

Process & Control

APPLICATIONS | PRODUCTS | SOLUTIONS

Bender celebrates 75 years of ISOMETER



1939 Ur-ISOMETER



1953 A-ISOMETER 2132P



1970 A-ISOMETER 107TM40



1974 A-ISOMETER IRG113Yb



2014 ISOMETER iso685



2003 A-ISOMETER IRDH275



1994 A-ISOMETER IRDH265

INSIDE

MIXING

How to avoid colour contamination issues when processing pigmented and non-pigmented batches on the same line



ROBOTICS

Simulation tools help you visualise and pre-programme a robotic installation safely in a virtual 3D world, before putting plans into effect



AUTOMATION

Adopting a condition monitoring system can deliver many benefits to chemical manufacturers, helping assets continue to perform effectively



CLEANING UP THE powder blending process



The design of the double helical ribbon agitator assures thorough mixing over a range of material properties

Ageing blenders at Webco, a contract manufacturer of liquid and powdered chemical products, have been replaced with ribbon blenders from **Munson Machinery**. The result is thoroughly and uniformly mixed product ready to be packaged for shipment

US-based Webco Chemical Corporation is a fully integrated, custom contract manufacturer and packager of liquid and powder chemical products, and offers both liquid and powder blending and filling services. Powder products are blended in quantities from small batches to multi-batch production runs and packed in containers ranging from 118cc bottles to 3.8 litre fibreboard drums.

“We blend primarily industrial, agricultural and household cleaning products,” said Mark Puliafico, president of Webco. “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 cu m. “This gives us a total blending capacity of about 40,770 to 45,300kg per shift,” said Puliafico. “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.”

“Our batch sizes generally run from 454 to 1361kg, although we occasionally

process smaller quantities of speciality cleaners,” Puliafico continued. “The bulk densities of the powders we blend range from 481 to 1201 kg/cu m. 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.”

Thorough mixing over a range of material proportions is assured by the 2:1 length-to-diameter ratio design of the double helical ribbon agitator, which subjects every particle of material to agitation during loading, blending and discharge. The duration of a production run can also vary greatly, ranging from a short single batch to some blends which run for as long as a week.

“When changing blends, we sweep out



The hopper pre-weighs and adds two major ingredients to the Munson HD-36 ribbon blender

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 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.”

Residual material is minimal due to tight tolerances of 1.6 to 0.8mm between the ribbon blades and the blender wall, reducing cleaning time between changeovers.

“The blenders are located on the upper floor of our two-storey building and discharge to the floor below,” explained Puliafico. Bulk materials are stored in silos, and 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 noted. 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 about 10-15 minutes,” said Puliafico. “Materials discharged from the blender are always thoroughly and uniformly mixed and ready to be packaged for shipment.”

One blender 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,” said Puliafico.

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,” said Puliafico. “If the processes were continuous, we could fill about 25 to 30 drums per hour, or 200 to 240 per 8-hour shift.”

Munson Machinery

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