

# AUSTRALIAN **BULK** **HANDLING** **REVIEW**

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VOLUME 29, ISSUE 1 | MARCH/APRIL 2024



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# Phoenix emerges with renewed output

Munson Machinery has helped a dietary supplement manufacturer improve its output fivefold and halve its labour requirement.

## IN 2020 US-BASED PHOENIX

Custom Manufacturing brought on Eric Manfull, an 18-year veteran of the food industry, to expand production and develop the firm into a contract manufacturer.

The business makes and packages protein powders, amino acids, functional foods and encapsulated dietary supplements. As part of its processes, it blends, encapsulates, fills sachets, bottles, and packages dietary supplements.

Manfull, the new general manager, said the main bottleneck was the mixing operation.

“We needed to blend 150,000 kg a month, but we couldn’t even scratch at volumes like that with the equipment we had,” he said.

His predecessor tried to solve the problem with a used V-blender, but its shaft cracked. Manfull then reached out to Munson Machinery which offered a factory-refurbished Rotary Batch Mixer.

“I had used a Munson before and I knew how good they were, so I wrote a check that night. It’s been key to our success,” he said.

Since installing the mixer, volume is up fivefold, labour is down by half, airborne dust is down 90 percent, blends are more homogenous, and nine-month production backlogs were cleared within 60 days, according to Manfull.

## Faster blending with less dust

The 2549L mixer has no agitators or internal shafts or bearings that contact the product. Instead, the horizontal vessel rotates on external trunnion rings located at each end. Within the vessel, mixing flights, or lifters, create a gentle four-way tumble-turn-cut-fold action that does not generate heat or degrade the product.



*Blends are homogenous and volume is up fivefold.*

Phoenix installed the mixer in a dedicated room that also houses a bag dump station and vibratory sifter. To load the mixer, an operator empties 25kg bags of ingredients into the bag dump station which feeds the material to the sifter. Fitted with a 2mm or 0.84mm screen, the sifter breaks apart clumps and prevents foreign objects such as bag pieces from entering the vessel.

On-size material passing through the sifter flows past rare earth magnets and into a chute connected to the mixer's inlet, which remains stationary as the vessel rotates.

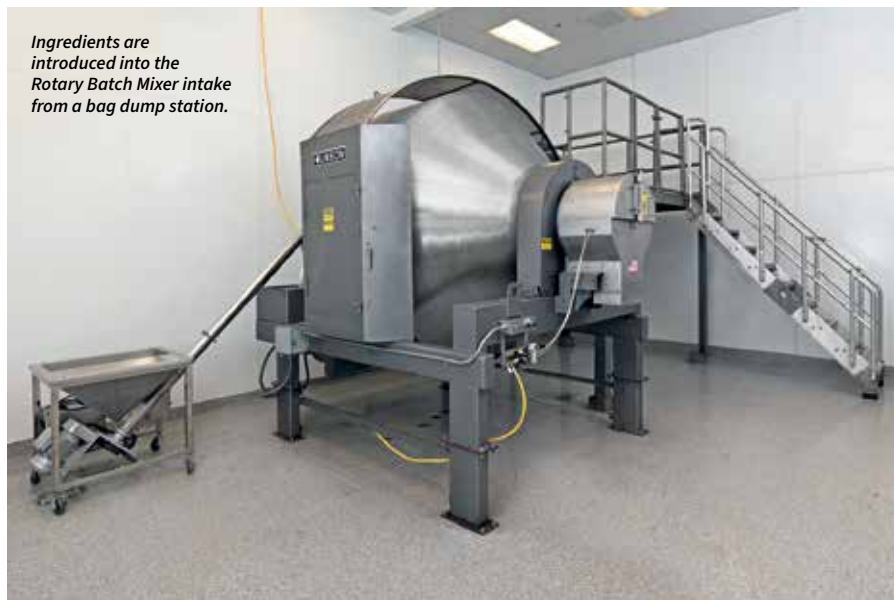
With a batch capacity of 1500 kg, the mixer is larger than Phoenix Custom's other units: a conical blender with a 600kg batch capacity and a smaller multi-axis tumble blender. The new mixer has proven easier and faster to load and discharge, while producing homogenous blends more quickly and with less dust.

The company manufactures about 30 products, some having just two ingredients and others as many as 50. The Rotary Batch Mixer handles protein and amino acid powder applications, while the conical and tumble blenders mix smaller-volume products.

"It takes us an hour on each end to load and unload the conical blender of a 600 kg batch," Manfull said.



Blends discharge with no residual through the stationary outlet into bulk bags that are transferred to the packaging lines.



Ingredients are introduced into the Rotary Batch Mixer intake from a bag dump station.

"We can charge the Rotary Batch Mixer with twice as many ingredients in 15 to 20 minutes and discharge in 10 minutes."

With faster throughput, the company overcame a nine-month backlog while also meeting current demand.

"We do more in one shift with this mixer than we could in two shifts with other the blenders," he said. "Instead of blending four days a week, 20 hours a day, we're blending four days a week over one 10-hour shift."

### Production up fivefold

Production has jumped from 2000 to 5000kg a week to between 17,000 and 25,000kg.

Blends discharge from the mixer through a stationary outlet equipped with a pneumatically actuated discharge door that allows the operator to control flow. Protein powder blends flow into bulk bags holding up to 450kg. These are transferred in-house to packaging lines that fill pre-formed poly bags and pouches of various sizes. Other products are transferred to a capsule-filling machine and packaged in bottles. Some protein powder blends are shipped out for packaging elsewhere.

The company fully cleans and test-swabs the equipment, including the fillers, taking about three hours.

"Drying takes longer than cleaning," Manfull said. "We are back into production with minimal downtime."

### Minimal dust

Better dust control has also improved the operation, with a flexible coupling sealing the sifter outlet to the mixer's inlet. In addition, ports on the mixer's inlet and outlet chutes connect to a dust collector, and a single radial seal prevents dust from escaping from the drum.

"The room stays much cleaner," Manfull said. "We have 10 per cent of the dust that was present before."

The internal flights that blend the material also serve to direct it toward and through the mixer's outlet until the rotating vessel is fully evacuated, preventing segregation.

"The mixing flights inside automatically discharge the batch until the vessel is clean," Manfull said.

"We're getting 100 per cent of the product out of the mixer, and blend homogeneity has gotten much better, zero problems."

Phoenix Custom Manufacturing is working toward obtaining ISO standard compliance and organic, kosher, halal, and gluten-free approvals.

Manfull said he feels fortunate.

"I expected to be using a 1,982 to 2,549 L paddle blender. I didn't know that you could find a good used Rotary Batch Mixer. For the wide range of things that we do as a contract manufacturer, this fits the bill and it's the perfect size," he said. **B**