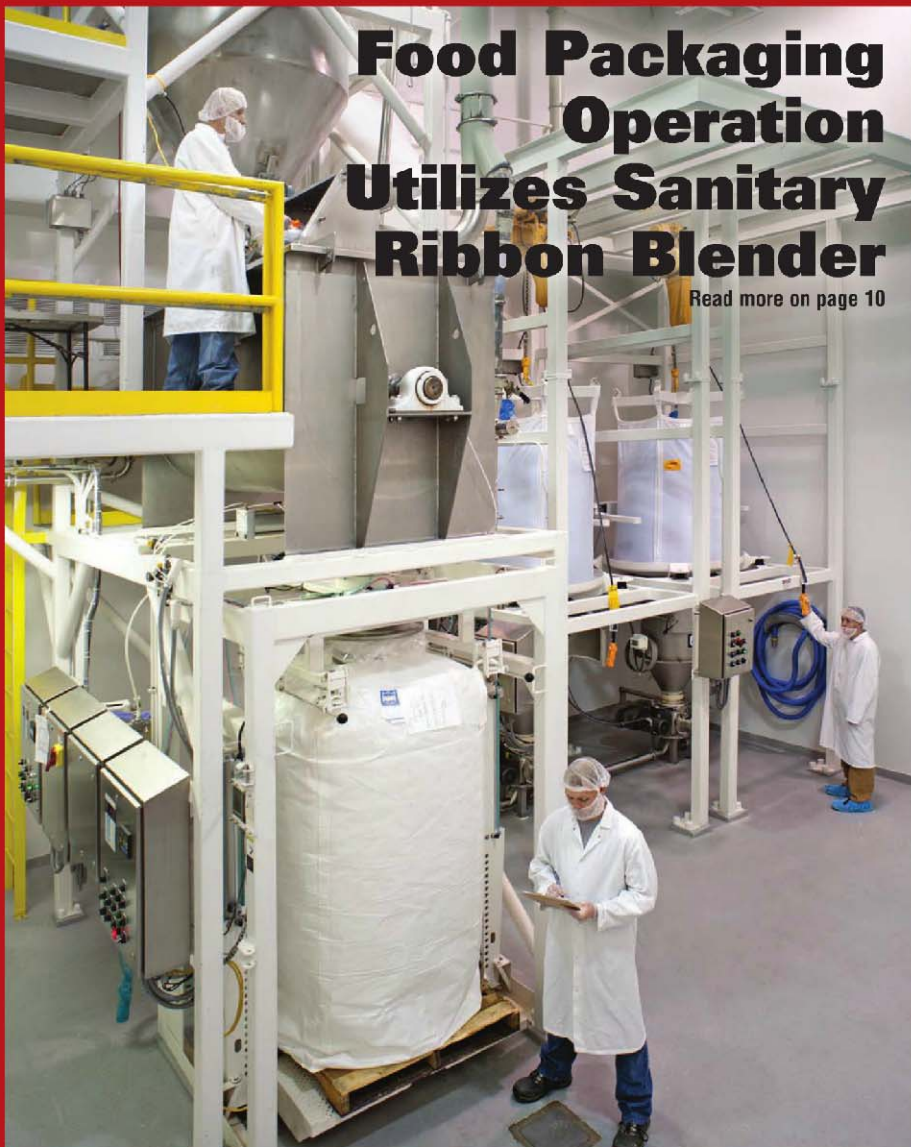


POWDER BULK SOLIDS

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Food Packaging Operation Utilizes Sanitary Ribbon Blender

Read more on page 10

Industry Insight

Today's manufacturing plants and the mixers within, both new and existing, are being increasingly challenged to mix in shorter amounts of time as manufacturers push fixed assets for greater returns. **Read more on page 6**



Mixing & Blending Focus

The WTS twin shaft paddle mixer is a batch mixer with two parallel drums, each equipped with paddles that promote a homogeneous mix regardless of particle size and density. **Read more on page 7**



Bin Activators & Dischargers

The SolidsFlow Model 6000 controlled rate discharger is used for discharging materials that have the tendency to compact, segregate, and bridge. Feed rates up to 1500 cu ft/hr are attainable. **Read more on page 24**



HemiPleat eXtreme Dust Collector Filter

A new HemiPleat eXtreme nano fiber filter from Camfil Air Pollution Control (APC) offers higher filtration efficiencies, greater durability, and better resistance

to pulse-cleaning. These advantages can extend filter life and reduce operating and energy costs associated with industrial cartridge dust and fume collectors. The standard eXtreme media delivers MERV 15 efficiency - higher than the base media rating of MERV 10 and the MERV 13 rating of competitive nano fiber products. Also available is a high-efficiency (HE) MERV 16 eXtreme media that delivers tested efficiency of 99.999 percent on 0.5 micron and larger particles by weight.

