

rates. Dust is accumulated in filters. Depending on sweeps and discharges, roasted whole beans may endure breakage. One of the main considerations with this type of conveyor is its high power consumption. Pneumatic conveying is the most expensive method for moving coffee beans.

Auger Conveyors

Known as flexible screw conveyors, they can transport coffee beans vertically, horizontally and at any angle. They consist of a stainless-steel flexible screw enclosed in a rigid steel tube or flexible plastic tube driven by a motor. The enclosed tube rotates around a central shaft, transporting the coffee beans according to the screw design and rotational direction. When the beans reach the end of the tube, they are discharged into the next machine in the roasting process, such as a grinder, or container for packaging. These conveyors have a throughput of up to 100,000 pounds per hour. Auger conveyors, however, have limitations on how much product they can transport before effecting product breakage, which can be significant. Also, internal cleanliness can be an issue resulting in a cross-contamination risk, with the need to disassemble the unit on a regular basis for cleaning. However, roasters may determine that the cost of cleaning may be well worth the additional capacity.

Aeromechanical Conveyors

A completely enclosed, high-capacity mechanical conveyor that can move coffee beans vertically and at varying angles. Within a stainless-steel tube, a wire rope with evenly spaced discs travels at high speeds, running in sprockets at each end of the conveyor. The high-speed action generates an internal air stream traveling at the same high velocity as the discs. As the coffee beans are fed in, the air stream aerates, or fluidizes them, and carries them to the packaging outlet, where they are discharged by centrifugal force. The system can move up to 80,000 pounds of beans per



The coffee system at U.S. Roasterie facility uses MPE Chain-Vey conveyors. photo courtesy of Modern Process Equipment

hour. A drawback to this system is that the flow of product can become inhibited, causing the conveyor to run without transporting beans at expected throughput volumes. Downtime is also a factor because the tension on the wire rope needs to be adjusted at regular intervals.

Tubular Drag Chain Conveyors

Tubular drag chain conveyors gently move coffee beans through a sealed tube with a drag chain pulled through it on a loop. Solid circular discs (flights) are attached to the chain, which push the beans through the tube. This system can move up to 45,000 pounds per hour of coffee beans. The chain needs to be regularly removed for cleaning, and the chain-drive components need to be regularly adjusted to keep the system in registration, which increases downtime.



MPE Chain-Vey ground coffee transport system at Melitta Coffee facility. photo courtesy of Modern Process Equipment

Tubular Drag Cable Conveyors

Tubular drag cable conveyors gently move coffee beans through a sealed tube using a coated, flexible stainless-steel drag cable pulled through on a loop. Solid circular discs (flights) are attached to the cable, which push the beans through the tube. Tubular drag cable conveyors can transport up to 49,000 pounds of coffee beans per hour, at low speed. The flexible design of the enclosed system keeps contamination out. The system must be cleaned, but it can be cleaned in place at multiple points to remove coffee buildup. Cables need to be replaced after about 1 million flexes; if a cable stretches and breaks, it can cause further potential damage. Businesses may want to invest in a backup cable to lessen potential downtime.

There are often debates about chain versus cable conveyors that call into question which conveyor is best suited for green or whole-bean coffee conveying with the least bean breakage.

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