

Application Example Metering Ingredients for Snack Mixes

Introduction

Multi component snack mixes are becoming popular quick snack options. Coperion K-Tron has supplied a variety of weigh belt feeder/system combinations for the metering of these components into the mix and prior to the packaging line. By utilizing a high accuracy feed mechanism, such as the Coperion K-Tron Smart Weigh Belt (SWB), the end user can be assured of ingredient cost control and high product quality.

SWB Principle of Operation

The Coperion K-Tron SWB is used for continuous controlled gravimetric feeding of bulk materials. This feeder features a primary weighbridge and offers an optional secondary weighbridge that provides continuous online auto tare, reducing maintenance, frequency of calibration, and improving long term stability. The SWB is offered with a stainless steel enclosure and an easy clean design, with a removable conveyor assembly, allowing easy access for maintenance and belt removal.

Application and Process Details:

In most blend applications, ingredients are delivered to the ingredient bins via bags, boxes, drums or supersacks. Once these ingredients are transferred to the product bin, a slide gate at the bin discharge is opened to allow flow of the product to the SWB feeder hopper below. Each individual component is metered by the SWB based upon a predetermined recipe, and discharged to a horizontal conveyor. The product in this conveyor is then sent to a carousel type packaging machine. The basic features of the SWB controls package allow the sequential starting and stopping of each ingredient line. During this process, the first weigh belt feeder discharges the initial ingredient

to the horizontal conveyor. The remaining belt feeders then discharge their ingredients sequentially, in accordance with the programmed sequence of operation, thus creating a natural layered mix. The number of the belt feeders in the line can vary, dependent upon the number of components in the mix. One recent Coperion K-Tron customer utilized 14 feeders in three lines, in order to create up to 30 different blends of products, with a maximum of seven individual components in each mix.

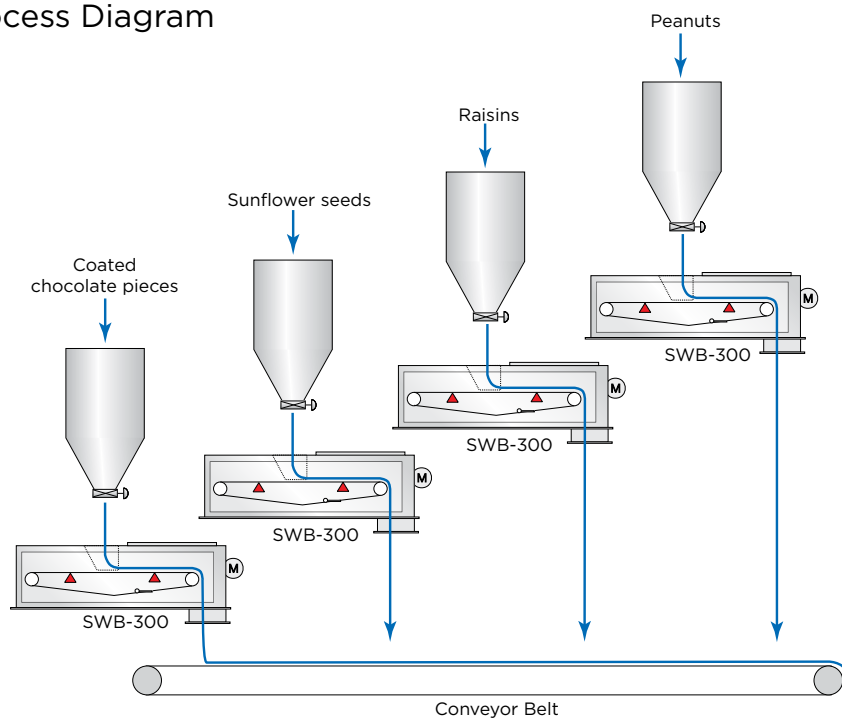
Coperion K-Tron Advantages

State-of-the-art SFT Weighing Technology:

- Advanced single wire weighing technology
- SFT III digital weighing technology delivers the high accuracy requirements needed for maintaining control of the addition of costly ingredients



