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ROTARY BATCH MIXER



To blend raw material for plywood adhesives at higher rates with greater uniformity, Willamette Valley Company replaced a ribbon blender that agitates material, with a rotary batch mixer that tumbles it.

Wilvaco mixes fine mesh bark powder from the Western red alder tree, along with other wood material, to produce dry blends that it ships to customers who formulate plywood adhesives. Examples of the products blended include Modal SPR-Dark and Modal SPR-Lite, both bulking agents for plywood glue mixes.

"We wanted pure blending in high volume," says Don Coleman, plant manager. "Our glue customers are very particular when it comes to their ingredients, so consistent quality is important. The ribbon blender did not mix materials thorough-

ly enough. The material, which customers mix in vats in their own formulations, could clog filters and shut down lines if not properly blended."

The Munson model 700-TH-140-MS at Willamette Valley blends uniformly in about 4 minutes, with throughput of 6000 lb (2721 kg) per batch. Capacity of the previous ribbon blender was one third of that amount, and was being outpaced by demand.

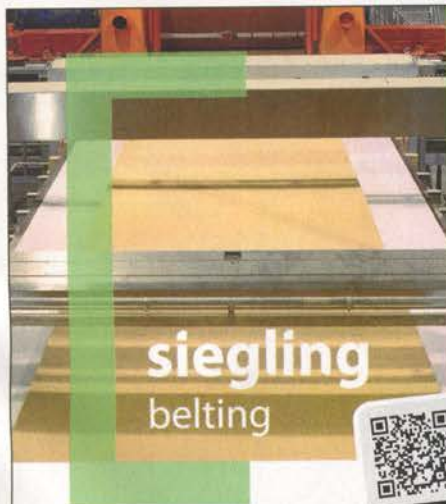
Coleman says the mixer's ability to continue rotating during loading and discharging prevents segregation of materials of varying densities, yielding a homogenous blend. Importantly, Willamette Valley is blending wood powder having particle sizes as small as 200 mesh (74 microns)—finer than baking flour—without densification, Coleman says.

The constant rotation also means energy consumption remains stable and relatively low, especially when making multiple batches of one blend. The "soft start" of the motor and slow mixing speed further increase energy saving, Coleman adds.

He learned about the rotary batch mixer from the plant manager at Idaho Milling and Grain, a Wilvaco company in Malad, ID, that blends wheat flour for glue extenders. Coleman wanted to replace the ribbon blender with a faster, higher throughput machine and his colleague, citing Idaho Milling's good experience, recommended the rotary batch mixer. Given the mixer's high output, uniform blend quality and short cycle times, Willamette Valley made the investment.

When tree bark—hog fuel—is delivered to the Willamette Valley plant, operators run it through a 3600 RPM grinder for cleaning and size reduction. The moisture content of the bark is 45 to 60%, so the powder is transported to a dryer, which reduces moisture to 6 or 7%. The bark powder is loaded into a distribution bin and conveyed to one of three PLC-controlled hoppers supplying the mixer.

Each hopper has capacity of 3000 lb (1362 kg) and is mounted on load cells. A rotary air lock at each hopper outlet discharges material into the mixer's inlet chute. Coleman says



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an operator selects a recipe on the computer and pushes a "go" button, causing material to discharge from the feed hoppers. A PLC receives weight loss information from load cells and automatically stops the rotary valves once an accurate batch weight has been discharged.

As the drum rotates, proprietary mixing flights lift, cut, fold and tumble the material, achieving complete blend uniformity in 1 to 3 minutes.

The internal flights also serve to elevate the material for discharge through a pneumatically actuated plug gate valve, leaving no residual other than dust. Coleman says, "Some fine dust may be left on the flights, but this can be vacuumed away when the machine shuts down for material changeover." A side access door provides access to all interior surfaces for cleaning and inspection.

From the mixer discharge, a pneumatic conveyor transports blends 14' (4.3 m) vertically to an overhead weigh hopper equipped with load cells and a rotary valve that allows filling of 50 lb (23 kg) paper sacks or 3000 lb (1362 kg) bulk bags under PLC control.

Coleman says 48,000 lb (21,792 kg) of material can be blended in 8 hours. "We could do more, but we continually test batch samples and double check our products to ensure consistent quality."

Visit wilvaco.com.

G5 SMART MILL

Raute officially launched its G5 Smart Mill concept in Portland, Ore. at the Timber Processing and Energy Expo in front of select customers in late September. The response has been particularly positive, especially in light of its steady adoption in mills all over Europe.

Since inception, there have been 57 G5 enabled units sold in eight countries spanning three continents. These units manage almost every aspect of the plywood process including peeling, drying, composing (face, dry core and green core), scarf-joint-



ing, patching, and layup, for 12 different hard- and softwood species, out of 50 possible species that Raute has currently identified. The database is capable of storing and identifying an unlimited number of species.

G5 Smart Mill is an innovative technology that optimizes production processes and raw material utilization. The new generation technology combines the latest instruments in vision, sensing, measurement, and intelligent analysis with automation for improvements in a single process, or, to truly maximum yields, complete mill modernization pushing all areas of production limits to their edge. These high-tech systems can be applied to existing machinery as well, reducing the need for cost intensive capital investments in most cases.

Since launching less than three months ago in North America, six new G5 enabled smart mill systems are operational or in progress for Canada and the U.S., with more in development. There currently isn't sufficient data to completely quantify the equipment's success, however early data shows an ini-

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