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JUNE 2026  
VOLUME 22 NO. 3

## TRUST YOUR EARS: HOW MECHANICAL INTUITION PROTECTS PUMPING EFFICIENCY IN F&B

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# NUTRACEUTICAL BLENDING TIMES CUT 90 PERCENT WITH ROTARY BATCH MIXER



A&Z Pharmaceutical cut blending times of its nutraceutical products by more than 90 percent using a Munson Rotary Batch Mixer over the V-cone blenders employed on other lines.

## Quantifying differences between two tumble-type mixers

*"Chiefly, A&Z needed uniform blends of dry ingredients without compacting them," says Marian Vija, director, research & development. "We make claims of uniformity for all the actives in our formulations and have to meet those claims in the final product - capsule, tablet, and powder drink."*

The company also desired shorter mixing cycle times with no product damage or segregation of materials.

The V-cone blenders did the job on the existing calcium and vitamin D production lines, but were typically taking 45 to 60 minutes per batch to achieve the desired uniformity, prompting the purchase of a 1133 ℓ capacity stainless steel model 700-TS-40-SS [Rotary Batch Mixer](#) from Munson Machinery.

The unit contains [internal mixing flights](#) that tumble, cut, turn and fold the batch, causing particles to recombine 288 times per minute, achieving batch uniformity in four minutes, or 11

cycle times of the Rotary Batch Mixer by about a half minute, versus five minutes in the V-blenders. *"The shorter mixing time makes overmixing and/or over-lubricating less likely,"* says Vija.

Fibre drums lined with GMP compliant plastic bags are staged beneath the mixer's discharge gate, and filled as one operator at the control panel adjusts the mixer to rotate slowly, while a second operator positions each drum below the gate.

## GMP sanitising procedure prevents cross contamination

A&Z established a protocol that complies with FDA Good Manufacturing Practices for sanitising and preventing cross-contamination. Once the mixing vessel is emptied, it is put under vacuum to remove residual dust. Large access doors on opposite sides of the mixing vessel are then opened and any remaining product is vacuumed, after which the interior is pressure washed with hot water, and the vessel is rotated for several minutes.

After the water is drained, a hot-water cleaning solution is added, and the mixer is rotated for several additional minutes. That solution is removed and the interior is again hosed down and drained and/or softly brushed as necessary. For a final rinse, hot water is added and the blender is rotated for several minutes and then drained. A one liter of 70% isopropyl alcohol is then added, the mixer is rotated 10 times, and is drained. This step is then repeated, after which the mixer is dried under vacuum for two hours, and ready for another cycle.

The large doors of the vessel allow unobstructed access for cleaning and visual inspection of all product contact surfaces, which Vija says can be accomplished without moving the drum.

## Results pre-determined through laboratory testing

Actual A&Z nutraceutical ingredients were tested at the manufacturer's facility using a laboratory-sized Rotary Batch Mini Mixer, with four minutes established as the optimum mixing time. A&Z also performed content uniformity studies on commercial batches made in the Rotary Batch Mixer in production. *"We obtained excellent results:*

*uniformity and a good mixing procedure,"* Vija says. *"The blends are suitably robust for compressing and encapsulation."*



to 15 times faster than the company's V-cone blenders. The company also gained production flexibility, as the mixer is equally efficient from 100% down to 15% of rated capacity.

The addition of dry lubricant in small amounts of one gram per 7 to 9 m<sup>3</sup> for certain tablet and capsule materials extend

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