Process Diagram



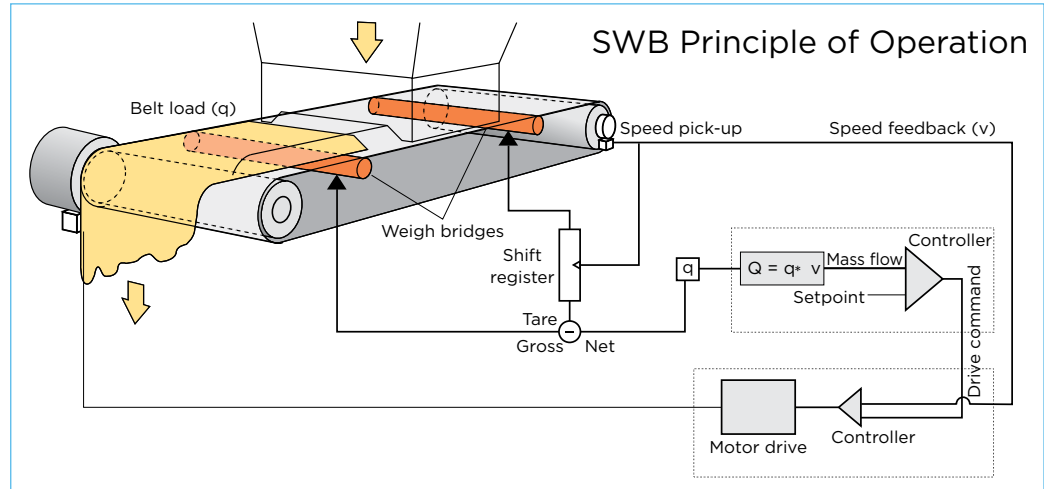
Metering Ingredients for Snack Mixes



- > High resolution weighing and powerful on board digital signal processing ensure precision feeding even at short intervals or in vibration-prone plant environments
- > Fast measurement speed
- > Resolutions as high as 1:4,000,000 in 80 ms
- > Direct digital weighing with electronic temperature compensation
- > Excellent repeatability and stability
- > Built in overload and under-load protection
- > Hazardous area models available for European (ATEX) and North American (NEC) standards

Smart Weigh Belt Feeder (SWB)

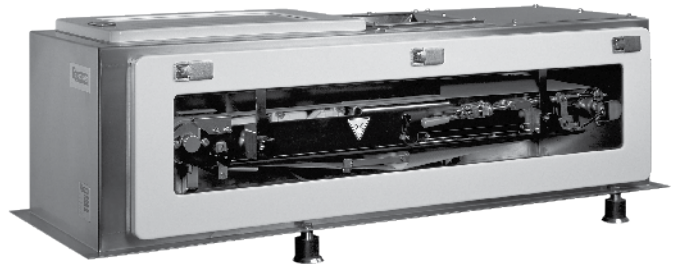
- > Typical flow rates: 20 – 40,000 kg/hr (44 – 88,000 lb/hr)
- > Availability of second weigh bridge with continuous taring ensures that either dust buildup or product buildup on weighing device has no effect on overall accuracy
- > Less space requirement at equivalent accuracies of screw feeders
- > Coperion K-Tron SmartConnex control capabilities to allow for a variety of programming options including ingredient control and recipe management
- > Improved Belt cleaning design as well as reduced maintenance requirements
- > Trapezoidal inlet design allows for improved material flow from feed storage bin



- > Models available in open frame or closed frame designs for ease in accessibility, cleaning and maintenance
- > Minimal product damage or attrition due to gentle action of weigh belt

Single Source for Feeding and Conveying Solutions

- > Volumetric and gravimetric feeding systems for a wide range of applications in most industries
- > Filterless and filtered receivers for conveying of bulk materials in industrial processes
- > Systems engineering support: single station or multi-station systems designed to meet all your material handling needs
- > World-wide service personnel: trained service engineers located around the world to provide on-site solutions at your facility



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