



Rapid Laner Provides Low Product Inertia at Demanding Speeds



Nercon's engineering specialists recently developed the Rapid Laner, a new laner solution that provides high speed sorting to individual lanes. This equipment and laning method has several benefits. First and foremost it allows each product to be diverted individually. It is expandable to nearly any number of lanes by adding divert arms. Also, the equipment is simple and easy to maintain. The only moving parts are the divert rails. Due to the open design, jam occurrence is greatly reduced and easily removed. Further, if product rates don't require servo speed, this concept can be easily converted to a pneumatic system.

The laner was developed to answer a particularly challenging laning application where the design criteria specified a rate of 250 - 9.5"L parts per minute, coupled with the added specification that any one product needed to be able to be delivered to any lane. Essentially the laner needed to be able to shift on the fly between every product. The reason behind this requirement was a future desire to add color recognition to the laner to sort random product into lanes based upon their color.

After careful analysis of the application, Nercon's conveyor engineering specialists decided that the solution required minimal product movement and low product-to-laner inertia to allow the system to divert one product per lane. The Rapid Laner did just that, by using several servo powered divert rails to divert from the main trunk line to various lanes, with low inertia at very high speeds.

Other laning equipment was considered, but traditional laning solutions (servo or otherwise), typically involve the side to side motion of a gate. Commonly used laning systems that utilize guide rails, powered side belts or extendable guide rails did not meet the criteria of sorting "any one product to any one lane". Traditional laning equipment cannot divert product to lanes fast enough between small product gaps. In this application, these systems would have resulted in too much inertia and reduced life expectancy of the system. Ultimately, the Rapid Laner provided the speeds and instant product sorting, with the smallest footprint compared to other solutions.

The equipment exceeded the customer's rate specification of 250 PPM. Testing has shown product rates of 300 PPM for a 9.5" long product. Rates up to 500 PPM are obtainable based on a combination of factors that include product size, weight and the number of units delivered per lane per divert.



Watch the movie demonstration on-line, www.nercon.com, click on News! The movie shows normal speeds and demonstrates the equipment in slow motion so the concept can be viewed more easily.

The Accumulation Conversation

Accumulation: Replace Bottlenecks with Buffer Zones to Increase Throughput

The Accumulation Conversation. Faster changeover, more automation and greater line speed are persistent issues that Operations and Manufacturing Managers face in production line planning. But even the fastest machines and quickest changeover process may not optimize production line volume. The true efficiency of the system is the rate at the end of the line. Buffering and accumulation are the keys to making high speed lines work successfully to maximize throughput.

Conveyor Speak. Accumulation is the process of collecting products for temporary storage. Buffering is the ability to collect products that can be delivered at a different rate than it is received. Both conveyors and accumulators can be designed with buffering capability. One more definition, throughput refers to the production volume of the entire line from beginning to end.

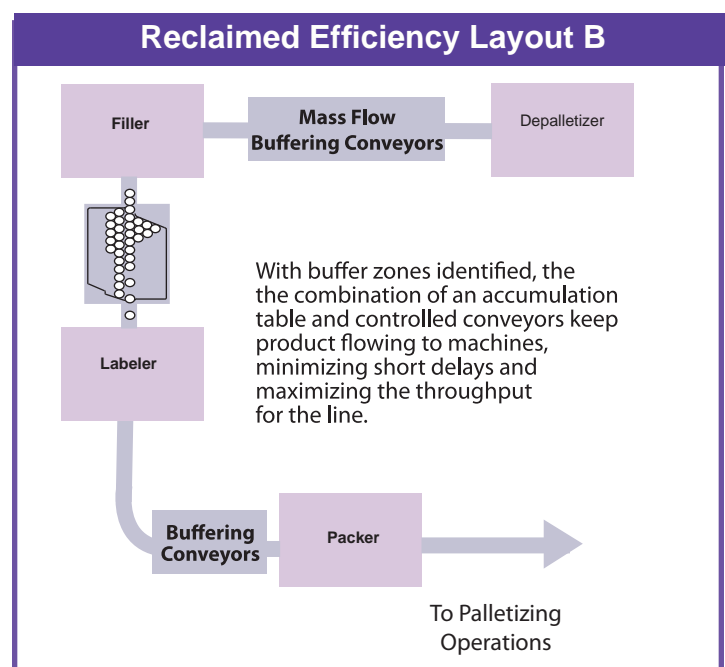
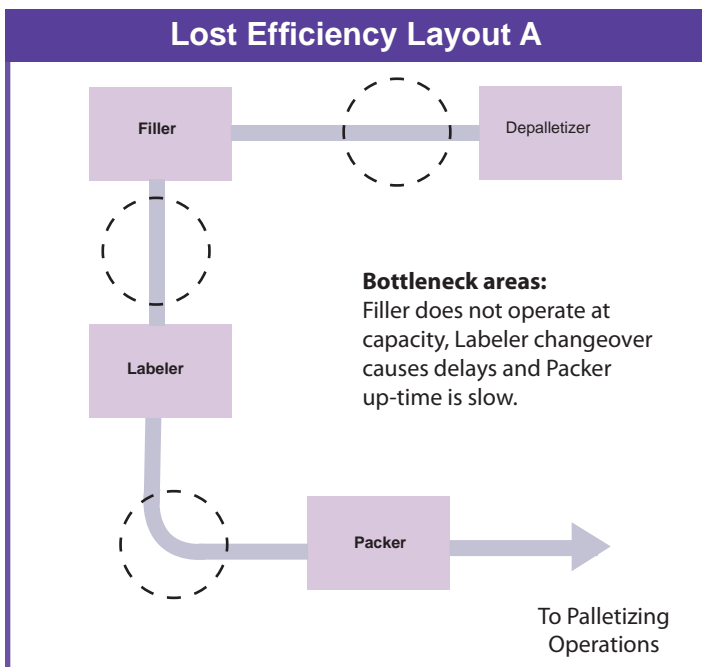
Short Delays Add Up. Short delays can happen any time on just about any type of equipment. Priming the labelers, cartoners or casepackers are planned delays, but unplanned delays can also occur, such as an incorrectly oriented package jamming in a wrapper. The point is that short delays add up. For example: A half-dozen stops at 10 minutes per stop in an eight hour shift, translates to one hour of lost production. The following layout illustrates four machines in a production line, each operating at 90% efficiency. Whether planned or unplanned, the machines almost never shut down at the same time, resulting in a loss of 40% efficiency.