Camfil APC, Jonesboro, AR 800-479-6801
www.farrapc.com

Pinch Diverter Valves

Cyclonaire pinch diverter valves are built for obstruction-free flow of dry materials conveyed under pressure in dilute, semi-dense, and dense-phase pneumatic systems. They can direct material to two different destinations or be set up to combine material flows from two different sources. Each valve can be adapted for its application and configured to a specific angle of divergence or convergence. They handle convey pressures up to 85 PSIG and may be furnished with flanged, plain, or grooved pipe connections with integral pressure switches that indicate flow direction. The valves are offered in diameters of 2 to 12 in. **Cyclonaire Corp.**, York, NE 800-445-0730
www.cyclonaire.com



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Vocational Service Blends Dry Products for Commercial Bakers

Located in the Blue Ridge Mountains of North Carolina, Transylvania Vocational Services (TVS) provides an organized program of developmental activities for individuals 18 years of age or older who have intellectual or physical disabilities. The program includes paid work training to enable individuals who lack work experience or need specific vocational training to overcome barriers to employment and enter a competitive job market.

To fund the program, TVS operates a plant in which bulk food products are blended and packaged for sale to government and commercial customers. The operation can blend a wide range of dry bulk food ingredients, from bakery and confectionary blends to dietary supplements and beverage mixes.

These products are blended using a 65-cu-ft Model HD-3-1/2-7 SSD double ribbon blender from

Munson Machinery Inc., equipped with a shortening extrusion system for bakery mixes. The blender also has a pressurized oil spray bar for adding uniform dosages of vegetable oil.

"Because of its versatility and ability to produce a number of different formulations, the blender not only provides our clients with an excellent vocational opportunity but also allows us to market our products to a variety of customers," says Steve Green, TVS plant manager.

Products Sold under Registered Trademark

Blended products such as Hot Roll Mix, Sweet Roll Mix, and Nutrablend Instant Corn Soy Blend, are all sold under the Mountain Maid trademark. The non-profit organization acquired the trademark as the result of a contest conducted in 2000 in preparation for packaging nonfat dry milk for the United States Department of Agriculture (USDA). The name was selected because



Overall view shows two bulk bag dischargers for whole wheat flour and nonfat dry milk, pneumatic conveying lines, weighing hopper, hand addition of ingredients, the ribbon blender, and final mix in the bulk bag below blender.



From each bulk bag, dry whole wheat flour and instant nonfat dry milk are pneumatically conveyed to a weighing hopper and then into a Munson double ribbon blender.



Nonfat dry milk (L), whole wheat flour (R), shortening and proprietary ingredients comprise the final Non Fat Bakery Mix (C).

it was symbolic of the culture of western North Carolina.

One of TVS's newer products is called Mountain Maid Low Fat Bakery Mix, a blend of whole wheat flour, instant nonfat dry milk, shortening, and proprietary ingredients. The mix is produced under contract with USDA for distribution to food banks, domestic feeding programs, and other nonprofit organizations.

"The ingredients are blended in individual batches in our USDA dairy-certified Munson ribbon blender which our clients operate," says Green. "The finished product can be used as a basic ingredient in baked or fried staples such as pie crust, pancakes, doughnuts, cornbread, biscuits, and gravy."

In addition to Low Fat Bakery Mix and other Mountain Maid branded products, the plant blends custom formulations under contract to customer specifications.

Designed for Thorough Mixing, Easy Cleaning

"Bakery Mix is prepared in 2500-lb batches," Green explains. Two ingredients – 1950 lb of dry whole wheat flour and 150 lb of instant nonfat dry milk – are pneumatically conveyed into a weighing hopper on load cells located directly above the ribbon blender. About 250 lb of proprietary ingredients are added to

the blender by hand, while some 150 lb of shortening is added by means of a progressive cavity pump.

The pump is equipped with a hopper to hold 50-lb blocks of shortening, and the hopper is equipped with a gravity fed screw auger to pull the plasticized shortening into the pump.

If the product being blended requires vegetable oil (Instant Corn Soy Blend, for one), the dosage to the blender is regulated by a programmable logic controller interfaced with load cells beneath the oil holding tank.

The Munson ribbon blender is a stainless steel food-grade unit with a capacity of 65 cu ft. Powered by a 25-hp electric motor, its

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Small amounts of proprietary ingredients are added to the blender by hand.

2-to-1 agitator length-to-width ratio yields uniform blends in minimum cycle times. Blending capacity is calculated as approximately 70-80% of total vessel volume, leaving ample room for material flow on the upswing side of the agitator.

Sanitation is Constantly Maintained

All internal welds have a minimum 0.25-in. radius to eliminate corners, cracks, and crevices that could entrap material. Tight tolerances of 1/16 to 1/32 in. between the ribbon blades and

the blender trough minimize the residual heel of material remaining in vessel after discharge, an advantage when cleaning between batches.

