NERCON Newsletter

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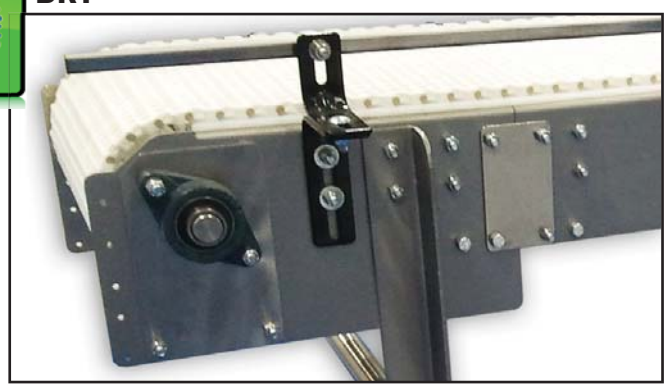
How to Leverage Levels of Sanitation on Conveyor Equipment

The following is an excerpt from a white paper being developed with the same title as our upcoming webinar, "Leveraging Sanitary Conveyor Construction Levels in Food Plant Operations."

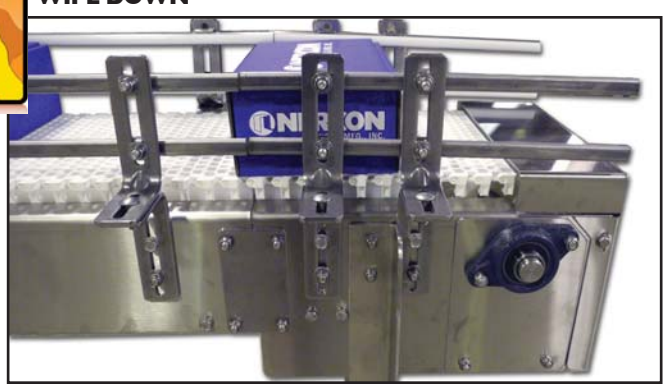
One way manufacturers can leverage the purchase cost of conveyor equipment is to select the construction level required by the application and environment. Highlighted are six levels of conveyor construction and how they are best utilized in different areas of a food manufacturing plant. The levels are presented from the most economical basic design to the highest degree of sanitary construction.

DRY



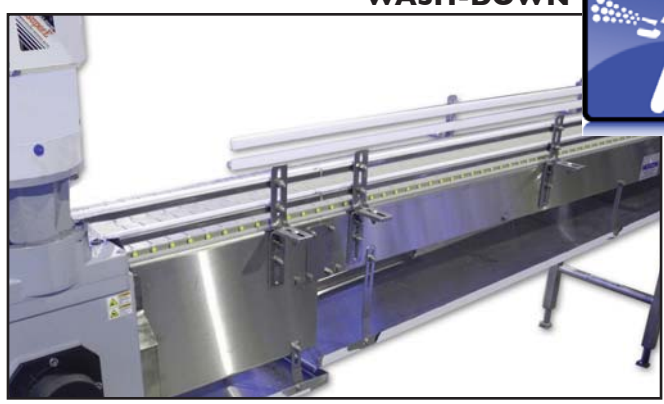
DRY. The DRY environment conveyor design is bolted together and constructed from coated carbon steel material. The environment must not have high moisture or humidity or be subjected to corrosive cleaning chemicals. Compressed air or a dry cloth is used to clean this design. While not a sanitary design, this conveyor type is the most economical and can be used to transport secondary packaging or for case handling to save on equipment purchase costs for those applications.

WIPE DOWN



WIPE DOWN. The WIPE DOWN environment design is bolted together and constructed from stainless steel. The environment is characterized by minimal moisture and humidity, with no use of corrosive chemicals. The cleaning is accomplished by hand using mild chemicals, but not spray hoses. This design may cost 10% - 15% higher than the DRY design, but it is still an economical solution with non-corrosion benefits that can be used to transport secondary packaging that may have occasional leakage.

WASH-DOWN

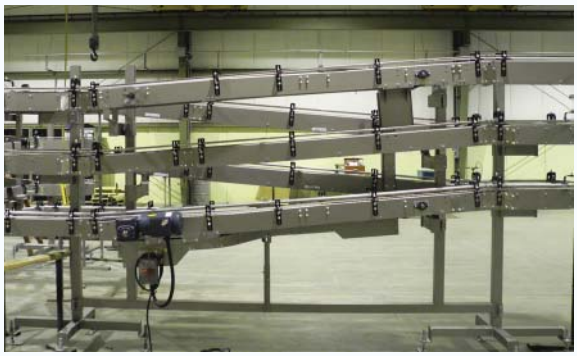


WASH-DOWN. The WASH-DOWN environment conveyor design is bolted together, constructed from stainless steel, and utilizes wash-down duty motors, reducers and chain. This design can be used in a high moisture and high humidity environment with moderate use of corrosive chemicals for cleaning. The cost increase is in the range of 10% - 15% higher than the wipe-down design. This WASH-DOWN level is typically used by manufacturers of baked goods or other non-cultured food products.

