labor in the warehouse.

Warehouse management can also help automate the work of warehouse laborers who might be picking different items that are all part of the same order. Through automation, these workers can reliably be directed so that these items are staged at the shipping area for proper inclusion in the combined order.



Moreover, it should be the goal of managers planning a warehouse management project to have warehouse workers use handhelds or other mobile devices to receive instructions on what to pick and pack. The use of such devices eliminates the need for workers to travel repeatedly to and from a centralized dispatch station, where pick lists are printed as hard copies and distributed.

Most manufacturers are producing a product that will be moved into an on-site or close by warehousing or shipping area. If they are already running an ERP solution they have access to some pre-existing logistics functionality, which is integrated with manufacturing and inventory processes and information on the customer orders to be fulfilled.

EXTENDED ERP



Extending that existing enterprise suite with straightforward technology designed to direct workers in the warehouse can be easily achieved without a stand-alone WMS solution. Moreover, the extended ERP approach can facilitate the more comprehensive approaches to picking and warehouse management, including the following:

- *Batch and wave picking.* Batch picking involves combining the picking requirement for several orders, and then sorting the materials for individual orders as the picker goes along. Wave picking entails accumulating a large number of orders for picking as a batch.
- *Picking by carrier.* For some companies, it makes sense to pick by carrier, particularly if they have a large number of small shipments that need to be packaged according to carrier specifications (**UPS** or **FedEx**, for example), while larger shipments are treated much differently, since they are to be shipped by the pallet or by truckload.
- *Communicating picking information to warehouse workers via mobile computers in multiple languages.* Even companies that are strictly domestic in their footprint likely employ people for whom English is a second language, and can benefit from making other languages available in the warehouse.
- *Task Management.* Automating the generation, distribution and management of warehouse tasks for workers is a common feature of WMS systems and can be used when extending the ERP system for not only warehouse tasks but manufacturing tasks such as replenishments, raw material picking for jobs or shop orders, cycle counts, dock to stock, etc. Tasks can be generated automatically using a pre-built set of business rules and user profiles or generated manually individually or from a task pool.
- Accommodating requirements to pick and ship items according to *first-in, first-out* (FIFO) or in accordance with expiration dates.
- *Picking products that are subject to revision levels.* Revision levels present warehouse workers with the challenge of looking at two of what appears to be the same item, but that, in fact, differ on the basis of detailed revisions or engineering change levels, which are tracked in the manufacturing system.
- *Material Allocation Management.* ERP systems don't necessarily allocate finished goods or materials in a manner that is most efficient for picking orders whether they be customer orders or shop orders. Extending the ERP system to allow materials to be unallocated, picked and reallocated to the appropriate order while maintaining the integrity of the ERP allocation process is key to maximizing the efficiency and speeding up your warehouse or shop floor.

- *Utilizing customer GTIN or UPC labels.* When needed for packaging or containerization processes or on a customer requirements basis, GTIN or UPC labels can be generated and applied at time of packaging and used for shipping or when most efficient during the manufacturing process.

We believe that many companies will benefit more from extending the logistics and shipping functionality within an enterprise environment than by rolling out a full-blown WMS. After working with a number of companies that have integrated full-blown WMSs with ERP systems, we have found that there is a definite gap between ERP distribution capabilities and WMS distribution logistics.

Furthermore, these full-blown WMSs duplicate many of the systems within the ERP environment and deliver numerous capabilities most manufacturers will not use. Most manufacturers simply need a few pieces of key automation, logistics support, and labor- and productivity-enhancing features; they don't need all the bells and whistles of a complete WMS.

In our experience, we have had success extending the warehousing capabilities of ERP systems by blending them with our manufacturing solution suite, which includes data collection, mobile devices, truck mounted devices, and the ability to direct workers to the next task. This approach delivers functionality for picking and warehouse automation, driving efficiencies to and automating the work of people performing those functions. A WMS might accomplish some of the same things, but it brings the added cost of additional licenses for the application and database, additional server hardware, additional support and maintenance fees, and additional staff time to maintain expertise on two disparate systems. Moreover, the integration of the ERP system and WMS will add cost not only in the initial implementation, but during each upgrade as well, since the integration will need to be "uplifted" to accommodate new software for both the ERP system and the WMS.

