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CASE-STUDY: RIBBON OF STANDARDS

FOR COMPANIES SPECIALISED IN BLENDING A VARIETY OF FOOD PRODUCTS, RIBBON BLENDERS CAN OFFER VERSATILITY AND ROBUSTNESS WHILE MAINTAINING THE DIFFERENT QUALITY STANDARDS.
BY **STEVE KNAUTH**, MARKETING MANAGER, MUNSON MACHINERY

QUALITY Custom Blending is a family owned and operated business specialising in custom blending of dried powdered food products, including drink crystals, rice products, pastry/dough improvers and various powdered blends for the food and beverage industry.

Founded in 1976, the company has grown to become a supplier to food companies in the US, Canada, Europe and Asia from its two locations in Trenton and Mississauga, Ontario, Canada, where it maintains its headquarters.

A major factor influencing the company's growth is its insistence on maintaining quality standards, including good manufacturing practices (GMP), US FDA's internationally recognised standard covering food and pharmaceutical ingredients, and Hazard Analysis Critical Control Points (HACCP), FDA food safety standards and part of the Canadian Food Inspection Agency's Food Safety Enhancement Programme.

The company takes great steps to assure compliance with these standards, including visual inspection of all incoming and blended materials, sifting and monitoring materials for particle size and integrity, passing them through a rare-earth magnet for product safety, and blending them in validated, sanitary and well-maintained ribbon blenders, each in its own sanitary room to prevent any possibility of cross-contamination.

"In 2006, when we had grown to the point where we needed to add a second ribbon blender to our Trenton facility, in addition to the three

already installed at Mississauga, we compared machines available from several manufacturers, including the supplier of our original four machines," says David Butler, plant manager at the facility.

"It looked like the Munson Model HD-3 ½-7-SS Horizontal Ribbon Blender with a capacity of 1.84 cubic metres might be the best fit for our needs. We arranged a tour of their manufacturing facilities and were so impressed that we ordered one on the spot."

VERSATILITY IS IMPORTANT

"We blend a wide array of food products," he explains. "Batch sizes can vary from as little as 250 kg to a metric tonne—the full capacity of the blender—but usually average about 1,000 kg. The amount of material being added can range from as little as 0.25 percent of the final blend all the way up to 50 percent, so we need versatility."

That was one of the reasons the company had selected the blender. Thorough mixing over a wide range of material proportions is assured by the design of the split double helical agitator with its 2:1 length to diameter ratio, which subjects every particle of material to agitation during loading, blending and discharge.

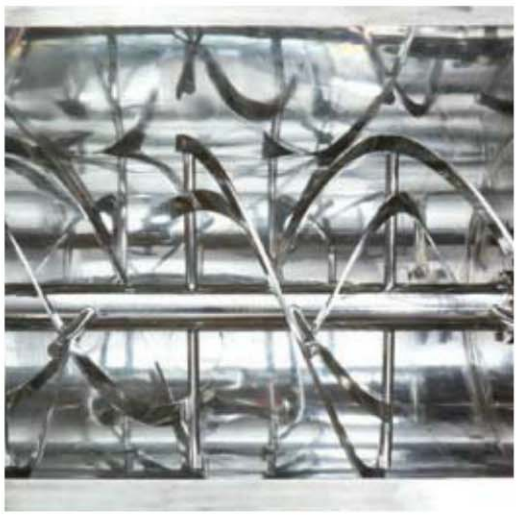
"We don't measure the bulk densities of the ingredients provided by our customers," he says, "but they vary widely and the blender can easily handle all of them. In one case, 600 kg of a very dense material was loaded into the blender. Because we chose the option of centrifugal clutch type motor couplings for start-up under load, however, the blender started immediately."

TOUGH SEALS

"Ribbon blenders are designed with packing glands that create a mechanical seal where the shaft penetrates the blender wall," he explains. "Because many of the materials we blend are highly abrasive, however, they were wearing away the braided Teflon packing, allowing material leaks and requiring packing to be replaced frequently."

Although air-purge shaft seals available from the machine supplier as an option were not originally specified, they ultimately proved necessary and the company replaced the original seals with them. They applied positive pressure to drive abrasive particulates away from the seals, which show no signs of wear or leakage after extensive use.

The company receives raw



Ribbon blenders are designed with packing glands that create a mechanical seal where the shaft penetrates the blender wall.

materials in containers ranging from bags, cartons and fibreboard drums to totes and bulk bags weighing as much as 900 kg.

"We don't treat or process these materials, but add them directly to the blender according to the recipe provided by the customer," he adds. "Some of the recipes require the addition of edible oil, but we add it manually, hand weighing it for accuracy, rather than using the liquid addition spray line.

"We try to schedule our production runs to minimise the number of product changeovers and have the capability to run as many as three different products in one day. We usually average about eight to 10 batches before switching products. A long run may last as long as three or four days."

With each batch, an operator activates the blender and the agitator blades begin to rotate when the blender is half full and a typical batch takes about an hour.

When a batch is completed, the blended product is discharged through a slide gate and fed through a magnet to detect any metal particles, then fed directly through chutes into the final packages supplied by the customer.

"We can package finished goods in a variety of ways, including five to 25 kg heat-sealed multi-wall bags, sewn multi-wall bags with or without plastic liners, five to 25 kg corrugated cartons with plastic liners, five to 20 kg plastic pails, 10 to 100 kg fibreboard drums with polyethylene liners, or totes or bulk bags weighing up to 1,200 kg."

HIGH SANITARY STANDARDS

Changeover between products is fast and easy. "The ribbon blender has its own sanitary room to eliminate any possibility of cross-contamination," he explains. "Because of the tight tolerance of 1.6 to 0.8 mm between the ribbon blades and the blender wall, very little material from the previous run remains to be cleaned out. We simply remove the ends to power wash and sanitise the interior of the blender."

The company's ribbon blender has the standard vessel design—a clean, one-piece welded unit with heavy-gauge vessel walls and thick, reinforced end panels. The air-purge seals around the shaft are removable to facilitate power washing.

All of the ribbon blender's internal welds are polished from 150 to 240 grit and have a minimum 6.35 mm radius to eliminate corners, cracks and crevices that could entrap material. Product contact surfaces, including the discharge grate, are constructed of stainless steel.

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