SANITARY LEVEL I

SANITARY LEVEL I. This construction level includes bolted stand-offs, stainless steel material with continuous smooth welds and wash-down duty motors, reducers and

A Comparison of Spiral Conveying Solutions



Alpine Systems use a multi-flex chain that provides the ability to flex in multiple directions. These systems are designed for single file, FIFO (First-In, First-Out) product transport, and are used for elevating, lowering and buffering.

ALPINE CONVEYOR

Product: Cans, Tubs, Bottle, Pucks, Cartons
Speeds: Up to 550 containers/minute, application dependent
Best Uses: Accumulation, Pre-Storage, Conveying between floors, Conveying over aisles
Modify: Anti-friction turn discs can be added to allow longer runs with fewer drives; Covers can be engineered to stabilize products; Sanitary construction is available including covers and pans
Drawbacks: Unstable products may not travel through incline and turns; Accumulation only occurs in the space between conveyed products; Depending on the application, the footprint can be significant

The Spiral Conveyor is a compact and versatile elevating solution.

SPIRAL CONVEYOR

Designed with a uniform slope, the Spiral Conveyor ensures smooth operation without disturbing the product. A continuously moving table top chain or plastic mat-style chain gently elevates or lowers the product in FIFO sequence.

Product: Low profile packages, trays, baked goods, cases
Speeds: Up to 150 feet/minute, application dependent
Best Uses: Conveying low-profile products between floors or over aisles; Elevating within a small footprint; Gentle product handling
Modify: Multiple lanes, slopes and chain widths available; Different infeed and discharge locations are possible; Can be designed for sanitary construction, including pans and covers.
Drawbacks: Limited elevation change due to chain strength; Unstable products may not convey on the incline

LIVE DRUM SPIRAL CONVEYOR

On a Live Drum Spiral Conveyor, the rotating stainless steel drum imparts the driving force to the inside edge of the belt creating very low tension on the belt. The benefit of low belt tension allows for exceptionally long lowering or elevating runs which translates into a significantly increased number of tiers.

Product: Jars, Cups, Cans, Bottles, Tubs, Bags, Pouches, Bundles, Cases
Speeds: Up to 400 feet/minute, application dependent
Best Uses: High volume and multiple tier elevation requirements; Multiple SKUs with no change-over; Heavier loads possible compared to other elevation solutions.
Modify: The Live Drum Spiral Conveyor can be designed with sanitary construction.
Drawbacks: While the Live Drum yields increased production efficiencies, it has a higher purchased cost compared to the Alpine and Conventional Spiral Conveyor

Live Drum Spiral handles Accumulation Demands of High Speed Lid Manufacturing Line

A plastics and container manufacturer sought to improve their container lid production with higher speeds and efficiencies. Nercon's part in the project was to provide a line that handled a non-round, high profile container lid with multiple manipulations from the blow molder equipment to palletizer operations at 300 products (lids) per minute.

One of the key pieces of equipment on this line was the Live Drum Spiral Conveyor. In order to have enough accumulation time to replenish foil materials in downstream operations, the accumulation solution needed to provide five minutes of temporary storage.

The Live Drum Spiral System was able to meet the accumulation demands which allowed the lid fabrication to continue during downstream equipment stoppages, thereby increasing throughput for the entire line.

These uniquely shaped lids in two sizes required dedicated lanes and multiple processes: single filing, accumulation, inverting, declining, merging and diverting. To accomplish these tasks, Nercon provided decline chutes/twists, 1:2 diverting systems, 2:1 merging conveyors, timing screw integration and a Live Drum Spiral System.

Alpine Conveyors Increase Efficiencies in High Volume Cooling Operations

A manufacturer of gel products looked to improve cooling efficiencies in their operations. The former method for gel cooling involved mass flow product handling through cooling tunnels with several product manipulations required such as de-nesting, single filing and product spacing. The numerous product manipulations often created production problems which resulted in less than optimal efficiency.

In the new system, a series of Alpine Conveyors replaced many of the product manipulations used previously since the product can remain single file throughout the entire cooling and packaging process. The result was increasing production by 45%.

In this application, Alpine Conveyors were used for product cooling. A versatile system, the Alpine System can also be used for elevating, lowering, accumulating and buffering.

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Sanitary Conveyors Cont.

chain. The SANITARY LEVEL I design can be used in high moisture and high humidity as well as the use of caustic cleaning chemicals to minimize bacteria growth. Often used in dairy and ice cream packaging lines, the SANITARY LEVEL I design is specified for the application.

SANITARY LEVEL II

SANITARY LEVEL II. This design is all welded with stand-offs and constructed from bead-blasted stainless steel material. Bearings utilize polymer housings; motors and reducers are stainless steel. This caustic wash-down environment has extremely high moisture and humidity with greater risks for bacteria growth. Most conveyor components in this design are removable for cleaning. The SANITARY LEVEL II design exceeds governmental compliance for direct raw food contact in process operations.

SANITARY LEVEL III

SANITARY LEVEL III. The SANITARY LEVEL III design is an all welded, open tubular design also using bead blasted stainless steel material. As in level II, bearings utilize polymer housings and motors/reducers are stainless steel. This design often uses a continuous belt with a low-tension sprocket drive. While this level of construction is 20% - 25% higher in cost than level II, manufacturers choose this level for extreme sanitation, low-maintenance benefits and changeover efficiencies.

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