About Bottlenecks. Knowing the location of the bottlenecks in the packaging line will help determine where the buffer locations are needed and the accumulation capacity required. This is typically accomplished by identifying the expected stoppages and their duration. The rate of the line will help to determine the upper limits for each machine.

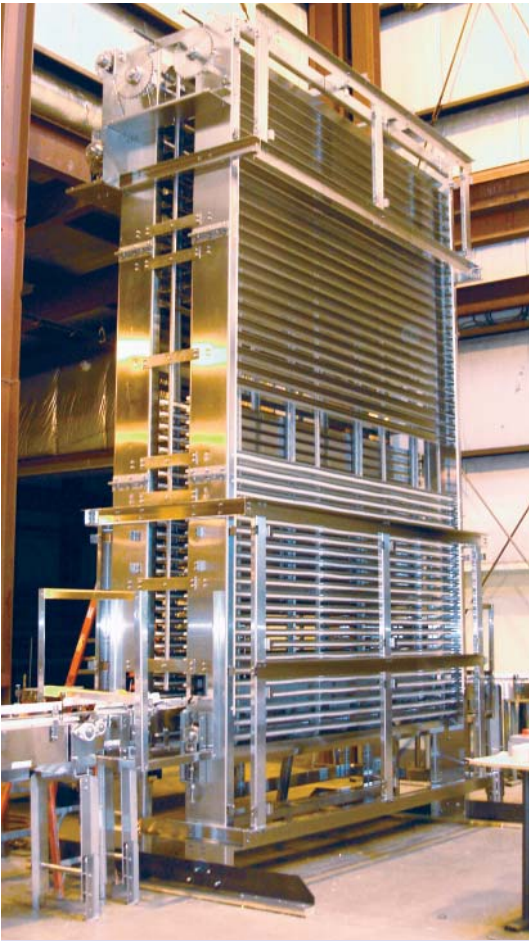
Manufacturers also conduct time studies, or use simulation techniques to determine accumulation requirements. Also bear in mind that machines can have completely different efficiencies depending on changes in the environmental conditions of the plant.

Common bottlenecks in packaging production lines are operations of bulk depalletizers, fillers, wrappers, cartoners, case packers and palletizers.

About Conveyors. Tabletop, mat-style plastic belt, fabric belt or roller belt conveyors can be used in buffer zones. To function as accumulating or buffering conveyors, the system must employ low friction practices. Low-friction conveying systems result in less back pressure on the products, which allows for greater accumulation lengths without product damage. Chain products that utilize non-driven rollers offer greatly reduced friction. Conveyors can also be engineered with “zero pressure” accumulation zones which raises the product off the conveyor chain to eliminate pressure on the product.



The Accumulation Conversation



Vertical Accumulator Creates Production Efficiencies While Making Effective Use of Vertical Space

Production line downtime is significantly reduced by integrating Nercon's FILO (First-In/Last-Out) Vertical Accumulator into production lines. During normal operation, the product passes through the accumulator. When a downstream malfunction occurs, the accumulator will INDEX UP rows of products until the accumulator is full or until downstream production resumes. At that time, the accumulator will reverse and deposit rows of product back onto the transportation conveyor. In addition to improved production efficiencies, minimal product damage and maintaining product orientation are also benefits of vertical accumulation.

