

Manufacturing Innovation Insider Newsletter

Modular Conveyor System: "Quick-Change Artist" Where Traditional Conveyor Systems Hold Back the Food Industry

A modular conveyor system can help optimize production, incorporate accessories that enhance quality, and provide serviceability that increases uptime while lowering replacement costs.

With the profusion of regulations, microprocessor-based processing equipment, formulation, testing, and other issues, the last thing that food packagers need to be worried about is good old-fashioned material handling. Yet, this is an area that has become more sophisticated too and can definitely impact both quality and bottom line. Conveyors and accessory fixtures that are not precisely integrated into a production scheme can diminish productivity and even compromise quality standards.

Production optimization is compromised when the conveyor system does not include all the right features, either because they are viewed as expensive or are unknown to system designers. In other cases, traditional conveyor systems that start out fitting production needs exactly become "de-optimized" due to changes in production equipment causing the conveyor systems to no longer provide a precise fit.

When a conveyor system is holding you back, you may also hold back on product design or packaging changes, which can be devastating in the marketplace. A recent National Food Laboratory (Dublin, CA) study concluded that up to 56 percent of consumers have recently purchased products they would not have purchased otherwise due to new and exciting packaging. Yet some food packagers are not able to even contemplate packaging changes because their conveyor systems are inflexible.

In many situations, the flexibility required to provide the right features and fit especially in changing



Carriage Candy Co. cut cooling time for their Kapow! brand lollipops from 20-25 minutes to just 10 minutes using DynaCon's modular conveyor with variable-speed drive and attached cooling fans.

production environments is best supplied by modular conveyor systems. A truly modular conveyor system not only helps optimize production, it can also incorporate accessories that enhance quality and provide serviceability that increases uptime while lowering maintenance and replacement costs.

Tholstrup Cheese, USA, located in Muskegon, MI, has a short run conveyor system that requires flexibility including adjustable length and variable speed. Headquartered in Denmark, Tholstrup is world-famous for its cheese varieties. The Muskegon plant produces Bleu, Brie, Havarti and Camembert. A six-foot DynaCon® system (originally 10-ft.) carries cheese products from a scale to the packaging de-

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partment. Midway between there is a labeling machine located over the conveyor that applies labels to various types and sizes of cheese products.

"It is important that we can synchronize the speed of the conveyor with the label dispenser," explains Torben Siggaard, General Manager. "Sometimes that requires adjusting the speed of product flow, and the easiest way to do that is adjust the conveyor speed. Some products are running at 44 products per minute, some at only 12 per minute. That's a great deal of difference, and with our variable-speed conveyor drive we can adjust the speed easily on the fly."

Siggaard points out that a major advantage of a modular conveyor system is the ability to make adjustments for unforeseeable circumstances. "The food processing industry uses a lot of equipment that is manufactured outside the U.S.," he says. "So, it is a significant advantage to be able to adjust the length or speed of the system to fit the requirements of new processing equipment that may come from anywhere in the world. Also, since the DynaCon equipment is simple to service, there are no delays in making conveyor adjustments."

Serviceability is a major appeal of the modular conveyor system, and enhances its flexibility. In effect, it is the ability to reconfigure or even completely re-engineer the system, adding a variety of capabilities — without having special in-house engineering capabilities. Any number and type of module can be integrated quickly and easily. For example, accessory items available from DynaCon include a Cooling Tunnel Module to cool products via air pumped into a covered section of conveyor; a stainless steel Water Bath Module with a built-in cooling element; a Drop Zone Reinforcement Module is available to absorb the shock of impact; and Exit Chutes that are used to control product flow by channeling products in a particular direction.

When needed, accessories and replacement parts for these systems can be shipped from Dynamic Conveyor overnight, saving days or even weeks that would be required for the repair or replacement of conventional fixed conveyors.



Manufacturing applications of modular conveyor systems

Carriage Candy Company, London, Ontario found that a modular conveyor with variable-speed drive and attached cooling fans provided a remarkably cost-effective solution for cooling its Kapow! Pops brand lollipops by 215 degrees (F) on a relatively short conveyor run of 14 feet en route to the packaging department.

In the past it took 20-25 minutes to cool lollipops in molds riding on a conveyor belt between the kitchen and wrapping department. After installing a DynaCon Modular Conveyor System, that cooling time has been reduced to 10 minutes, more than doubling productivity on the line.

