

SHUFFLE DRIVE CONVEYOR SYSTEM – A HORIZONTAL MOTION SOLUTION FOR HANDLING DRY FOODS

WE ALL KNOW THAT A PROPERLY CONFIGURED CONVEYOR SYSTEM WILL MAXIMIZE THE USE OF EVERY AVAILABLE SQUARE FOOT INSIDE A FOOD PLANT. HOWEVER, FOOD HANDLING OFTEN ISN'T AS STRAIGHTFORWARD AS BUILDING A CONVEYOR FROM POINT A TO POINT B. SOME PRODUCTS LIKE “DRY FOODS” ARE JUST HARD TO HANDLE FOR VARIOUS REASONS.



FIGURE 1 DIFFERENT TYPES OF LEGUMES.

DRY FOODS TAKE A VARIETY OF DIFFERENT FORMS AND SIZES (SEE FIGURE 1). FROM KIBBLES TO SEEDS OR PELLETS AND NUTRIENTS, MAYFRAN INTERNATIONAL SHUFFLE DRIVE FOOD CONVEYORS ARE DESIGNED TO HANDLE A VARIETY OF COMMON (AND UNCOMMONLY) FRIABLE DRY FOODS WITHIN THE INDUSTRY.

OUR SHUFFLE DRIVE CONVEYOR SYSTEMS GENTLY MOVE DRY FOOD PRODUCTS FROM PRODUCTION TO PACKAGING WITHOUT JEOPARDIZING THE SHAPE.

WORKING PRINCIPLE OF VIBRATORY CONVEYORS:

As its name suggests, a vibratory conveyor is a mechanical tool that uses vibration to feed and position material in production lines. Electromagnets are used to produce vibrations. The device transforms vibrations caused by electromagnetic fields into mechanical vibrations. These mechanical vibrations are then harnessed to move components down the production line.

The Problem: Current brand owners of cereal, dog food, pasta, snacks, and dry foods in general heavily rely on vibrating conveyors (see Figure 2) to move product. In other words, food sits on a stainless tray and vibration is used to move the product from one end to the other. This is usually during the packaging stage. However, the product is constantly shaking, hitting the tray walls, and bouncing up and down. This can potentially lead to breaking and/crumbling of the product.



FIGURE 2 VIBRATORY CONVEYOR SYSTEM AT A PET FOOD OEM

WHY SHUFFLE CONVEYORS:

There are a few reasons why Shuffle Drive Conveyors are better for food consistency, but they are also easier to run to clean, and perform maintenance on if necessary. Table 1 is a side-by-side comparison of shuffle, vibratory, and belted drive systems.

TABLE 1: MAYFRAN SHUFFLE CONVEYORS VERSUS VIBRATORY AND BELTED DRIVE SYSTEMS

	Shuffle Drive System	Vibratory System	Belted Drive System
Motor Size	1 hp	1.2 hp	0.2 hp
Noise Levels	62db (like riding a car on the highway)	90db (like a train entering a station)	75db or less (like riding a car on the highway)
Vibration	None	Vertical/horizontal shaking	None
Surrounding Work Environment	Good	Bad	Good
Bacteria Accumulation	None	None	Yes – washdown is necessary
Cleaning	Easy due to simple structure	Cleaning is difficult due to complicated structure of the driving part	Difficult to clean between the belt and moving parts
Maintenance	Very easy to replace parts	Too many parts. Expensive to replace. Replacement work is difficult	Belt needs to be replaced every 2 months to a year depending on the product

NOTE: TO DETERMINE THE TOTAL COST OF THE CONVEYOR SYSTEM, START WITH THE INITIAL CAPITAL COST PLUS THE COST OF INSTALLATION AND ADD THE PROJECTED ANNUAL MAINTENANCE AND SANITATION COSTS OVER THE ANTICIPATED LIFE OF THE EQUIPMENT. ALTHOUGH THE INITIAL PRICE TAG FOR VIBRATORY CONVEYORS AND HORIZONTAL MOTION CONVEYORS IS OFTEN \$8,000 TO \$10,000 HIGHER THAN THAT OF BELT CONVEYORS, THE LARGER UPFRONT COST IS QUICKLY RECOVERED BECAUSE IT CAN COST \$3,000 A YEAR OR MORE TO MAINTAIN AND CLEAN A BELT CONVEYOR. KEEP A CONVEYOR IN OPERATION FOR MORE THAN THREE YEARS, AND THE SHUFFLE MOTION USUALLY COST LESS.

