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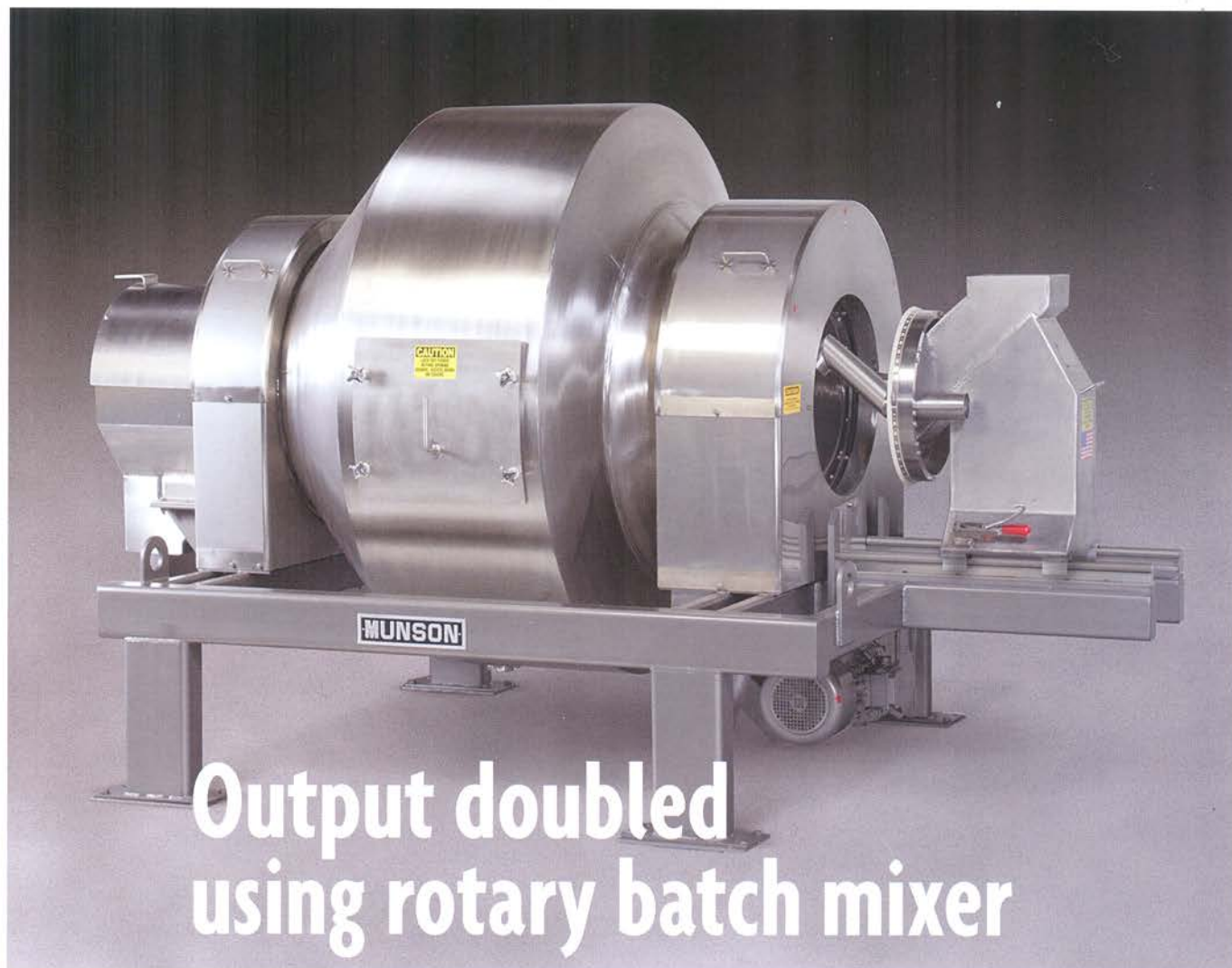


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# Output doubled using rotary batch mixer

### ABOVE:

With a batch capacity of four cubic metres (4,000L), the Rotary Batch Mixer at NuTech Biosciences has doubled output of nutritional feed supplements.

