



Rotary drum mixer uses 83% less power, gives uniform blend

Plant experiences improved consistency and quality at reduced packaging cost

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New Solutions to Plant Problems

Problem: Applied Biochemists, Inc., Mequon, WI was experiencing size degradation in a liquid/solids blending process. A large amount of undesirable "sand" was being produced during batch blending of two of their impregnated granular products.

Besides particle degradation, "puddling on" of the liquid additive onto the dry material was creating uneven penetration of the active ingredients. The unevenness resulted in chemical "hot spots" and non-uniform application. The resultant products were less effective in their end uses as an algaecide or herbicide.

The blended algaecide and herbicide products are for aquatic application. They essentially consist of a granular carrier, a highly absorbent clay substance, which is impregnated with chemically active agents during the blending process. Resultant particles must be large and dense enough to sink to the bottom of a body of water, where release of the "poison" takes place over a period of time without harm to fish life. "Sand" in the product wastefully floats away without sinking to work as designed.

The complex rotating element of the 4 ton batch blender in use was powered by a 75 hp TEFC electric motor. The energy consumption of the blender was high. The rotor in the blender remained in operation throughout blending and product discharge. When the time came to discharge product it was necessary to reverse the direction of rotation of the



Bagger automatically stops product flow at pre-set weight. Each fill takes approximately 7 seconds

mixing element. This required the operator to stop the mixer, switch directions, then restart the machine.

The production system incorporated costly double handling of the finished product. Packaging equipment for cartons, bags and drums were located separately from the blending facility. Intermediate transport of finished product in bins or drums added to labor costs.

Solution: In December 1982 Applied Biochemists, Inc. installed a 4 ton horizontal, rotary drum mixer. The mixer was supplied along with a packaging system for filling cartons, bags and fiber drums. The mixer discharges by gravity directly into the packaging equipment.

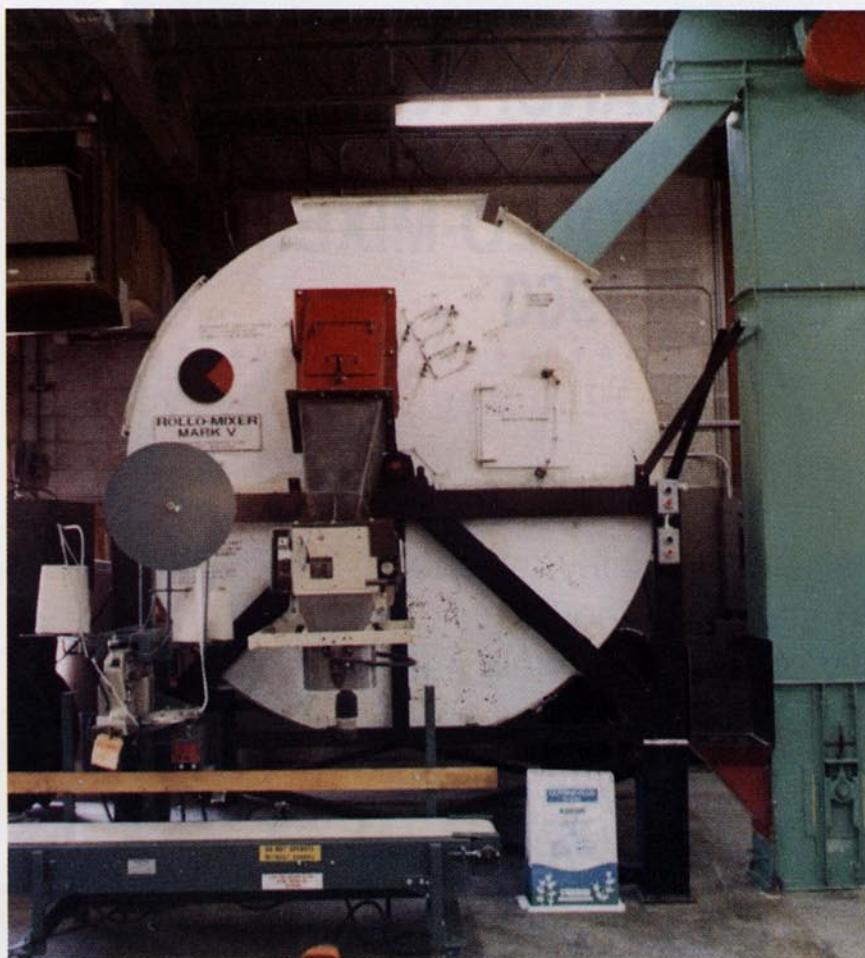
The horizontal, rotary drum mixer has

no augers, ribbons or paddles in the mixer to heat-up, tear-up or damage the product. Gentle, low intensity mixing action uniformly blends the dry particulate matter while liquid additives impregnate the granules during "free fall." Once the batch is in a mixed state, the unit does not over-mix, nor does it un-mix during discharge.

Batch sizes can be from as small as desired up to the 4 ton rated load volume. Due to the nature of the mixing action, the amount of heat build up due to friction is minimal. The positive displacement mixing provides accurate blending and is energy efficient.

The mixer continues to rotate in the same direction during product discharge

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The bag dump/splitter has an integral dust collector filter which helps keep the work environment clean

This 4 ton horizontal, rotary drum mixer and packaging system has eliminated double handling of products at Applied Biochemists, Inc.



as it does during mixing. There are no changes in direction; no changes in speed. Emptying is complete and no clean-up between batches is necessary. The rotary drum mixer is powered by a 10 hp TEFC electric motor.

To fill the mixer, bags of dry ingredients are dumped on a bag splitter which feeds a bucket elevator. The bucket elevator discharges directly into the top of the mixer. The bag dump/splitter has an integral dust collector/filter which prevents dust from entering the working environment. A relatively simple pumping apparatus delivers the active liquid ingredients onto the dry material through a spray lance inside the mixer.

After mixing is complete, the product

is discharged by gravity into the packaging equipment. The closed system eliminates the possibility of product contamination and further ensures a clean working environment.

Results: Product degradation was eliminated after installation of the rotary drum mixer and packaging system. The "free fall impregnation" produced a uniform product without hot-spots. The liquid additive's in-depth penetration of each granule of carrier yields a product which provides a controlled period of effective application.

Constant uniformity of the mixed product is sustained throughout product discharge. The 10 lb cartons, 30 and 50 lb bags and fiber drums have improved

consistency and quality at a lower packaging cost than previously experienced.

High energy costs made mixing an expensive operation with the old system. The rotary drum mixer requires less than 2 hp per ton of rated capacity. Power consumption has been reduced by more than 83%. ■

"ROLLO-MIXER", Mark V, "BLEND-PAK" System was supplied by Continental Products Corporation, Box 762, Milwaukee, WI 53201.
