

WMS is for Distribution and Shipping Companies, Not Manufacturing, Right?

By

Thomas K. Ryan

Principal

TKR Consulting Associates

103 Arbor Ave.

West Chicago, IL 60185

Phone: 630.876.0607

Email: tomryan@tkrconsulting.com

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Warehouse management systems (WMS) are for distribution and shipping companies, not manufacturing, right? Wrong! WMS can be integrated with shop-floor control and other manufacturing systems to more effectively control inventories, track lot numbers in assemblies, and insure the availability of components/raw materials to the manufacturing process. In this article, we will discuss the key features of a WMS that are specifically applicable to manufacturing environments.

As manufacturing operations continue to squeeze their inventory levels through better shop-floor scheduling and production schedule management in collaboration with their raw material and component suppliers, they are seeing that they have gained most of the advantage they can through those means and it is still not enough.

Many are looking into their receiving and shipping operations and are realizing that even though they may not be distribution operations, they still have warehouses attached to their manufacturing operations. Yes, I did say warehouses. They have at least two, a raw material and components warehouse and a shipping/distribution warehouse. These two operations are usually on opposite sides of the manufacturing process and are often separate departments. Some operations even have a work in process (WIP) warehouse. Manufacturers are now examining whether warehouse management systems can be applied effectively to their environments. The overwhelming response is YES.

The examination of the fit of WMS in a manufacturing environment begs the question of what can the manufacturing execution system (MES) or shop-floor control systems do to address these issues? Will they meet the needs without forcing the addition of a WMS?

The reality is that for most manufacturers with complex raw material/component issues or the need to maintain a stock of finished goods to support customer service commitments, the MES or shop floor control system is not adequate to the task. The good news is that many WMS functions available as base line capabilities from packaged solution providers can be used to meet these needs. Additionally, WMS systems have always had to interface with other systems to function effectively. Thus, the merger of a WMS in support of a MES is a relatively simple exercise for the WMS vendor.

Let's examine how some of these WMS functions will support the manufacturing operations.

1. First is the establishment of strong lot control disciplines. WMS receiving functions support specific identification of a receipt against the purchase order (PO) that authorized it. Additionally, the tracking of inventory within the WMS, when coupled with the use of bar-coded license plates for appropriate units of inventory, allows the identification of lot number with each element of inventory in the raw material warehouse (pallet, case, etc.). This identification is retained as long as the inventory is maintained and can be supplied to the MES when the raw material is delivered to the production line.

The receiving function works equally well on the finished goods side of the operation. The newly manufactured goods can be received accurately into the WMS and validated against the production order. As the units of inventory are

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created, the appropriate lot number can be captured or assigned. Again, this attribute of inventory is retained until the product is shipped.

The capture of which lot was shipped to which customer can be specific down to the day, hour, lot number, customer PO, originating production order, and then the roll up of raw material lot numbers can be matched with what the WMS provided the MES and the MES view of when these lots were consumed in the manufacturing process. This capability allows very targeted, precise recall operations triggered by specific quality information from a specific vendor about a specific part or component.

2. Second is the management of inventory available for production use in the manufacturing operation. It is possible to use the replenishment functions that a distribution based WMS would use to manage forward picking to manage the replenishment of raw materials to the manufacturing line. This allows operations to minimize the inventory in the manufacturing environment and to maintain exact control of what inventory is in where in the entire manufacturing process. It ensures a steady flow of materials and components to support a continuous manufacturing process. This capability gives control of inventory that is not typical for most manufacturing operations. No longer is the visibility of what raw materials are on the shop floor lost.
3. Third is the use of kits and bills of materials. Many WMS have bills of material (BOM) or kitting support functions. The integration of this functionality with the MES allows the WMS to control the delivery of an array of parts, based on the BOM, to the appropriate workstation in manufacturing, thus supporting batch operations. Also, the use of the BOM can support postponement strategies within the manufacturing enterprise.

Specifically, the manufacturing operation can produce components that are received and stored in the finished goods warehouse. They can then be "married" with other parts or accessories based on the customer's orders. Thus, last minute customization or accessorizing can be accomplished without incurring additional production cycles and with less total inventory than building and stocking the final stock-keeping units (SKUs) would incur.

The use of WMS in a distribution warehouse is well known to provide tighter inventory control of reduced inventories, more effective and productive utilization of staffing, and greater total throughput from the facility. These values can be added to similar benefits from a MES or shop-floor control system by adding the WMS to control both the raw material/component and finished goods/distribution component of every "warehouse" attached to a manufacturing operation.

Additionally, these functions can be gained from off-the-shelf packaged solutions that are available from multiple vendors today. The integration of these two systems is well within the demonstrated capabilities of most WMS vendors. The net result is that manufacturing operations can realize the next level of inventory reduction and control, lot control discipline, and productivity necessary to enhance their competitiveness.