volta™
Belting Technology

The Next Step
in **Belting**

Fresh Cut Potato Industry

Conveying Solutions

French Fry Processing Successes Using Volta Belts

The world consumes a lot of potatoes and potato processing lines are some of the largest and most sophisticated in the food industry, especially in terms of throughput volume and capacity.

The most critical aspect for conveying systems in potato processing plants is hygiene (sanitation). In answer to this challenge, Volta homogenous belts are highly resistant to the aggressive nature of starch which tends to corrode the belt surface.

Before food reaches the consumer's table, it has already come into contact with harvesting equipment, freezers, cold storage units, a wide array of transportation vehicles in various containers, and has passed through processing machinery.

Worker safety, product quality, equipment reliability, sanitation, and ease of maintenance are all top concerns for conveyors in the potato processing industry. Hygiene is important to potato processors and continues to rise in importance given the increased focus on food safety in addition to more demanding production schedules.

Hygiene standards in the food industry are extremely high, especially when it comes to conveyor belts as these are in direct contact with food.

Food products routinely make contact with conveyor belting, and public awareness of the industry's reliance on easily-broken modular belting has risen. The presence of plastic fragments from this source, either as foreign bodies or contamination in the food, is now common knowledge.

As a manufacturer of food-grade conveyor belts with over 60 years of industry experience, Volta Belting Technology firmly stands behind the safety and stability of all Volta food-grade belts to prevent the problems found with inferior belt types.

Raw Intake / Receiving

Raw Intake or Receiving is the location and process where the raw potatoes are off-loaded into the processing plant. During the process, significant amounts of dirt, sand, mud, vines, and rocks are mixed in loosely or are already adhered to the potatoes. These materials, including the potatoes, can be referred to as 'products'. The products create a very harsh working atmosphere for a conveyor, causing severe abrasion and impact. In some plants, the potatoes and 'products' are dumped from trucks onto a steel pan or hopper and simply gravitate onto the belt surface.
Volta food-grade materials possess mechanical features which make them ideally suited to static elements such as funnels or chutes.

When modular belts are used, the free fall of the potato during intake and washing can break belt materials. Plastic parts can then go into the potato, creating hazard points.

Volta uses homogeneous food-grade materials, including transparent and translucent conform designs for funnels, chutes, pipes, and similar elements.

The flexible material is ideal for forming and is used on potato intake chutes and other areas where a gentle transfer can prevent bruising.

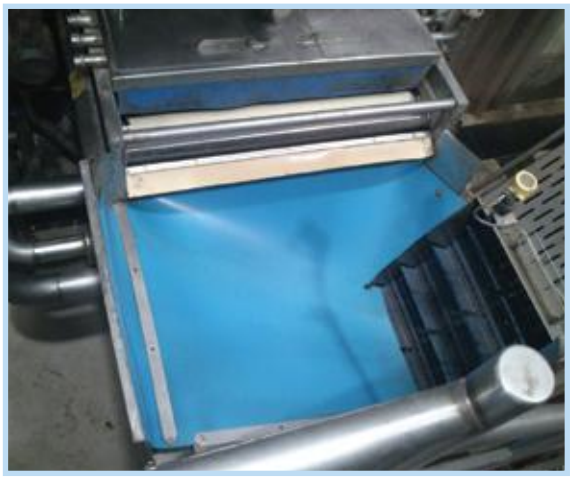
The belt material absorbs the impact of falling products, preventing waste and rejects.

Measurements, like those for hopper linings, are often difficult or inaccurate, therefore all elements are custom-made and can even be fitted and welded on site.

Hammocks are used to reduce noise and damage to sensitive products in freefall.

The very first location where Volta solved problems was the steel pan or hopper.

The Problem: The constant impact of the 'products' on the pan repeatedly broke the welds between the pan and the conveyor frame.



The Solution: We replaced the entire steel pan with a thick, dense, homogenous Volta material and bolted it to a steel framework that was created by the plant. These hygienic TPE pans were much less expensive than the steel version and the end users could employ them for at least 2 seasons without needing repair.

From here, the 'product' cascades down the pan onto the first conveyor belt which is typically at an incline, moving the 'product' into the plant and onto the next place where Volta SuperDrive™ solved another problem.

The Problem: The constant impact of the 'product' landing on the conveyor would, in the past, cause the cleats to detach as well as heavy wear and tear. The belt would need to be replaced on a monthly basis.

The Solution: These conveyors were changed to suit a SuperDrive™ with short (1 to 1.5" high), double electrode welded cleats. These belts proved incredibly successful, with some plants reporting multiple seasons of work free of trouble and maintenance.

The mixed-in vines, rocks, and other debris are then removed from the 'product' and the potatoes are transferred into the 'wet end'.

Wet End / Washing and De-stoning

After this process, the potatoes are washed clean and are on their way to the peeler. (N.B. some restaurants prefer their fries to still have peel on them and some lines will send the potatoes on, bypassing the peeler).

After the peeler, most of the conveyors are troughed and commonly use PVC 120 white or 3-ply white Nitrile belts.

The Problem: These old-tech belts were unhygienic and wore out very quickly. Some had mechanical issues with 'stringing', fibers loosening from the reinforcement fabric in the belting and wrapping around bearings. This caused breakdowns and the entry of foreign bodies into the product flow. The fast wearing was largely due to residual liquids and the presence of starch seeping out of peeled potatoes and cracking the surface of both PVC and white Nitrile rubber.

