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TOMPKINS ASSOCIATES

How to Choose a Material Handling Control System

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Businesses continue to demand increased efficiencies from their material handling systems. An important consideration is how to make better use of the control system to support supply-chain visibility and manage the flow of product through the facility. A control system upgrade can result in significantly improved product flow and extend the life of an existing material handling investment by years.

The first step is to recognize that a control system upgrade may be in order. The types of problems that a control system upgrade may solve include:

- Product shrinkage due to mis-sent shipments.
- Lost productivity due to poor system fault diagnostic tools.
- Operational downtime due to improperly designed material flow.

Among the benefits realized by operations that have upgraded their material handling control systems are:

- Increased productivity (daily shipments at one site rose 20% due to controls upgrades).
- Increased accuracy of delivery (reduction of 5% mis-sort rate to substantially less than 1%).
- Increased maintainability and operability.

The key to achieving these results is to understand the people, processes, and technologies that can unlock the potential of your material handling system.

People: Consult All Stakeholders
Your material handling system is more than just conveyors, motors, and other hardware. It is also the people who make decisions about picking, shipping, and maintenance using the data provided by your material handling equipment (MHE) control system. These people must be consulted before you make a decision about a new control system. Stakeholders in the new control system include operations staff and management, and also less-obvious groups such as the marketing, IT, and maintenance departments. Each stakeholder will have ideas about the data they would like to see provided by the new control system. These requirements must then be evaluated and balanced against constraints of cost, complexity, and schedule.

Processes: Why Have We Always Done It That Way?
A hidden benefit of upgrading your control system is that it will drive you to consider your business processes in a new light. As you consider the data-collection and decision-making requirements of your new control system, it will lead you to question those "We've always done it that way" processes

surrounding the MHE system. You will also have the opportunity to plan for control system integration into your supply chain visibility initiatives.

Before selecting your new control system technology, you should formalize your control system and business-process needs in a requirements definition document. This requirements definition should be functional in nature, rather than technology-specific. In addition, you should identify the education and training needs associated with the new control system. Improvements to system and process efficiency always have some impact on work-floor activities and culture. You need to plan for these changes and their associated training and preparedness activities as early in the process as possible.

Technologies: Weigh the Advantages

Once you have your business and system requirements baselined, you can narrow the choices of available controls technologies to best meet your needs. In general, this means choosing either Programmable Logic Controller (PLC) - based controls or software solutions hosted on a personal computer.

PLC systems have been a traditional choice for many years. They offer the advantages of familiarity and (usually) commonality with existing systems. PLC manufacturers continue to innovate to enhance the data handling and data exchange capabilities of PLCs. In particular, look for PLC solutions that have the ability to use Ethernet communications to share MHE system data with the rest of your enterprise using custom messaging or the OPC standard.

Software control solutions hosted on a personal computer are often described as "Soft PLCs" to emphasize their hardware control abilities. Such hardware control abilities are now a mature presence in the marketplace with many stable, proven offerings. The advantage of PC-based controls lies in their increased data-handling capabilities. By their very nature, PC-based controls can use all of the data analysis and presentation tools developed by the IT community. They offer the possibility of extensive integration into the enterprise computing environment and support for such technologies as data mining and web-based reporting.

One emerging technology based upon the explosive growth of wireless networking (802.11b/g or "WiFi") is wireless control systems. These systems, while still evolving, have found acceptance in such environments as outdoor storage yards or equipment docks - areas where wired controls are impractical but the need for item control and data integrity exists.

In summary, there are many good controls-technology options available in today's market. The key to selecting the best control system for your situation is to start by thoroughly understanding the people and processes supported by your material handling technology. For more information, go to Tompkins Control System.