This vertical accumulator (left) was recently designed and manufactured to handle frozen entrees. The accumulator provided 4 minutes of temporary storage, nearly 1000 products. Using full advantage of vertical space, this equipment measured 18 feet tall with a footprint of approximately 10 ft. x 4 ft.

The equipment was adjustable to accommodate two different sized products which used different flights. The flight positions had close centers so they were servo driven for greater control. It was positioned between the cartoner and the case packer. Even given periodic downtimes for the cartoner and case packing operations, the line achieved a continuous rate of 240 products per minute.



Visit www.nercon.com, key word "accumulation" for more information and movies about accumulation equipment.

Accumulation Continued

Buffering conveyors are a series of conveyors that provide a degree of accumulation capability above and beyond their normal transport function. Using a combination of speed, rate and back pressure control, buffering conveyors will allow for minor stoppages in downstream equipment without having to immediately stop upstream equipment. Between machines, a well-planned conveyor layout will provide the most "buffering" possibilities for the production line. Their capacity to accumulate is determined by how fast the conveyor is running over nominal production rates, and the products' ability to withstand the additional pressure that results from the accumulation process.

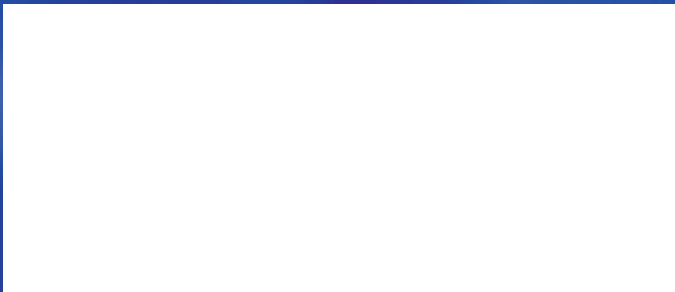
While some buffering zones can be handled by transport conveyors, other zones may require a dedicated piece of accumulation machinery. The most important aspect of any buffering system is that, when running normally, the downstream equipment must run faster

than the upstream equipment in order to de-accumulate the buffered product in preparation of the next buffering cycle. Without this extra downstream de-accumulation capacity, a buffering system becomes a one time buffer that can only be de-accumulated when the upstream equipment is stopped.

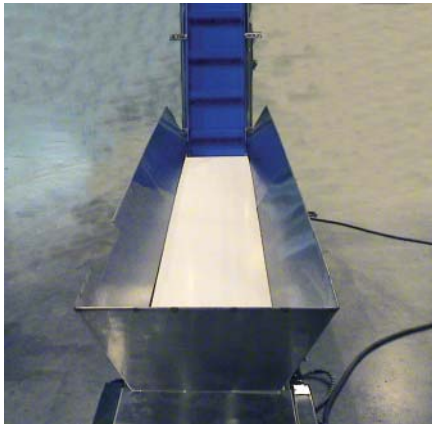
Continue the accumulation conversation on-line and read about: Mistakes to Avoid, Accumulation Controls and Accumulation Case Files. Log onto www.nercon.com, click on News and scroll to this story to download the new 8 page white paper.



Download our new white paper on
"ACCUMULATION"



New Literature Downloads from Nercon!



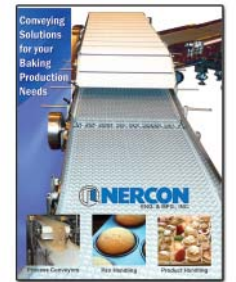
SANITARY CONVEYORS

On the left is a hopper take-away system using a thermoplastic polyurethane flighted belt. This is a wash-down duty system running both allergen and non-allergen products. The belts can be wiped in place on this closed top system. The new Sanitary Conveyor brochure download has more information about these positive drive systems as well as highlights of Nercon's sanitary standards, modifications and process room compliant conveyors. These new downloads are available at www.nercon.com, click on news and scroll to this section!



CONVEYING SOLUTIONS FOR BAKING PRODUCTION

This belt system (photo left) utilizes a wide belt incline with a tipping noser for rejecting bad product. It also features a reclaiming trough belt positioned under the wire mesh conveyor to catch and reuse salt applied to unbaked product. This system is featured in the new baking download as well as many other specialized bulk conveyor systems. The download also features Nercon's expertise in pan systems and product handling conveyor lines. Nercon has handled bulk ingredients, and packaged and unpackaged baked goods including cereal, chips, snack mixes, bars, cakes, pies, cookies dough, bread, crackers and more!



ACCUMULATION CONVERSATION

This reflow accumulation table shown on the left was placed on a production line to temporarily store bottles during filler downtimes. The new Accumulation Conversation white paper discusses the benefits of using accumulation and buffering where production line bottlenecks occur. Read about best practices for buffering conveyors, mistakes to avoid in adding accumulation to production lines and information about accumulation controls. Also featured in this 12 page paper are some of Nercon's accumulation solutions case files. Go to this section on our news page on our website to get this download!



Download all at www.nercon.com, click on news and scroll to this section!