"Before purchasing the modular conveyor we were convinced that we could improve product flow. We already had the kitchen capacity. All we needed to do was efficiently lower the temperature of the lollipops," says Bob Edgecombe, Carriage Candy principal and Plant Manager. "Initially, we thought about purchasing a cooling tunnel for our existing conveyor. But they were expensive and might not be adaptable to our future needs. So we looked at the DynaCon system." Although Edgecombe was impressed with the solidness of the high-impact plastic conveyor sections and their availability in a variety of widths, most important was that the system offered a wide array of accessories, including cooling fans, that integrate with the conveyor modules.

Carriage Candy purchased a 14-foot modular system with 32 attachable fans that cool the lollipops in trays riding on a link belt. A variable-speed drive enables the conveyor operator to adjust the speed of the belt as required to ensure that the candy is sufficiently cool when it arrives at the wrapping department.

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"The fans draw the air from underneath the belt and blow it up onto the molds, and the belt is open so that air is coming through the belt, hitting the molds and cooling them down," explains Edgecombe. "The system is highly efficient, expandable, easy to service and it saved us a lot of money."

When Carriage Candy ordered its system, a DynaCon sales engineer inquired about possible future reconfigurations and new applications that the customer might have. When Bob Edgecombe said that eventually he planned to integrate a 90-degree radius turn and lengthen the conveyor run, the engineer advised him to upgrade the order to an appropriate drive and belting. When Carriage Candy moves ahead with the new configuration, they will be able to do so with almost no delay in production.

"For us to reconfigure with a 90-degree radius turn all we have to do is buy that conveyor module," Edgecombe explains. "We can extend the belt 18 inches or 8 feet, just by popping in the necessary number of 18-inch modules and adding a number of links to the belt. To clean the belt, we take it right off the conveyor, scrub it down in the sink, dry it off and put it back on. It's quick and it's easy. It's a beautiful system to work with."

Al Mitchell, President of Mitchell Associates, a Milwaukee, WI-based manufacturers rep firm specializing in system integration, says that food products are among his favorite applications for modular conveyor systems. He says because they often involve "indexing," which requires that items must be conveyed in specific quantities according to exact timing.

With a variable speed conveyor motor and indexing capabilities, the DynaCon conveyor is ideal for applications such as placing flavor packets in soup mixes. In that setup, the major soup ingredients are poured from a filling machine into master packages. In a secondary operation, the conveyor indexes forward exactly 13-1/2 inches 60 times per minute and deposits a flavor packet into the master soup mix package. That indexing capability can improve the efficiency of many applications.

"I've never seen a conveyor system with that many features," adds Mitchell. "It fits beautifully into many production and packaging schemes, and is a 'quick-change artist' that maximizes usage and ROI like nothing else on the market."

Jill Batka, President of Dynamic Conveyor, says that the DynaCon system is not only used in food processing, but also for harvesting produce. "We've sold systems for picking operations, such as a blueberry farm, where equipment has to be both flexible and highly portable, a prerequisite for many fruit and vegetable harvesting operations."

Batka says the modular conveyor system has also been used very effectively in secondary agricultural operations, for example, cleaning onions as they come in from the field. The raw onions come in big crates and are dropped into vats of water for cleaning. The onions are drawn out of the water vats on DynaCon conveyors, are sprayed, trimmed and transported to packaging machines.

"The food industry is so large and diverse that the applications for our modular conveyor systems seem to be limited only by the size and weight of the product. Other than that, it appears to be a question of imagination," Batka says.

For over 20 years Dynamic Conveyor Corporation has been a source of innovative conveyor systems for industry, including the lightweight, "truly modular" DynaCon system, the alternative to traditional heavy steel conveyor systems that require custom fabrication and cannot be modified without considerable expense. The DynaCon system is appropriate for today's manufacturing techniques, where work flows and systems must be adaptable to ever-changing processes and product requirements.

For more information about DynaCon conveyor solutions, contact Dynamic Conveyor Corporation, 5980 Grand Haven Road, Muskegon, MI 49441; phone toll free (800) 640-6850; fax (231) 798-9583; or visit the web site: <http://www.dynamicconveyor.com/>

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