



Tubular Drag Conveyor conveys tea from point A to point B - easy!

How to Convey Tea: A Drag That's Not a Drag

A first-hand account on how tubular drag conveyors are changing the nature of tea processing. (By Karl Seidel)

Not long ago, I toured the production facility of a major tea operation that uses tubular drag conveyors. It is very interesting to observe tea whizzing by in story-high, modern configurations and to get a close look at beautiful leaf products. It also lends a fun “aha!” experience into how these conveyors are set up once off the engineer’s blueprint, elegantly transporting an impressive quantity of the fine tea from point A to point B.

Often, there is a very large volume of tea being conveyed inside such state-of-the-art tea facilities. The tea processor let me pick their brain that day and tour the facility but it is not unusual for them to remain anonymous to outsiders. As a coffee roaster with a keen interest in foods like tea, nuts, spices and coffee, I stood transfixed as an enormous amount of splendid black tea moved quickly through tubes inside the plant. It’s typical to know that some aspect of food processing can be done, but it is so much better to see and grasp how it’s done.

I saw a great deal of efficiency and an

amazing layout of tubes, turnarounds, discharge points and a lot of tea. It was fun. To visualize the tea process, you might draw on your own experience or take a facility tour like I did, or jump on the internet. If you go to www.youtube.com and enter the search words “tea processing,” you can watch videos showing just how tea is processed in all kinds of facilities.

It’s certainly important to keep the integrity of the product while conveying tea and to protect it from contamination. There are many steps along the way, whether using tubular drag conveyors or not. Tea can be picked, sorted, bruised, panned, steamed, cleaned, fired, dried, rolled, fermented, withered, scattered, boxed and steeped — or any of these dizzying combinations. One will see many of those steps in a good tea facility or in a demonstration video and also hear debates about the right time to stop wilting and oxidization. One can also watch tea leaves roll, fall, lift, or cascade between mesh air driers that are three stories high.

Most tea usually goes through several

generic stages that include wilting, bruising, oxidation, kill green, shaping and drying. Green tea is a bit different and usually skips the first three steps. Yellow tea is additionally yellowed and oolong tea is mostly cured after drying, as are some of the post-fermented teas. And then within each category there are sub-processes. For example, “kill green,” a process to stop oxidation, is typically done: by baking white tea, by panning oolong (or baking) and by steaming green tea (though sometimes by panning; there is industry variance). There are production variations and improvements; indeed, there are many aspects and approaches in tea processing, possibly as many places as tea grows (although mostly throughout China, India and Japan).

With many tea production facilities, huge amounts of tea are no longer being conveyed with buckets, belts or chains but, much more carefully through tubes where the tea is dragged internally and safely to its next destination. These systems are highly efficient. Carl Teten of S & D Coffee in Concord, North Carolina says, “we have four main tubular drag conveyors right now each running over five million lbs. of black tea annually with no downtime.” Systems can be made that fit any of those processing generic stages, although most tea producers that use tubular drag conveyors do so after the last drying stage, when the tea is at its most fragile, valuable pre-packaging point.

It’s helpful to look at how these tubes actually work conveying tea. The tea travels

along inside covered or see-through tubes because discs pulled by cables inside the tubes “drag” the quantities of tea along. It’s very safe, clever and efficient. Imagine an enclosed horizontal tube with flexible vertical discs carrying the tea along in the proper direction (although the tubes in real life travel in any direction). Tea leaves move through the conveyor but in varying configurations depending on the needs of the client. Also, clients are not stuck with one configuration or trying to make the new conveyor fit their existing space or the existing equipment being moved all about in inconvenient ways since all systems are designed for them. Think the flexibility of Lego building blocks but astronomically more sophisticated.

In this kind of system there are various points for inspection, discharge points, spots to view the tea passing through and often a turn-around unit that can be opened. One company recently found that it makes sense to put a handy see-through panel on the turnaround as well. With a configured tubular drag system, the client can use existing tea production space and integrate the cost-saving conveyor with existing equipment. Production flow can be adjusted with various available speeds. The best systems have a separate clean-out disc made of urethane, and as it moves through the tubes, it wipes the tube clean. The clean-out disc is different from the “regular” discs that do the actual conveying. That disc is a bit larger in diameter than the tubes, specifically for that self-cleaning purpose.

Tea producers find several advantages to using tubular drag conveyors over older methodology. First, these systems are commercially available to small, medium, large or humongous operations. Next, these tubes carry tea from point A to point B without using air blasts, vacuums, belts or buckets, so it is a very gentle process. Designs offered include many options in layout, length and size such as two, four or six-inch diameter, and really any design configuration that is needed can be accommodated. Also, there are no residual flavors if the tea type changes because the systems are self-cleaning and use the urethane disc in the form of a squeegee.

Some clients travel directly to the manufacturing location to run their tea through



Close-up of Inspection Tube shows tea moving.

the tubes and test their leaf in those systems. But in most cases that isn’t necessary since the tea is routinely sent and tested ahead of time. The results are not only tracked with care and discussed with the tea producer but sometimes videotaped, uploaded to a private website and transmitted back along with an analysis for them to consider. Also, if the tea producer wants to add more systems, larger capacity systems or transfer systems around, that can be done as the tea processor grows.

Ease of installation routinely surprises tubular drag conveyor clients but the measurements and plans as with any well-made equipment are carefully made in advance. Existing personnel at the tea production facility can install the system or hook it up with hands-on help from the system manufacturer. “We especially like the ease of installation, which is important to us because it is expensive to have service personnel come into Canada, and we didn’t want to have to depend on other companies doing the installation,” said Jean-François Vallee, engineer at Van Houtte in Montreal, speaking of tubular drag conveyors designed by Cablevey. They are a manufacturer of food-protecting technology, dragging dry loose tea in enclosed tubes, expanding into this area from coffee about three years ago. The process starts when an interested tea company or tea producer contacts the manufacturers for information and a quote. Engineers walk the client through various steps to determine size, configuration, price and the

best set-up for their particular operation. After the quote is accepted, the company goes ahead with preparation, manufacture and delivery. Turnaround time is fast, and with a top company are typically six to eight weeks on an order.

Others have had similar positive reactions about all points in the process, including as early as testing their particular tea through. When I spoke to Carl Teten right after testing, he told me, “I have five additional Cablevey systems that I’m getting ready to install for moving tea from a 10,000-lb. silo using multiple discharge points. The tests ran beautifully. Once we put the system in, we were done.” Phil Hall, president of Cablevey Conveyors says: “Our goal is to get tea producers to love this technology and give us their feedback because it reflects on the market opportunity and it only proves even more the satisfaction we are already seeing for tubular systems as a great conveyor of tea.”

Yogi Berra once said, referring to distance, “It’s not too far, it just seems like it is.” Maybe with these modern conveyors, the distance of moving tea will feel much less. Here is cutting-edge but proven technology for the efficient conveyance of tea. Tubular drag conveyor systems already serve many sectors of food, agricultural and industry, but to see their efficient application with tea and coffee is very exciting. ☕

Karl Seidel is a coffee roaster and marketing manager for Cablevey Conveyors. www.cablevey.com.