

CANADIAN

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What Process Industry Needs to Know



# SMALL MIXER, MASSIVE IMPACT

A Case-study in Reducing Cycle Times and Overages with a Rotary Batch Mixer

By Steve Knauth

**W**hen EW Packaging switched to a Rotary Batch Mixer, the Los Angeles contract manufacturer cut blending time in half and slashed ingredient overages from 10 percent to just 2-3 percent. The gentle, efficient mixing action eliminated dead zones and product damage while delivering perfect HPLC tests every time — transforming powder blending from a bottleneck into the company’s most profitable operation.

EW Packaging contract manufactures and packages powder, tablet and capsule products, protein powders, energy drink mixes, and sports nutrition products. Customers include national warehouse clubs and dietary supplement retailers.

Founded in 2001 as EW Trading, dba EW Packaging, CEO Rob Lonas renamed it EW Packaging when he brought the company’s packaging and printing services in house. Today EW operates six blister-filling lines and four bottle-filling lines, and uses flexographic printers to customize pouch and blister foils. It also machines its own tooling, which shortens turn-around times and reduces costs.

In 2016, the company began blending dietary supplement and food powders and manufacturing tablets and capsules, but the company’s V-cone blender proved inefficient. “The machine was a lot of work and there was a lot of downtime,” Lonas says. “It took at least 30 minutes to get a load in and out, plus another 15 to 20 minutes of actual mixing.”

Next, he tried a ribbon blender, which reduced loading and unloading times but it compromised blend quality. “The ribbon blender has corners, dead zones, where the powder is not mixed,” he says. Sometimes EW added as much as 10 percent more active ingredient to the products than required for HPLC testing to confirm that the product met the label claim. In addition, the ribbon blender’s



impeller put product quality at risk, Lonas says. “It chops up the ingredients and damages the product at the same time.”

## GENTLER, MORE ACCURATE BLENDING

To improve EW’s blending operation, Lonas purchased a 425 L (15 cu ft) Rotary Batch Mixer (this one from Munson Machinery) that loads, blends, and discharges in about 15 minutes — half the time of the previous blenders. The unit’s

**The 425 L (15 cu ft) capacity Rotary Batch Mixer discharges to a screw conveyor which transfers mixed powder products to an auger filling machine.**

horizontal vessel rotates on external trunnion rings located at each end, handling ingredients gently because it has no agitators. Instead, the vessel has internal flights that create a four-way tumble-turn-cut-fold mixing action, producing homogeneous blends without generating heat, shear or stratification. Lacking internal shafts, the mixer has no seals that are in contact with the product.

To initiate a blending cycle, operators hand-weigh ingredients into a drum. A plant-based protein product may contain up to eight ingredients, while a flavored creatine product may contain up to four. The drum containing the weighed batch is then lifted onto a mezzanine and dumped through a security screen into a hopper that discharges into the mixer’s stationary inlet. A collection hood contains fugitive dust during the loading process, while a single external seal prevents the escape of dust during vessel rotation.

Lonas highlights the Rotary Batch Mixer’s gentle mixing action in his business conversations. “It is part of my sales pitch for whatever the job is — encapsulation, tableting or just blending a powder,” he says. “This mixer just folds in the in-



Operator empties a scoop of hand-weighed powder into the mixer intake which remains stationary as the vessel turns.

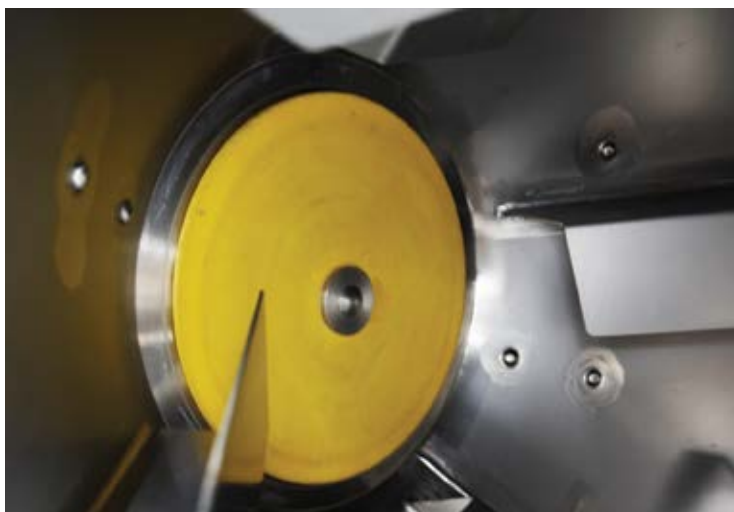
PHOTOS: COURTESY EW PACKAGING



EW Packaging's fastest line fills as many as 50,000 bottles a day.



The Rotary Batch Mixer loads, blends, and discharges from a stationary outlet in about 15 minutes.



Internal mixing flights impart a tumble-turn-cut-fold action that produces a homogenous blend with no heat, shear or stratification.

redients. It is not smashing them or pounding them together.”

Blends are discharged from the mixer through a stationary outlet. Batches destined for encapsulation or tableting flow into mobile hoppers that are rolled into the adjacent room for those processes. Powder products are discharged into a screw conveyor that transports the batch

to the feed hopper of an auger filling machine, which dispenses it by weight into bottles, canisters, tubs, or most any container.

The vessel leaves almost no residue following discharge. “There are not any corners or pockets that can collect powder,” Lonas says. Between blending campaigns and when switching products, operators

wash, rinse, and swab-test the vessel interior in accordance with Good Manufacturing Practices.

Lonas says that the blends are always on-spec, and overages range between 2 percent and 3 percent instead of 10 percent previously. “I sold my V-blender and my ribbon blender. The Rotary Batch Mixer gives us a perfect HPLC test every time.”

#### **SMALL SIZE, BIG OUTPUT**

Despite its modest volumetric capacity, the mixer outputs high volumes because it loads and discharges quickly and blend times are short, as little as 3 to 6 minutes, Lonas says. “When we started getting bigger orders, we got nervous at first thinking our mixer was not big enough, but we ran some big orders with no problems.” In one case, EW Packaging blended some 80 batches of a protein powder over four days, filling all of it into 2.3 kg (5 lb) tubs.

“The future for us is growing the powder business because we have our powder lines so dialed in. It is a profitable and a fast way to fill bottles.” The company’s fastest line fills as many as 50,000 bottles a day, which includes capping, induction sealing, metal detecting, check-weighing, labelling, lot coding, and neck banding.

“We seldom tell customers ‘No’ unless they come in with a liquid,” Lonas says. “If we do not have the right machinery, we buy it. Our niche is getting new products going for people and cranking it out, getting them into the market fast. We get a lot of business because of our blister capabilities and because we can do short-run stuff. There are not many other places on the West Coast that can do that.”

Lonas calls the mixer his workhorse. “I think we changed a seal once. There is not much maintenance to do on it. It is one our most reliable machines.”

**STEVE KNAUTH** is the marketing and technical manager for Munson Machinery Co., Inc. Established in 1823, Munson Machinery is a world leader in mixers, blenders and size reduction equipment for bulk solids materials.