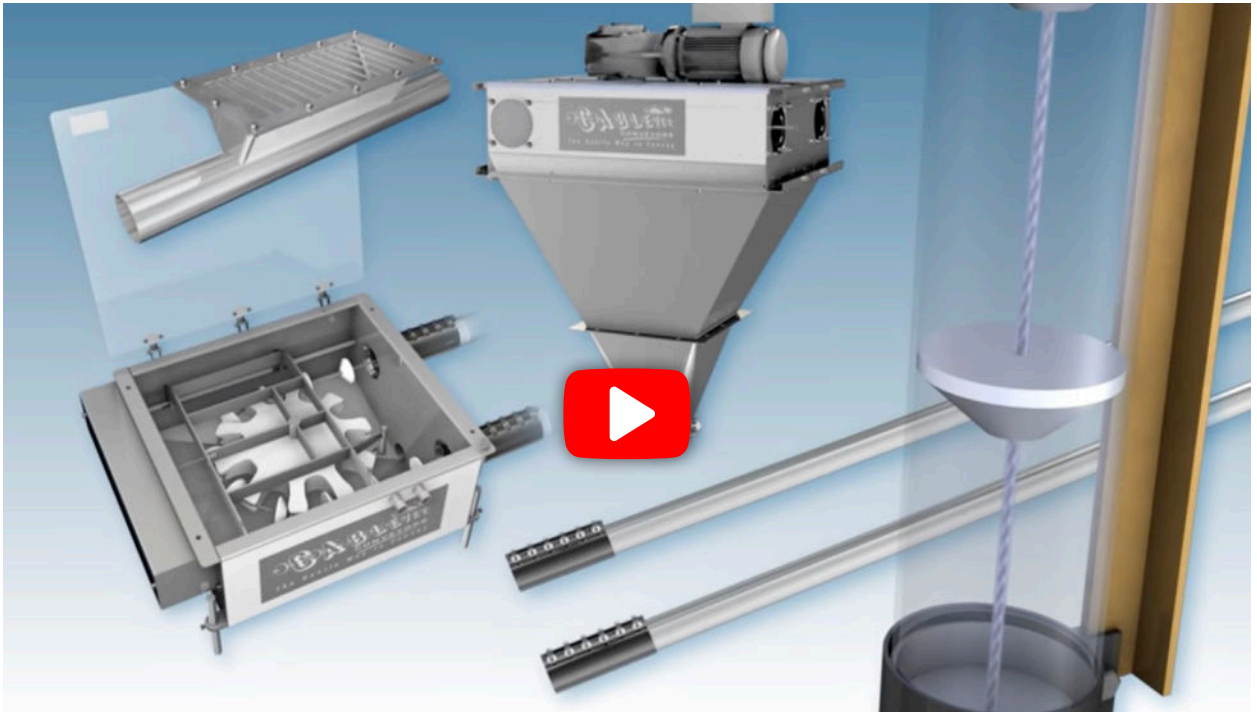




Designing the Right
CONVEYOR SOLUTION
for Your Facility Application



The Gentle Way to Convey®



Industrial processing companies replacing a current line or adding a line extension to their operating facilities can select from among multiple conveyor technologies or types. Regardless of the technology selected the goal remains the same—to move products in a safe, effective and efficient manner while minimizing operating and maintenance costs and sparing labor. This article will discuss the various considerations a plant operator should consider when selecting and configuring a Cablevey tubular drag style conveying technology for his or her facility.

Proper system design can provide a materials handling solution that will supply years of reliable service. Cablevey tubular drag style disc and cable conveyors offer gentle conveyance of friable materials, to preserve product integrity, avoid ingredient sifting, and effectively contain dust. The enclosed nature of the tube style conveyor technology contributes to plant hygiene while simultaneously preventing foreign contaminants from entering the product stream.

Modular components offer flexibility in design to help the system fit within even tight plant footprints, or spaces. System design, to accommodate space and specification, involves an ongoing process from discovery through shipment and even installation.

Direct engineer to draftsman communication creates initial drawings, layout and project finalization. First, however, the Cablevey team collects vital information that impacts the system's dimensions, placement and direction.

QUESTIONS TO ASK ABOUT THE PRODUCT OR MATERIAL CONVEYED

One of the first considerations focuses on the product to be conveyed. Typical questions about the product can include:

- What material is going to be transported?
- Are there material ratios to be considered in the product mix?
- What are the minimum and maximum bulk densities?
- Are some of the materials more delicate than others, or more friable?
- Is the material abrasive or sticky and if so, to what degree?
- What is the product moisture level?
- Is combustibility a concern?
- What is the product's ambient temperature?
- Has there been a problem with product degradation with current or previous systems?
- Are there any current expansion plans (i.e., new SKU introductions or changes in product lines)
- What is the desired volume or throughput?

Volume/Throughput



A range of tube diameters allow for transport of different materials from powder to pet food, offering varying capacities depending on product bulk density. Options include:

- Two-inch diameter tube conveyor systems originally designed to move mash and grain mixes. Now, these commonly move chaff, cookie crumbs, seeds and ground coffee. Maximum capacity transports up to 75 Ft³/hr (3,000 lbs.).
- The four-inch diameter series, our most popular size, offers a maximum capacity of up to 525 Ft³/hr (21,000 lbs.).
- The six-inch diameter tube series transports up to 1240 Ft³/hr (@49,000 lbs.)
- The eight-inch, high-volume cable conveyor is the latest introduction to the series of conveyor sizes. This model offers a system capacity of up to 2,000 Ft³/hr (80,000 lbs.).