Furthermore, integrating a WMS technology stack with a pre-existing enterprise suite can effectively slow down processes and sabotage lean inventory initiatives. The typical means of integrating a WMS and a manufacturing system is to periodically refresh data in the WMS in a batch process from the manufacturing software. In situations when product must be shipped literally right after it comes out of manufacturing, that batch integration is often not fast enough. In these situations, an up-to-the-minute snapshot of the manufacturing system is essential.



Additionally, many companies today are turning inventory too quickly to accommodate a batch process update to a WMS, and they can experience even more problems with visibility of current inventory from the manufacturing side. In a make-to-stock environment, manufacturers are always trying to make just enough product and have the correct amount of finished goods in inventory. Lacking up-to-date visibility of what is in the warehouse, the manufacturer has a harder time managing that lean inventory, and it might make too much of a product. Moreover, product that shows up as still available according to the manufacturing system in the warehouse may have in fact already been shipped, making it impossible to make good on promised delivery times.

PLANNING THE WAREHOUSE AUTOMATION IMPLEMENTATION PROJECT

When preparing to implement warehouse automation technology—whether a full-blown WMS or tools to extend existing ERP functionality—a number of hard questions need to be asked. The decisions necessary to chart a course of action should not be rushed, as the results of these decisions will impact your business for many years to come. Here are a few guidelines:



1. Handle diverse customer needs.

Understand clearly what your customer requirements are. Many organizations have a single, static process they follow when serving their customers. Yet most customers have varying needs and requirements. Understanding and categorizing the various needs of different customers can allow

implementation of a more flexible solution, as opposed to a rigid warehouse solution that meets 100 percent of the needs of only 50 percent of customers.

Consider for a moment that a business has high-volume customers, high financial reward customers, demanding customers, and low-volume customers. A manufacturer may have customers in different industries, which need things to be done in a slightly different way. In some cases, the expectations of, or regulatory demands placed on, the customer's customer may impact the shipping process. In situations like this, integration may be critical not only with the manufacturing and inventory systems, but with the *customer relationship management* (CRM) system as well.

Diversity in order size alone may require parallel picking and shipping systems: some customers may order by the hundred gross, while others order by the dozen. In this case, 50 percent of orders might be packaged for delivery by UPS, while others might be palletized and prepared for intermodal transport.

2. Respect the nature of the workforce.

In planning a warehouse automation project, it is critical that management understands the capabilities of its workforce. Can employees handle the learning curve of various automation solutions, and will they be receptive to the resulting change? Remember that employees may need a very concrete overview of how automation will affect them and benefit the company, particularly if warehouse staff is performing manual processes.



3. Attain interdepartmental cooperation.

While warehouse automation is facilitated by technology, it is not strictly an IT-driven initiative. The ultimate solution must be driven not only by customer needs, but by 1) the business intelligence requirements of manufacturing, which include the need to know what is in the warehouse at any given time, and 2) senior management, which needs to assess inventory levels and monitor business performance.

Senior management must be directly involved at the early stages of an implementation plan to establish goals and deliverables. Once the goals are identified, it is essential that key and knowledgeable members of manufacturing, distribution, and IT departments work closely together to achieve those goals. In most cases, a lot of the information necessary to achieve warehouse automation resides in the manufacturing and CRM systems, so a thorough audit of existing systems and functionality should be performed prior to selecting additional technologies to add to the mix.

ABOUT THE AUTHOR



David Barks is vice president of Radley Corporation. During his 23 years in this position, his responsibilities have included management of *research and development* (R&D), operations, and sales. Barks has authored numerous white papers and articles on shop floor automation, and speaks regularly at trade events. Prior to joining Radley, Barks worked for a pioneering voice messaging firm, where he was responsible for telecommunications systems integration development, testing and support, before moving into a major account sales role in the Federal Systems Group.