

A U S T R A L I A N

BULK HANDLING

R E V I E W

- All the action from the Australian Bulk Handling Awards
- Peer reviewed paper: Developments in silo loadings research by Alan Roberts
- Dust control feature
- Transfer chute design
- WA's Tronox doubles efficiency of bulk bag filling
- Profile: Neil Kinder in conversation

www.BulkHandling.com.au

Volume 19 No 6

November/December 2014

Bonfiglioli A Series drives are cyclone, heat & rust proof, energy efficient and very very quiet.



A SERIES A90 helical bevel geared motor



Bonfiglioli

power, control and green solutions

Ribbon blenders help powder contractor boost capacity

US-based Webco Chemical Corporation has installed a pair of Munson ribbon blenders in a bid to increase production capacity in the face of rising demand.



From silos located outside, the large hopper pre-weighs and adds two major ingredients to the Munson HD-36 ribbon blender. Minor ingredients are manually dumped from bags.

Webco is a fully integrated, custom contract manufacturer and packager of liquid and powder chemical products, founded in 1956. The company blends powder products in small to multi-batch production runs, and packs powder in containers ranging from 118cc bottles to 3.8 litre fibreboard drums.

"We blend primarily industrial, agricultural and household cleaning products," Webco president Mark Puliafico told ABHR.

"Some examples include metal cleaning and finishing products, household and commercial laundry powders, and cleaning products for dairy farms including egg washing cleaners and even a powdered teat dip for cows."

To meet increased demand, Webco recently replaced its ageing blenders with two Munson Model HD-36 stainless steel

heavy duty ribbon blenders, each with a blending capacity of 1.13 cubic metres.

"This gives us a total blending capacity of about 40,770kg to 45,300kg per shift," Puliafico said.

"One blender discharges into the fibreboard drums while the other feeds a semi-automatic filling machine. Both blenders run pretty much constantly, and we expect them to remain at the heart of our business for at least the next 50 years."

Webco's batch sizes generally run from 454kg to 1361kg, "although we occasionally process smaller quantities of specialty cleaners," Puliafico explained.

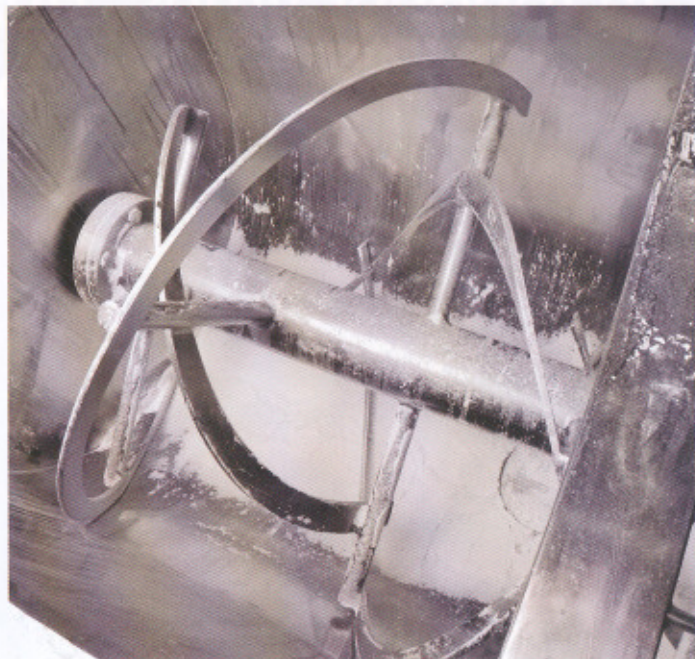
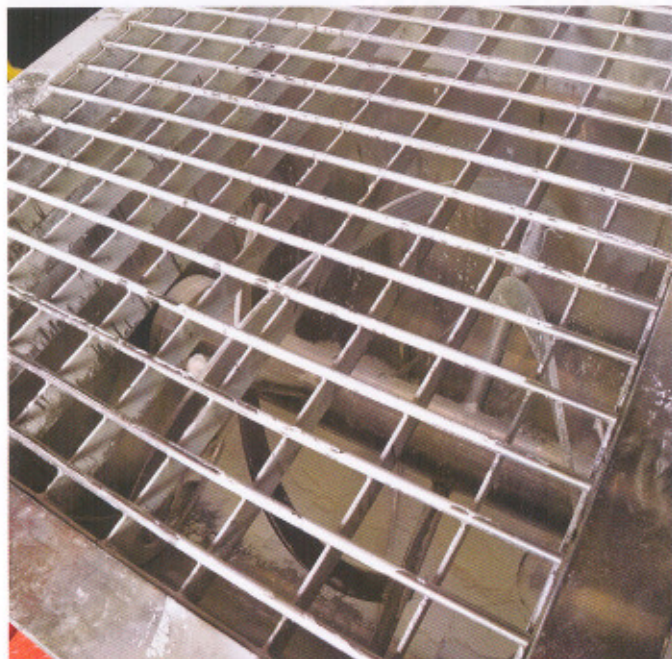
Powders blended range between 481 and 1201 kilograms per cubic metre.

