

department BUSINESS SURVIVAL STRATEGIES

by Thomas R. Cutler

Tier 1 Warehouse Control Systems

Defining a Tier 1 warehouse control system (WCS) is necessary for appropriate technology selection. Distributors and manufacturers handling distribution functions are seeking guidelines and criteria to determine if a generic warehouse management system (WMS) sold with a new enterprise resource planning (ERP) will suffice; it will not and here is the explanation.

The primary feature of WCS is its control capabilities versus simply a visual interface as provided by a human machine interface application. The primary objective of WCS is to manage the routing of product, work-in-process, and inventory through a network of material handling equipment. Other features of WCS are that it provides a uniform interface for a variety of equipment to the upper level management systems; it is highly modular with the ability to be easily re-configured to adapt to changing business requirements or layouts; provides both historical and real-time information; and enables real-time control decision based on data-centric information.

The distinctions between a WCS and a WMS are significant. The role of WMS comprises responsibility for the entire warehouse; material handling automation, and static locations. WMS also acts as a business system focusing on the "business needs" of the warehouse. At the same time, WMS maintains a vast amount of information such as inventory data, customer orders, and historical data. It processes large amounts of data in a non real-time mode to arrive at the daily workload of what is to be processed by the material handling system on a day-to-day basis. WMS employs highly standardized software products that provide well defined services. Customized modifications to WMS can be extremely costly and threaten future upgrades and support.

Machine Controls/programmable logic controllers (PLC) are responsible for a localized area of the warehouse, such as a conveyor segment, machine (crane, carousel, palletizer) and are focused on the mechanization and implementation needs of the warehouse. However, machine controls/PLCs are bit manipulators not data manipulators. They lack functionality to handle data strings and files.

Other features of machine controls/PLCs include being able to respond to events in real-time; custom programmed to the warehouse site; and are developed in a technician friendly language (ladder logic), which allows for easier trouble-shooting techniques.

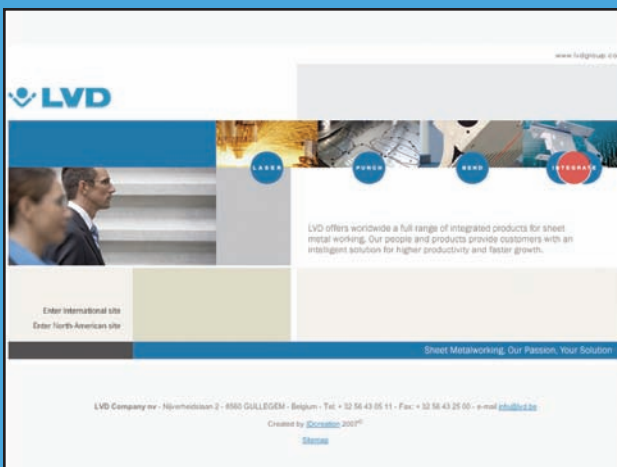
According to Jerry List, vice-president of QCSOftware, "The integration of functionality occurs because the warehouse control systems' scope encompasses the entire material handling automation. It coordinates the interfaces between the various localized automation controllers, such as conveyors and AS/RS (Automated Storage and Retrieval Systems). The WCS also establishes data management responsibilities in real-time and accomplishes this by working with a subset of data provided by the WMS. Unlike the WMS, the WCS is a modular control system that is custom configured to plant layout; it provides a combination of Supervisory Management screens as well as Diagnostic utilities for the warehouse technicians." Typically, a WCS is

for high volume distribution centers; companies that process thousands of orders per day and utilize conveyor. There are corresponding technology features that must be identified to ascertain Tier 1 WCS standing. One feature is that it must be an open system offering platform independence. As a result, it must be able to support various operating systems if the system is to be scalable; it must be able to run under a variety of operating systems; it must be supported under multiple platforms; and the flexibility to be deployed on the platform of the customer's choice facilitates support by in-house IT staff. The WCS system must also serve a wide range of functionality. Adaptability is another key feature. WCS handles the differences in communication protocols to various manufacturers' equipment of similar function so that the WMS is not affected, (different type of sorters, cranes, will not impact the functionality).



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