Intelligent Design

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There was a time when the simple way a conveyor functioned was fully contained within its name: it conveyed materials from one place to another.

But as equipment requirements in manufacturing facilities and distribution centers have advanced past the basics, even the conveyor has gone from simply a belt, some rollers, and some rails to a high tech piece of equipment that can talk to the user by way of integrated automation systems.

“Manufacturers applying intelligent, automated conveyor systems are increasing their operational benefit, lowering their maintenance costs, while gaining overall life expectancy and reliability,” explains Boyce Bonham of Hytrol Conveyor Company.

Adds John Kuhnz of Hartland, WI-based Dorner Mfg Corp, “Often times the conveyor is the delivery system in the production line and requests for real time data is on the rise. Tailor fit controls and sensors are used to meet these new demands,” he says. “Customers are able to have conveyors turn on and off dependent real time production input. The conveyor literally looks up stream and will turn on or off dependent upon what it sees.”

Maintenance Benefits

Many of the benefits derived from intelligent conveyors are maintenance-related. According to Joe Morris of pneumatic conveyor system manufacturer Cyclonaire, by creative programming and monitoring of field devices, an operator can reach the point of true “lights out” conveying, and at the same time monitor cycle times, cycle rates, hours of usage, and many other variables that can be used to predict maintenance requirements, even in advance of failures. Adds Morris, “With the addition of load cells to a pneumatic conveyor, throughput rates can be monitored and maintenance requirements related to tons handled.”

Another point to note is that the message becomes loud and clear, reducing the likelihood of user error through misinterpretation of the related maintenance information. Through the use of PLCs monitoring machine function and operation, “problems can be identified and reported to the operator immediately, and corrective action literally spelled out to the operator on the HMI (human machine interface),” Morris says.

Hytrol’s Bonham agrees, citing the tremendous improvement in the maintenance costs associated with automated conveyor systems due to the technology being used today. “Systems are being designed using precision components and processes, along with the use of electronics in lieu of mechanical components that

require regular maintenance," he says. "Therefore the maintenance costs portion of the total cost component is often quite low compared to operation cost benefit."

Adds Kuhnz: "In addition, sensors can track key conveyor metrics like bearing temperature or hours of operation and provide feedback electronically that can be analyzed so the appropriate action can be taken. "

Transforming Labor

Other benefits to getting high tech with your conveyor systems is in the ability of this equipment to take the labor out and move it to more value added activities. According to Bonham, it's important to keep this in mind if you're dealing with a bit of sticker shock over the investment. "Even though automated conveying solutions do require an initial investment, the return on that investment can be tremendous," he explains. "The conveyor system can practically eliminate the labor cost of moving goods and allow a manufacturer to focus their labor on true value added processes within the operation."

And the elimination of human involvement can mean more than just improved maintenance—it can create more of a self-contained system that can work without human supervision, and be more accurate. "Higher accuracies are achieved by a combination of material handling methodology and the sophistication of the weighing equipment," explains Morris. "With the addition of automated controls including primary operator inputs as well as internal machine inputs, the machines can reach a point of not only operating self-contained but also self-diagnosing conveying problems and taking corrective action without operator input, thus continuing operations unattended."

Innovation

Considering the major benefits that can come from the aforementioned features, many conveyors systems manufacturers have responded with fresh designs based on customer demand for more intelligence.

"With the miniaturization of sensors and controls, often times the devices needed to provide this (complex) data can be designed right into the conveyor and can feed the customers' existing PLCs," says Kuhnz. Dorner has also responded to user need for more web-based training outlets, in order to help with the learning curve of some of the more complex equipment. "We are getting more and more requests for video instruction on key aspects of our conveyors. In response, we have created a DVD that goes with each belted conveyor that has instructional video from initial conveyor set up to belt change and tracking. In addition, customers are continuing to request easier product searches for detailed information."

According to Brandy Lloyd of Hytrol, more innovations are coming down the road. "Energy-efficient and zero-maintenance remain at the forefront of our designs," he says. "Customers need the ability to integrate picking and sortation systems with smart conveyor controls tied directly to various ERP or WMS software systems. Tracking and real-time feedback are critical when providing a totally integrated

solution. Hytrol's E24™ and EZLogic® Accumulation System are prime examples of how we continue to remain at the forefront of conveyor technology."

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