

Dry Processing Technology

Focus on Powder & Bulk Operations

Wayne Labs, Senior Technical Editor

Keeping potato chips flavorful

Snack maker finds a better way to control ingredient flow.

For more than 50 years, Zweifel Pomy-Chips, AG, (Spreitenbach, Switzerland) has been one of the largest snack food manufacturers in Europe. The company produces about 5,000 tons of potato chips annually, and another 1,200 tons of snacks are produced from grain and corn.

Known for innovative chip flavors and recipes such as Nature, Paprika, Provençale, Curry and Mexican, Zweifel strives for quality coating and consistent delivery of the seasoning blend to the potato chip manufacturing process. The problem was that existing equipment wasn't delivering consistent quantities and perfectly repeatable blends to the coating process. This not only affected flavor but also wasted expensive ingredients when greater-than-needed amounts were delivered. Zweifel needed a better way to meter the ingredients to the coating process.

The processor looked at volumetric feeders and loss-in-weight (LIW) feeders. Volumetric feeders are relatively inexpensive, but are open-loop and don't take into account fluctuations in material density. LIW feeders work on weight or mass and can be used in a closed-loop control system. Zweifel considered LIW feeders a good solution for controlling its ingredient flow, and it chose K-Tron LIW gravimetric screw feeders.

Martina Burger, manager technical services for Zweifel, describes the process. "During the coating process, the seasoning ingredient or blend is fed directly to the feeder hopper, which delivers the product to an extended single screw." She adds, "Screw feeders are used due to their ability to deliver difficult flowing materials (e.g., seasoning powders with high oil contents) directly and evenly to the process and without surges in flow. The seasoning powder flows from the screw directly to the coating drum, in which potato chips are rotating at a fixed rate." The precisely measured flow of seasoning results in consistent coating of the chips while maintaining quality and taste.



At Zweifel, K-Tron loss-in-weight feeders accurately deliver the right amount of seasoning mix, producing consistently flavorful potato chips. Source: K-Tron

Single screw feeders equipped with a 60mm-diameter screw deliver salt, paprika and other seasonings at rates of 5 - 200 kilo/hour (1 - 440 lbs./hour). A control system manages recipes.

Depending on the seasoning to be added, the operator chooses which recipe is required, and the controller adjusts the feeder variables accordingly. Zweifel finds the feeder is easy to clean and maintain, allowing quick process changeovers when the spices/ingredients are changed.

Zweifel's LIW feeder consists of a hopper and feeder that are isolated from the process so the entire system can be continuously weighed. As the feeder discharges seasonings, system weight declines. The LIW feeder controller adjusts feeder speed to produce a rate of weight loss equal to the desired feed rate setpoint. With this technology, a constant mass flow is ensured, providing consistent product delivery to the coating device. LIW feeder controls verify the material is flowing and send an alarm if material flow is stopped by an upstream problem. ♦

For more information, Sharon Nowak, 856-256-3119, snowak@ktron.com