Product Integrity

While throughput and volume are important, a system that maintains product integrity or avoids product degradation, reduces waste to boost profitability. The cable and tube conveyor technology design gently handles materials from inlets to discharges by holding those materials between the discs within the enclosed tube.



Sweeps navigate curves and directional changes to convey materials to the desired discharge station; however, the disc and cable conveyor design means materials are not blown or forced through the sweeps as with other types of conveyor technology. Friable materials are conveyed without battering, stress or friction to keep breakage to a bare minimum. Multinational corporations and larger processors paring down product breakage by even a single percentage point will create a dramatic return on investment in less than a year, with incremental savings accrued over the lifetime of the equipment.



Flexibility in Design Due to Modular Components

One of the unique features of a Cablevey tubular drag style conveying system is its flexibility in design due to the modular construction style. The basic components can be assembled in myriad configurations to fit within the allotted space or plant footprint desired, including taking advantage of overhead space, or moving product from one building to another and for different elevations, from grain silos to mezzanines.



While reliable and efficient and gentle on delicate materials, the tubular conveying system is comprised of components that allow operators to easily maintain, service and clean the system. Components include the cables, discs, tubes in stainless or clear FDA-approved plastic for viewing purposes, drives, turnarounds and sweeps.

Direction and Distance

Materials can travel horizontally or vertically, from multiple inlets to discharges. As far as distance, materials have been conveyed up to 300 feet in a single system; however distance is determined by the number of sweeps, required capacity and the type of product being conveyed.

Sweeps are available for system configuration in 30-, 60-, or 90-degree angles. The design and layout often require minimal modification to the existing facility.



Layout and Elevation

The cable and disc system offers a variety of potential configurations capable of operating on multiple planes, from feed silos to the production floor to a mezzanine level, with few limits on direction or height.

Sample layouts can include inline, a loop, vertical transfer or a combination or blend of horizontal-vertical-horizontal. Systems can take product from one building into another.

Footprint

A recent survey conducted by Cablevey® Conveyors with more than 200 representatives at food processing firms revealed that 91% of respondents said their business experienced growth in the 2021-2022 timeframe. The survey also revealed a high level of automation within this industry. Most companies operate multiple conveyor lines, with 83% of companies surveyed operating 6 or more conveyor system in their facilities and 26% of companies operating more than 25 conveyor systems across business units.



With multiple lines already operating within a finite amount of space, a new or replacement system that can be configured in multiple ways to fit within that space or footprint has heightened importance. Replacing a bucket elevator for example, with a drag cable system, involves careful selection of sweeps and placement of the turnaround, not just for space concerns but also to facilitate cleaning and maintenance.

A cabled conveyor system can take advantage of overhead space as long as the operator can still access the system with a lift or via a mezzanine.

Feed/Discharge

Automated discharge configurations allow for continual material processing and delivery. Cablevey offers standard inlets for the various diameter systems. Our design engineers can work with your specifications for the number, size and type of inlets and discharges for single or blended product mixes.

Plant Sanitation and Cleanability

An important consideration when selecting system components relies on the plant's cleaning system and whether or not production must meet FDA regulations.

Does the plant rely on wet or dry cleaning? Are there regular washdowns? Does the system need to accommodate clean-in-place (CIP) routines? These play a role dictating material choices for the system and components, most often constructed of stainless steel or FDA approved polymers.



The enclosed system drastically cuts down on dust for greater plant sanitation and safety. This enclosed conveyor virtually eliminates the potential for foreign contaminants to enter the product stream.

In terms of cleaning the system itself, Cablevey offers a variety of optional cleaning elements for a dry clean designed to meet a variety of swab-test standards. These cleaning elements can include brushes, air knives, and single use sponges. Urethane clean out discs are a replaceable standard to help keep tubes free from dust, product fragments or residue.

Supervised Installation



The installation is a critical last step in the design process. During professional, supervised installation, the technician can recommend revisions to the layout or system movement when onsite for visual inspection.

Any recommended changes must be approved by the applications department for validation and feasibility; however, the technicians have decades of experience with service and installation troubleshooting.

These final adjustments can ensure the system will operate to its maximum potential, while permitting easy cleaning and maintenance.

Energy Considerations

Conveying systems, sometimes called “energy hogs,” generally consume quite a bit of the energy used in a processing plant. This only increases its importance in an era of rising energy costs and compliance to corporate sustainability pledges.

The design of the cable and disc conveying system features a compact drive unit that operates to its full potential while relying on a minimal amount of horsepower, drastically cutting the energy expenditure of the system compared to alternative conveyor technologies. The smaller drive offers benefits such as:

- Dramatically less power use
- Quieter operations for a better work environment
- Lower energy usage cuts operating costs over the lifetime of the system

Our engineering staff and technical team members are happy to discuss more specifics about the design process for your unique materials handling needs. Cablevey fills a unique niche for gentle transport of friable materials, trusted in thousands of operating facilities in more than 65 countries around the world. Ask us to help design your new or replacement system today.

ABOUT CABLEVEY CONVEYORS

Cablevey Conveyors is a global specialty conveyor manufacturer that designs, engineers, assembles, and services tubular drag cable and disc conveyor systems. With customers in more than 66 countries, the company specializes in moving materials for food/beverage and industrial powder processors that seek food-grade conveying performance with clean, fast, energy-efficient, and cost-effective systems. Learn more at www.cablevey.com.