Once the low fat bakery mix is thoroughly blended, it is discharged into a bulk bag located

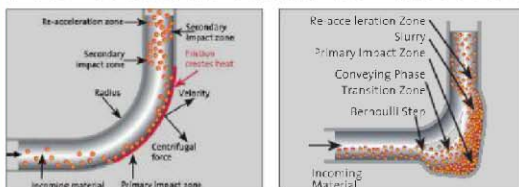
Wear resistant pipe bends

Gary Brock, Pelletron Corporation

Pneumatic conveying of abrasive materials wears out standard, long-radius pipe bends quickly. There are various types of pipe bends designed for extended lifetime available. Pelletron developed a special elbow that withstands the most abrasive materials.

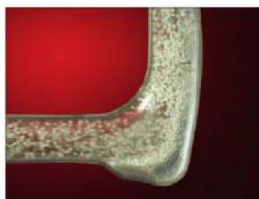
Wear problems are common in dilute phase conveying systems with high velocities. The conveyed product slides along the elbow wall at a high velocity and high centrifugal forces press the conveyed material against the outer metal surface. The resulting friction causes the elbow walls to wear out quickly.

Pelletron developed a unique, patented conveying pipe elbow that is trade named the Pellbow®. It is especially designed to minimize damage caused when solid particles are injected into a high velocity conveying system — the higher the velocity, the higher the friction. Using a Pellbow® avoids the problems caused by friction in traditional elbows.



Standard long-radius pipe elbow

Pellbow® model



Clear Pellbow® in operation



Wear resistant Pellbow®

By design, material flowing through the Pellbow® forms a pocket or "impact zone" and moves slowly upward and out. Incoming material is deflected at 90 degrees with minimum resistance and no impact damage. The Pellbow® is wear-resistant making it the ideal solution for conveying abrasive products. The Pellbow® is self-cleaning when the material flow is stopped and it works in all installation positions.

Long-radius elbows or other types of pipe bends in existing vacuum and pressure dilute phase conveying systems can be easily retrofitted with the Pellbow®. The pressure drop compared to long-radius elbows is minimally higher. The minimum product-to-air ratio of 3:1 or higher guarantees best results. The Pellbow® is designed to fit all kinds of pipe and tube connections.

The Pellbow® is available in aluminum, stainless steel and cast iron for pipe sizes from 1.5" up to 12", as well as in surface hardened versions. More information is available at www.pelletroncorp.com

Contact Pelletron to get a free-of-charge recommendation and a proposal for your application.

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Shortening is added to the blender, equipped with a shortening extrusion system, by means of a progressive cavity pump.



Designed for thorough mixing, easy cleaning: Tight tolerances between ribbon blades and the blender trough minimize residual material remaining in the vessel after discharge. Agitator length-to-width ratio of 2-to-1 yields uniform blends in minimum cycle times. A spray line is included for liquid additions.

directly below the blender. The bag is transported to a separate clean room where its contents are packaged in various smaller containers to fill individual customer orders.

"Our clean rooms can be used interchangeably for any of our blended products, but packaging lines for different food products are located in separate clean rooms, each with its own separate HVAC system to prevent cross-contamination," Green explains. "After each product production/packaging cycle, the clean room is thoroughly sanitized. The sanitation is then verified using ATP testing, a rapid measurement of actively growing microorganisms through detection of Adenosine Triphosphate, or ATP. Allergen testing is also conducted before

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setting up the clean room for the next product.

USDA and ISO Certified

The ribbon blender was purchased with the assistance of Solid Design Southeast (Charlotte, NC), an independent Munson representative.

"John Reinecke, our Solid Design sales representative, worked closely with us in selecting the proper equipment," Green recalls. "He helped us locate an engineering company that could design and install the entire production line, including the blender and the accessories required to weigh and measure the Bakery Mix ingredients. Munson personnel were also available whenever we had questions. In fact, we are in the process of purchasing a blender, similar to our current installation, to increase our manufacturing flexibility and to expand our total blending capacity." The TVS food packaging operation is certified to USDA 3-A standards.

"Such certification requires inspection by a qualified third party to verify use and maintenance of uniform standards and practices for the sanitary and hygienic design, fabrication, installation and operation of equipment and machinery," Green explains. "As an ISO 9001:2008 registered facility, we assure our customers that quality is integrated into every step in our manufacturing processes."

TVS is committed to upholding the highest food safety standards.

"Our production and sanitation practices, based on the highest industry guidelines and current good manufacturing practices (cGMPs), are put to the test constantly through audits by the USDA Agricultural Marketing Service (USDA-AMS), Food & Drug Administration (FDA), U.S. Army Veterinary Command (VETCOM), and other third-party agencies," says Green. "If a customer needs Kosher certification, we can provide that as well."

For more information on Munson Machinery Co. (Ulica, NY), call 800-944-6644, or visit www.munsonmachinery.com.

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