The Solution: These conveyors were retrofitted to accept Volta SuperDrive™ which has proven to solve all the problems noted above. Volta belts are highly resistant to the aggressive nature of starch, don't contain fibers, and do not deposit fragments and belt parts into the product flow. A thick SuperDrive™ is preferred for conveying whole potatoes to absorb impact and prevent bruising should the potatoes be dropped onto these conveyors. The ease with which a Volta belt can be welded on-site has eliminated the use of lacing – another benefit from the changeover and another bonus for the processor.

Inspection & Sorting

In some plants, the potatoes are then inspected using visual inspection machines which detect brown spots, blemishes, and other imperfections. They also attend to any last residue of 'product' that may be on or in the potatoes. In some cases, inspection takes place after the potatoes have been cut into strips. Volta SuperDrive™ belts have been used on the conveyors that feed the inspection machinery and the takeaway conveyors handling output from the inspection machines. SuperDrive™ belts are also highly successful on takeaway conveyors removing the rejected material which, if safe, is further processed for animal feed.

The Problem: When a French fry is still raw and wet, it tends to stick to the surface of the belting due to surface tension, thus products can travel around the head pulley and then drop - often onto the floor. This was previously corrected by spraying water on the head pulley or attempting to blow the fries off the belt with an air jet. Water is ever more expensive and now considered a finite resource, so avoiding this is necessary.

The Solution: Volta SuperDrive™ with the ITO-50 texture allowed the plants to put an end to the water spraying of the head pulleys as it allows the fries to easily drop off of the belting. The texture is easy to clean and features the benefits of all Volta food-grade materials.

Further (manual) Inspection

However, isolated pieces of 'product' can still make it through the visual inspection machines without being removed. Therefore a person is often stationed next to a troughed conveyor prior to the packaging and ensuing freezing process.

The Problem: The previously mentioned issues of 'stringing' and wear continue to be a problem when using white PVC or Nitrile rubber belts. Additionally, detached cleats add to the foreign bodies that can ride along with the good fries. Furthermore, white belts have been demonstrated as a direct cause of headaches and nausea in inspection personnel.

The Solution: SuperDrive™ belts with small ridge cleats welded using Volta 'electrode' profile have replaced the traditional belts and solved these issues. The small ridges help carry wet French fries up any slight incline commonly used in this process. The blue color is preferred and greatly reduces requests for breaks or headache medications from the inspectors. These belts have been seen to last for many years in some plants.

Our new SuperDrive™ belt with Mini Cleat (MC) top will replace this belts. The fully extruded cleats and the benefits of the positive drive conveying enhances the incline conveyance capability of carrying bulk product on large width belts, usually 36 inches (92mm) wide that run with a trough and usually up an incline by up to 25 degrees. The MC top prevents product rollback on the incline without requiring flights.

Packaging

There is a wide array of applications in packaging. In most cases, Volta has retrofitted conveyors that were using modular belting, but some older plants were still using Nitrile and PVC belts. One of the most successful applications is conveyors that carry bagged fries through the metal detector. This is another area where a slight incline is common.

The Problem: Bagged product moving on an incline through a metal detector on modular belting with rubber inserts to keep the bags from sliding back. These inserts soon wear out and then the bags begin sliding back toward the tail of the conveyor. This causes pileup and necessitates the stopping of the line and for bags to be pushed manually up the incline.

The Solution: The conveyors were retrofitted with DualDrive™ used upside down with the drive lugs facing up as small cleats carry the bags up the incline. This doesn't give them the tracking that SuperDrive™ does.

A new FMB-SD-MC-ITM2 will be used here. The fully extruded Mini Cleat (MC) top on our SuperDrive™ homogeneous material enhances the incline conveyance capability of carrying bulk product by up to 25 degrees. These belts afford the end users excellent durability.

Conclusion:

In conclusion, within a potato/French-fry plant, Volta offers many varied uses and benefits for end users. Contact Volta to reduce maintenance, and improve cost-efficiency, hygiene, and auditor compliance.

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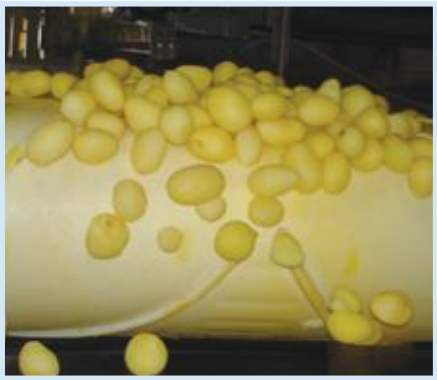
SD™ in Potato Intake

SD™ at Wet End

SD™ at Wet End



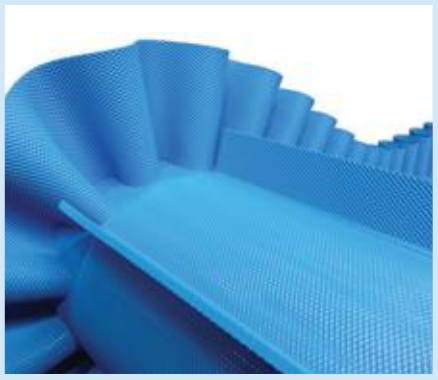
SD™ at Wet End

SD™ French fries elevator

SD™ in French fries conveying

SuperDrive™ lines

Clear material used for Funnels



SuperDrive™ with ITO50 texture

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