"The proportions of the materials we need to blend can vary widely, down to as little as 0.05% of the final blend in the case of dyes required for colouration."

Munson says its ribbon blenders are designed to ensure the kind of thorough mixing required thanks to the 2:1 length-to-diameter ratio design of their double helical ribbon agitator, which is designed to subject every particle of material to agitation during loading, blending and discharge.

The duration of a production run can also vary greatly from product to product, Puliafico added. "Some runs can be as short as a single batch, but we often run the same blend for as long as a week before changing to a different blend," he said.

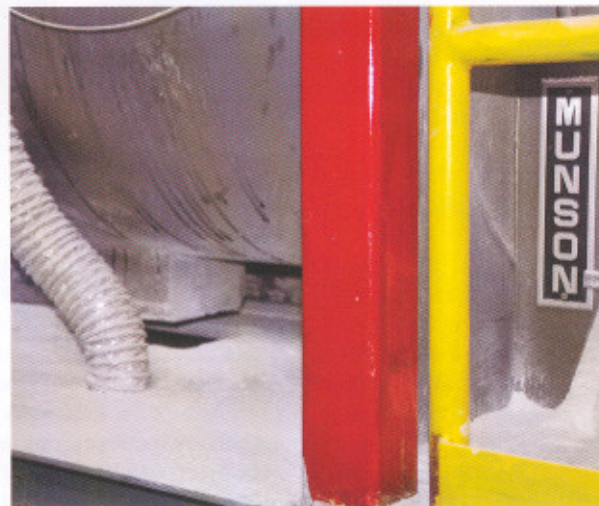
"When changing blends, we sweep out any powder from the previous blend, scrape the interior surfaces with the plastic blade, and then power wash the interior of the blender. This takes about 30 minutes. We don't need to add a separate cleaner because we're



The 2:1 length-to-diameter ratio design of the double helical ribbon agitator assures thorough mixing over a range of material proportions, according to Munson.



The operator fills and check weighs a 19 litre pail that will hold 23kg of finished product. The hopper in background holds 1135kg of product discharged from the ribbon blender on the floor above.



Material discharges through the bottom part of the blender into the hopper and filling machine on the floor below.



Webco Chemical fills products in drums, fibre legs, and 19 litre pails such as these.

blending cleaning products to begin with. We try to schedule cleaning for the end of the day to give the blender a chance to thoroughly dry before beginning the next run."

Tight tolerances of 1.6 to 0.8 millimetres between the ribbon blades and the blender wall are designed to minimise residual material, reducing cleaning time between changeovers.

"The blenders are located on the upper floor of our two-storey building and discharge to the floor below," Puliafico explained.

Bulk materials at Webco's plant are stored in silos, from which they are conveyed to a weighing system and then added to the blenders. Materials supplied in smaller bags are added manually according to bag weight.

Although the ribbon blenders are available with internal spray lines for

introducing liquid additives, Webco bypassed this option.

"Because of the diversity of products that we blend, we have to add different liquids to each one," Puliafico said. "We usually add the liquid manually when the powders are partially blended. It takes less time and effort to add manually than it would to clean the spray line when we change liquids."

The blender maintains a constant speed of rotation regardless of the blend being processed. A typical batch takes between 10 and 15 minutes.

"Materials discharged from the blender are always thoroughly and uniformly mixed and ready to be packaged for shipment."

One of the Munson blenders feeds blended material to the semi-automatic filling line. The other discharges into fibreboard drums, or into bulk packs which are sent to another department

where an automatic filling line can fill as many as 10,000 bottles in an 8-hour shift.

Both blenders are equipped with knife gates. "When the drum reaches its target weight, the knife gate stops the flow of material, the filled drum is manually removed and replaced with an empty one, and the knife gate is reopened," Puliafico said.

Since the drums are filled directly from the blender, the number filled per shift depends on the time it takes to blend a batch.

"This can vary from 20 to 40 minutes, including the time it takes to load the recipe and empty the blender.

"If the process were continuous, we could fill about 25 to 30 drums per hour, or 200 to 240 per 8-hour shift." ■

Contact: info@munsonmachinery.com iBulk (Australian representative): tony@ibulk.com.au