A US manufacturer of nutritional supplements for animal feed explains why a rotary batch mixer was the best choice for its operation and how the equipment has performed.

**NUTECH BIOSCIENCES, FOUNDED IN 2010,** produces mostly chelated minerals such as iron and copper. This involves a process whereby organic materials such as amino acids react with minerals to produce compounds that make the minerals more easily absorbed by the animals.

Other products provide different nutrients, individually or in combination, for specific uses, such as supporting nutrition in pregnant dairy cows during the last weeks before calving.

The NuTech product line includes direct-to-consumer supplements that farmers can add to livestock feed, as well as compounds prepared especially for commercial feed manufacturers.

Improving its mixing operation enabled the company to double production.

"We purchased a Rotary Batch Mixer from Munson in 2014 to increase production capacity," explains company president and founder PV Reddy.

"Although the mixer has a three-tonne capacity, we typically mix about 1.8 tonnes at a time. Daily

throughput is about 13.6 tonnes, and 272 to 363 tonnes per month, depending on demand for product," Dr. Reddy said.

A previous one-tonne drum mixer processed about nine tonnes per day and 181 tonnes per month. Dr. Reddy says it is still in use for mixing smaller batches of product.

### **Concentrated ingredients blended**

The company specified a model 700-TH-140-MS which has a useable batch capacity of four cubic metres (4,000 L).

Dr. Reddy said, "We manufacture concentrated products. Once we produce the concentrated product, we blend it down to the percentages we want in the Munson mixer".

Most often, the concentrated product is mixed with a carrier, such as bran. The product concentrate typically makes up 60 per cent to 80 per cent by volume of the product-carrier mixture, he explains.

NuTech produces diverse combinations, from

a single component mixed with bran to blends of multiple product components. Mixtures may be wet or dry.

Ingredients are processed elsewhere in the plant and loaded manually into the mixer from bags through a stationary inlet as the mixing vessel rotates. Uniformity can be achieved in two to three minutes, but the mixer runs up to 10 minutes per batch for added insurance of uniform distribution of the concentrated ingredients.

The operator unloads the blended product into a 2.7 tonne capacity bin that discharges into 25 kg bags. A digital scale tracks the weight of each bag. When the bag reaches the desired weight, it drops down to a stitching machine for closure.

### **Frequent product changeovers**

The nature of the product line means NuTech makes frequent product changeovers, says Dr. Reddy. Cross-contamination is generally not a concern, due to the small amount of material remaining in the mixer after emptying and the fact that a very small amount of one product would not affect the performance of another.

The only exception is not a performance or safety issue, but a cosmetic one: when changing from a coloured product mix to a white one, for example. Most of the blends are mixed with a bran carrier, which is tan or brown in colour. Before mixing a white-coloured blend after a bran mixture, the mixer must be

thoroughly cleaned to prevent tan specks appearing in the white product.

How extensive the cleaning process depends on the product. Some powdery minerals cling to the mixer's walls. The cleaning process starts with loosening product from the walls of the mixer through the drum's two clean-out doors, and takes about an hour, he says. The mixer is cleaned weekly, or as needed when changing from a coloured product blend to a white one.

### **Matching a mixer to the process**

NuTech also considered agitated mixers with stationary vessels, and another type of drum mixer, but decided on the Rotary Batch Mixer for its tumble-turn-cut-fold mixing action, its blend quality of uniform particle distribution, and its cleanability.

Dr. Reddy also wanted relatively quiet operation and variable speed control. "When mixing dry material, the mixer can operate at lower speed. When adding oil to the mix, a higher speed is required," he explains.

He says, "An advantage of the rotary mixer is that you can prepare the batch in the mixer today and can bag it tomorrow. This is not possible with a stationary mixer, which would lack the power to re-start when full of product. If you have two hours left in the day, you can make the batch, even if there's not enough time to both mix the batch and package it". **B**

**BELOW:**  
NuTech Biosciences manufactures and markets nutritional feed supplements to livestock producers and commercial manufacturers of animal feed.

For more information visit: [www.iBulk.com.au](http://www.iBulk.com.au)

