Investigate before you integrate

Proper integration planning can assure that your new conveyor functions seamlessly with other hardware and control systems.

In many ways, integration of a new conveyor system is like preparing for the big game.

Think of yourself as the coach. The goal is to have your new conveyor communicate and coordinate with other materials handling equipment and existing information systems. Your game plan is to seamlessly integrate all of the individual components of the new materials handling team. Software and controls are your playbook.

In this scenario, "The entire network infrastructure needs to be planned well in advance," says Randy Hardeman, vice president of research and development for Fortna, Inc. Fortna is a materials handling distributor and integrator headquartered in Wyomissing, Pa.

Hardeman says that the first step of integration is to define all of the information that needs to pass to and from the host system, the conveyor, and other materials handling equipment. The host may be a warehouse management system, a manufacturing execution system, or other management software. Every piece of equipment that has a need for some type of control also needs to be identified.

"There are lots of thinking machines on the floor that control equipment," adds Hardeman.

A control vendor has to be selected along with a connection system. Ethernet-based controls are ideal for the factory or warehouse floor, as they can be easily monitored or controlled from a PC located just about anywhere in the facility or even offsite.

"TCP/IP is really the language of the world now," says Hardeman. "It allows control of just about anything."

In some cases this may mean upgrading legacy systems to assure they will work with Ethernet. Programmable controllers, for instance, may be replaced with PC-based controls. A serial connection may also be required to integrate a legacy system.

Hardeman next develops a functional document that details the required communications specifications. This includes information flowing to and from the hosts, control requirements, and data rate specs. One communications server is usually designed to handle routing of the information.

The data transfer rates are extremely important, as the integrator needs to make certain they will be adequate for the desired throughput.

"If you need to get 100 boxes out the door each minute, but you can message only 98, you are in trouble," observes Hardeman.

Once all the integration planning is completed, it is time to test the system. Fortna uses simulations for some of its testing and also evaluates individual modules before shipping product.

"You want to make sure that all the information gets to where it needs to go before you ever get on site," adds Hardeman.

New modular designs introduced in recent years make testing and troubleshooting problems much easier.
The final step in integration comes after installation, during the startup period. Throughput testing makes sure that the system matches the design parameters. The control code helps here to uncover any flaws in the system.

"The control code is the front line of troubleshooting," adds Hardeman. "If you have good control code you can find any problems in the pneumatics, electronics, and mechanical systems that may exist at start-up."

If all works as designed, productivity should follow, and you have won the big game.

Next month: Installation considerations