

# Drum mixer makes the grade

**D**emand soon outstripped capacity when Tucson, Ariz.-based Mortex Manufacturing Co. started making Systex, a premixed polymer-cement coating that includes cement, aggregate, acrylic polymer, and four other proprietary ingredients. A high-speed, high-shear disperser producing 300-lb. batches of the mix—bagged and sold to contractors, who add water on site—was found unequal to the task of supplying an expanding customer base. So, the company took a rotary drum mixer out of storage and started it up.

In 1985, Mortex purchased a new rotary drum mixer from Munson Machinery Co. of Utica, N.Y., in anticipation of expanding its line of chemical additives used to produce decorative, nonskid coatings for concrete swimming pool decks and patios. The intention was to upgrade the additives, which were mixed with white cement and white marble at the jobsite, by making a premixed product requiring only the addition of water. Subsequently, the company shelved its plans and put the machine in storage when an unfavorable change in market conditions developed.

The introduction of Systex in 2002 and increasing demand stimulated interest once again in the Mun-

son mixer, which has a rated batch capacity of 3,000 lb. Initially, operators doubted it would function, says Mortex President Ted Deason, since the mixer had been in storage so long. "Usually, if you let a piece of machinery sit idle that long, you have all kinds of trouble when you start it up," he contends, "but we had a pleasant surprise. We greased the motor and bearings, and it worked like a charm."

Another concern in moving to the larger machine was whether it could achieve thorough blending of the seven mix constituents. "The individual ingredients range from less than 1 lb. up to 100 lb., so thorough distribution is critical," says Deason. Although the high-speed disperser produced a thoroughly mixed 300-lb. batch in one minute, the mixing action was violent and tended to grind the material. By contrast, the Munson mixer proved gentler, yet forceful enough to do a thorough mixing job. "And, it doesn't grind the aggregate," Deason affirms.

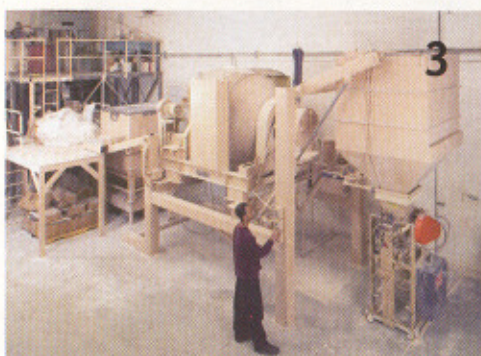
Mortex runs batches of about 2,680 lb., which approaches the capacity of the Model GB-20 rotary batcher. "A uniform blend could be achieved in two to three minutes," says Deason, "but we run longer because the mixer also serves the secondary



1. The fill hopper to the left of the mixer is in the "up" position as the operator loads a new batch.

2. A newly mixed batch is released into the discharge hopper by the operator. With feed hopper and discharge hopper located on the left and right, respectively, of the machine, Mortex's rotary drum mixer suits production of a premixed polymer-cement coating.

3. The discharge hopper containing a newly mixed batch is in the "up" position and placed over the packing machine, which fills 50-lb. bags.



function of an attrition device." He explains, "Some of the chemicals are agglomerates that the mixer separates into discrete particles in approximately 15 minutes, so we run at least 20 to 30 to be positive that we get complete separation."

In terms of power usage, the drum mixer is more efficient than the high-speed disperser. The smaller machine uses a 50-hp motor to mix a 300-lb. batch, Deason says, while the drum mixer uses a 5-hp motor to do a batch 10 times that size.

All material going into the blender is screened to remove any big lumps. Then, a sample of each mixed batch is run through a 60-mesh screen to separate the cement and additives from the largest aggregate to ensure that no unmixed material remains. Front-end screening is performed by a vibratory screen, located on top of the steel hopper used to load the blender.

The hopper sits on a platform surmounting a scale. The major ingredients are fed sequentially into the hopper by a front-end

loader and the weight of the whole package is checked with each addition. Minor ingredients are weighed individually, then moved by conveyor into the hopper. "Eventually, we will have the system fully automated, where conveyors and augers will feed all the ingredients," Deason asserts.

When the hopper is loaded, it is picked up by large, hydraulically operated arms, and the batch is bottom-dumped into the blender via a slide-gate valve. Following the mixing cycle, the material is dumped through the mixer's discharge valve into another hopper, which is hydraulically lifted and set on top of the packer.

As differences in particle size may cause separation, the packing station is located close to the blender to avoid transporting the product. When Mortex examined bagged product to determine whether the packaging operation itself caused any separation, no such problem was apparent. "We use a high-speed packer," says Deason, "so the violence of the packing operation precludes any separation in the bag."

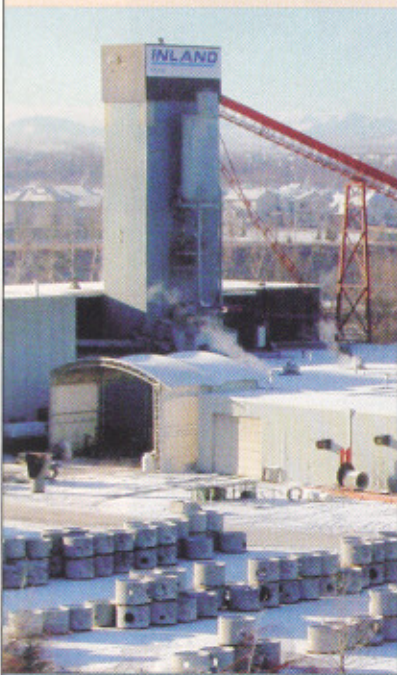
Cleaning is reportedly a simple matter. Since the products include cement, Mortex operators use a vacuum cleaner rather than washing the interior of the machine. Says Deason, "After running colored material, the amount of material that is left is so small as to be insufficient to throw off the color on a 3,000-lb. batch." Using a couple of neutral-colored products as purging compounds also serves to clean the mixer: any residual color doesn't hurt those products. "Checking for color contamination with our spectrophotometer," Deason reports, "we have found that, even if a color is detectable, it is below the level that the human eye can distinguish."

After more than two years in operation, maintenance of the mixer has so far entailed simple greasing of moving parts, and no noticeable wear has been reported. "Even the urethane gasket that seals the discharge door is still in good shape," Deason adds.

—Munson Machinery Co., 315/797-0090, [www.munsonmachinery.com](http://www.munsonmachinery.com)



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