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Vocational service blends dry products for commercial bakers with sanitary ribbon blender

Transylvania Vocational Services (TVS) located in the Blue Ridge Mountains of North Carolina, provides an organised programme of developmental activities for individuals 18 years of age or older who have intellectual or physical disabilities. The programme 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 programme, 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 confectionery blends to dietary supplements and beverage mixes.

These products are blended using a 1.8 cu m Model HD-3-1/2-7 SSD Double Ribbon Blender from Munson Machinery Co., Inc., equipped with a shortening extrusion system for bakery mixes. The blender also has a pressurised 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," said 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-



From each bulkbag, dry whole wheat flour and instant non-fat dry milk are pneumatically conveyed to a weighing hopper and then into the Munson HD-3-1/2-7 SSD Double Ribbon Blender



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

profit organisation acquired the trademark as the result of a contest conducted in 2000 in preparation for packaging non-fat dry milk for the United States Department of Agriculture (USDA). The name was selected because it was symbolic of the western culture of North Carolina.

One of TVS's newer products is called Mountain Maid Low Fat Bakery Mix, a blend of whole wheat flour, instant non-

fat dry milk, shortening and proprietary ingredients. The mix is produced under contract with the USDA for distribution to food banks, domestic feeding programmes, and other non-profit organisations. "The ingredients are blended in individual batches in our USDA dairy-certified Munson ribbon blender, which our clients operate," said 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 and easy cleaning

“Bakery Mix is prepared in 1134 kg batches,” explained Green. Two ingredients – 884.5kg of dry whole wheat flour and 68kg of instant non-fat dry milk – are pneumatically conveyed into a weighing hopper on load cells located directly above the ribbon blender. About 113.4kg of proprietary ingredients are added to the blender by hand, while some 68kg of shortening is added by means of a progressive cavity pump.

The pump is equipped with a hopper to hold 23kg blocks of shortening, and the hopper is equipped with a gravity-fed screw auger to pull the plasticised 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 1.84 cu m. Powered by an 18.65 kW electric motor, its two-to-one agitator length-to-width ratio yields uniform blends in minimum cycle times. Blending capacity is calculated as approximately 70 per cent to 80 per cent 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 6.35mm radius to eliminate corners, cracks and crevices that could entrap material. Tight tolerances of 0.8mm to 1.6mm between the ribbon blades and the blender trough minimise the residual heel of material remaining in the vessel

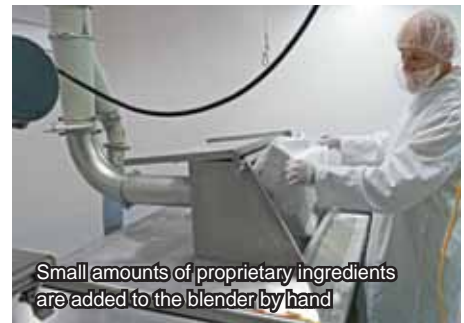
after discharge – an advantage when cleaning between batches.

Once the Low Fat Bakery Mix is thoroughly blended, it is discharged into a bulk bag located 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,” explained Green. “After each production/packaging cycle of the product, the clean room is thoroughly sanitised. The sanitation is then verified using ATP testing, a rapid measurement of actively growing micro-organisms through the detection of Adenosine Triphosphate, or ATP. Allergen testing is also conducted before 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, North Carolina), an independent Munson representative. Recalled Green: “John Reinecke, our Solid Design sales representative, 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 expand our total blending capacity.”

The TVS food packaging operation is certified to USDA 3-A standards. “As an ISO 9001:2008 registered facility, we assure our customers that quality is integrated into every step in our manufacturing processes,” explained Green. **FBA**



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



Packages of blended products sold under the Mountain Maid trademark are distributed to various organisations



Munson's ribbon blenders are designed for thorough mixing and easy cleaning