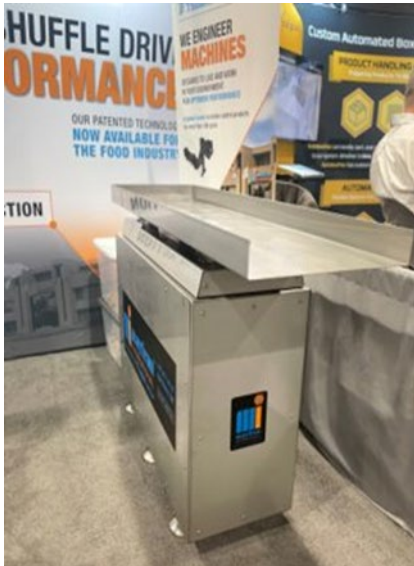


FIGURE 3 MAYFRAN'S SHUFFLE DRIVE CONVEYOR

The Solution: Mayfran International has introduced a Shuffle Drive Conveyor (see Figure 3). This technology supplies gentle transport of dry foods like cereal ingredients (such as flakes, dried fruits, extruded puffs), pet food, snacks, and other shapes and sizes within the food industry.

The goal is to transport friable foods gently and securely. Dry foods require gentle transport to avoid breaking or crumbling. Cereals are another example which typically consist of nuts, grains, dried fruit, and other ingredients sensitive to free falls, or vibrations.

Mayfran International (see Figure 3) utilizes a stainless-steel tray that gently moves product through the system. This helps cereal mixes maintain desired ratios of smaller and larger pieces and prevent the settling out that can occur with other types of conveyors.

FEATURES AND BENEFITS:

- First of its kind rail design. This technology conveys confidence, and peace of mind.
- Longer Lasting performance: Less wear and tear due to having fewer moving parts and a non-vibratory design. Plus, durability keeps food moving around the clock for years even decades, saving money and time.
- Quality Components: Washdown application and a stainless-steel surface with food grade fittings keep the area clean.
- Flexibility and Access: The Mayfran Shuffle Conveyor provides easy access to drive and motor components while meeting your operation's space requirements. *NOTE: Variable speed compatibility and the ability to add sensors allow you to adjust the pace of conveyance.*
- Sanitary: A removable top pan and its continuous design lets you adjust quickly when needed while preventing leaks. A sealed cap on all components prevents bacteria from forming in gaps.
- Less Energy: Mayfran Shuffle Conveyor uses less energy while giving you the option to start and stop the machine under full load conditions (see Table 2).

TABLE 2: PRODUCT SPECIFICATIONS

Standard type	Small Shuffle Conveyor	Medium Size Shuffle Conveyor
Tray Width	W300, W450, W600	W300, W500, W700, W900
Tray Length	L1500~L3000 (15mm increments)	L2400~L10200 (300mm increments)
Max Tray Weight	60kg --- 50Kg	350Kg
Tray Material	316 Stainless Steel	316 Stainless Steel
Tray Support	Linear guard rail	Linear guard rail
Motor Capacity	1 hp	2 hp
Number of Strokes	70-83 min	80 min

Company: *Mayfran International – Food Division*

Product Line: *Shuffle Drive Conveyors for food industry*

Applications: *-Dry Foods (Pet foods/Cereals/Coffee/Snacks)*

-Pharmaceutical (Medicine pills)

-Agricultural (Fertilizers/Feed)

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