

# POWDER & BULK SOLIDS

The Source for Dry Processing and Bulk Handling Technology



## Selecting the Right Weight Indicator

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### A Royal Farewell

Retiring after an impressive 30 years as an integrated media consultant for *Powder & Bulk Solids*, Kay Christensen has some parting words before calling it a career.

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### Advanced Load Cell Troubleshooting

Load cells are not only the most critical part of a bulk electronic weighing system, they are also a vulnerable part of the scale system. Load cells undergo challenges that may impair their functionality.

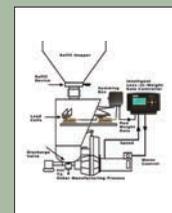
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### Intelligent Loss-in-Weight Closed Loop Rate Control

New intelligent closed loop feeder controllers are delivering unprecedented accuracy in manufacturing operations where tiny amounts of material can make a huge difference to the finished product.

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### E-Scale Bench Scales for The Connected Enterprise

Hardy E-Scale bench scale series delivers direct connection to Rockwell Automation's The Connected Enterprise with an IIoT-ready (Industrial Internet of Things) scale base. It includes an integrated Hardy weight processor for direct industrial network connection via EtherNet/IP, Profibus-DP, and Modbus protocols. The bench scales are ideal for dry food processing, consumer packaged goods, pharmaceutical manufacturing, laboratory, and industrial installations.

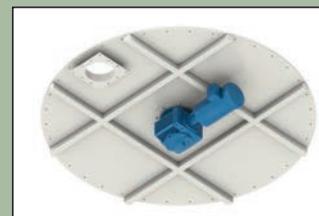
Hardy Process Solutions, San Diego, CA 858-278-2900  
www.hardysolutions.com



### Flat-Bottom Bin Sweep

Kice Industries introduces a new flat-bottom bin sweep that is suitable for use in NFPA-compliant filter or bin designs avoiding the requirement for tall hopper sections. With a total height of 10.5 in., this design can help fit equipment in spaces otherwise not possible or eliminate the requirement for costly floor penetrations. The unit incorporates a sweep-arm with an FDA-compliant neoprene wiper, and a simple bottom-mounted direct drive motor assembly for reliable operation and ease of maintenance.

Kice Industries, Wichita, KS 316-744-7151  
www.kice.com



# Rotary Batch Mixer Doubles Livestock Feed Supplement Output

Founded in 2010, NuTech Biosciences Inc. manufactures nutritional supplements for the animal feed industry. Most are chelated minerals such as iron and copper, according to company president and founder PV Reddy, DVM, Ph.D. Chelating is a process whereby organic materials such as amino acids react with minerals to produce compounds



Nutech Biosciences manufactures and markets nutritional feed supplements to livestock producers and commercial manufacturers of animal feed.

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,” Reddy said. “Although the mixer has a three-ton capacity, we typically mix about two tons at a time. Daily throughput is about 15 tons, and 300 to 400 tons per month, depending on demand for product.”

A previous one-ton drum mixer processed about 10 tons per day and 200 tons per month. Reddy says it is still in use for mixing smaller batches of product.

## Concentrated Ingredients Blended with Carrier

The company specified a model 700-TH-140-MS, which has a useable batch capacity of 140 cu ft.

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

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

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 3-ton capacity bin that discharges into 55-lb 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.



With a batch capacity of 140 cu ft, the rotary batch mixer at NuTech Biosciences has doubled output of nutritional feed supplements.

## Frequent Product Changeovers

The nature of the product line means NuTech makes frequent product changeovers, said 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 (changing from a colored product mix to a white one, for example). Most of the blends are mixed with a bran carrier, which is tan or brown in color. Before mixing



Internal mixing flights produce a tumble-turn-cut-fold mixing action that achieves uniform blends.

a white-colored 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, Reddy said. 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. The mixer is cleaned weekly, or as needed when changing from a colored 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. 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 explained.

"An advantage of the rotary mixer is that you can prepare the batch in the mixer today and can bag it to-

morrow," Reddy said. "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."

For more information on Munson Machinery Company, Inc., call 315-797-0090 or visit [www.munsonmachinery.com](http://www.munsonmachinery.com). [www.nutechbiosciences.com](http://www.nutechbiosciences.com)







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## BLEND

### ROTARY BATCH MIXERS



- 0.25 to 600 cu ft (0.01 to 17 cu m)
- 100% uniformity in less than 3 minutes
- Uniform liquid additions
- Ultra-gentle
- Complete discharge
- Fast sanitizing

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- Low cost

## REDUCE

### LUMP BREAKERS



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- Quick screen cleaning, inspection, removal

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