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THE MAGAZINE FOR OPERATIONS AND MANUFACTURING MANAGEMENT

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Focus on **POWDER & BULK OPERATIONS**

Wayne Labs, Senior Technical Editor

Tea blend time and degradation cut with rotary mixer

Tumble-turn-cut-fold mixing action yields 100% batch uniformity in less than three minutes.



▶ (Left): An employee loads ingredients into the mixer. (Top, right): Mixing flights produce a tumble-turn-cut-fold mixing action that yields 100 percent batch uniformity in less than three minutes. (Bottom, right): A variety of natural flavors can be added to the tea via an internal spray system. Source: Munson Machinery.

When Choice Organic Teas was founded in 1989 by Granum Inc., it launched the first exclusively organic tea brand in the US. The company offered four choices of organic teas—Green, Ban-cha, Twig and Oolong. Today, it offers more than 75 varieties of USDA-certified organic, sustainably grown teas and herbal infusions.

In 1990, the processor was using a 10-cu.-ft. capacity, food-grade, modified cement mixer to blend up to 30 lbs. of tea per batch. During the mixing process, the mixer had to be stopped and opened several times, both to add flavoring and to address unblended areas, which significantly slowed the blending process.

"The modified cement mixer lacked a baffle system unlike the mixer we use today," explains Rod Hanson, Choice Organic Teas quality assurance manager. "Because of this, there was a dead zone in the middle of the mixer where the tea would not properly blend, and this area had to be manually scooped and stirred, after which the machine could be restarted."

Long mixing cycles degraded the delicate tea leaves, while frequent stoppages and low capacity meant that an entire workday was lost blending enough batches to yield 240 lb. of blended organic tea.

As the company grew, it added increasingly sophisticated bagging equipment and eventually replaced its blender with a 15-cu.-ft. capacity MX15-SS mini rotary batch mixer from Munson Machinery.

"The Munson mixer revolutionized our blending operation," says Eric Ring, Choice Organic Teas purchasing manager. "It allowed us to do large amounts of blending with no ribbons of

non-blended ingredients, yet gently enough that it didn't damage the tea."

The stainless steel Munson blender uses a gravity-driven mixing process, which employs internal mixing flights that produce a tumble-turn-cut-fold mixing action. The processor runs the mixer continuously for 15 to 20 minutes per batch to prevent stratification of ingredients throughout loading and final discharge with no residuals.

Average weights for each batch of tea range from 150 to 300 lbs. "Teabag cuts, which are finer than leaf tea, can be mixed at higher weights—up to 320 lbs.—because they're stronger and heavier," says Ring. "Leaf teas are mixed in smaller batches to protect the leaf."

Some blends have only two to three ingredients, while others require 10 to 12. "We choose hundreds of different organic-certified ingredients from select tea gardens and vendors worldwide," says Hanson. "We have specific recipes for our blends that are formulated pre-production for our many bagged tea and whole leaf offerings. Our master blender adheres to these blend sheets when weighing out specific ingredients for each blend and knows, through experience, the blend time necessary for each batch."

Internal spray lines built into the mixer allow for a wide, even spray of natural flavors. "We choose from a variety of nozzles based on the viscosity of the flavor," says Ring. "Using the internal spray system and a specific nozzle, we are able to pressurize the flavor and apply it widely and uniformly as the tea tumbles, resulting in uniform distribution with no saturated areas."

The internal spray system is also used for cleaning the blender between batches. "We have a nozzle that allows a strong flow of our own special formula for flavor neutralization and cleaning between batches," adds Ring. ♦

For more information:

Steve Knauth, 315-797-0090, info@munsonmachinery.com