

Improved separation technology yields 50% jump in processing output at Zemex plant

Switch to modern screening machines reduces “blinding” and speeds throughput at attapulgite operations in Georgia

Forget size. When it comes to processing industries, it's speed that matters. More precisely, the faster/greater the throughput of finished product out the door, the more quickly money can flow back into the corporate coffers.

In this quest for greater output, no processor can afford any weak links in the chain. Especially in the case of bulk solids operations, any one piece of equipment that slows the process down jeopardizes the profitability of the entire plant. However, one clay processor decisively uncorked a pre-existing bottleneck by replacing its outdated separating equipment with a new design that immediately shifted output into overdrive.

“Per each separator we can now get about 4 to 4.5 tons of product per hour through the screen, whereas we'd only manage about 2.5 tons with the old machines,” says Tom Oldaker, plant manager of Zemex Corporation's attapulgite operations at Attapulgus, GA. “We're getting a lot more product 'in the bag,' faster.”

A need for more throughput

Headquartered in Atlanta, GA, Zemex Corporation is a leading producer of industrial minerals, with facilities located across the United States and Canada. Zemex' product mix includes phlogopite mica, muscovite mica, feldspar, feldspathic sand, silica sand, attapulgite clay, kaolin clay and talc.

Named for the mineral, the company's Attapulgus site processes attapulgite clay (hydrous magnesium aluminum silicate) and sells it under trademarks such as EZ Gel, Gel B and Super Gel B. These powders provide viscosity and suspension properties to various products used in the construction industry, including tape joint compound, plasters, and texture products.

The plant employed five, 60" spring-suspension separators, with a screen of 300 micron, to get rid of agglomerates that formed in storage and to remove any debris that might have fallen in—all in an effort



A Russell Finex separator in use at Zemex's plant

- Increased plant throughput by approximately 50%
- Eliminated mesh blinding, helping to move material through the screens faster
- Dramatically improved sieving accuracy and efficiency

to ensure that only attapulgite at less than 400 micron was going out the door. But while the plant consistently turned out top-notch quality, quantity left something to be desired.

“What was hurting us was inadequate throughput,” recalls Oldaker. “Within the small space that we had, the five separating machines could not handle enough capacity. Not only that, but there was one type that really wasn't reliable, as the screens got ripped very easily.”

Of even greater consequence, according to Oldaker, the ineffective machines were rejecting a tremendous amount of good clay because the screens were constantly being flooded whenever plant management attempted to ramp up production.

"Because of the constant 'blinding' of these screens, we were only able to run at about 60-65% of potential capacity," continues Oldaker. "If we tried to put 4 tons per hour through those screens, we'd get 2.5 tons of product and 1.5 tons of reject. Because we couldn't get the material through the screens fast enough to meet sales demands, we were working a lot of daily overtime and a lot of weekends. It was a huge money loser for us"

Seeking a solution

In an effort to improve production volumes and simultaneously reduce man-hours, Zemex began a search for higher output separators.

"We sent samples of attapulgite to a handful of different manufacturers to let them run trials," says Oldaker. "Our choice was largely based on the difference in the mechanics of each separator; how it imparts the energy onto the screen. What it came down to is that you have your more traditional screen manufacturers that all utilize the same basic method of vibrational energy technique. These traditional type screens did not have the throughput we required."

"Then you have the machines from Russell Finex that have a different way of providing that energy, so we wound up testing them on the recommendation of Sawyer Hanson Innovations, a manufacturer's rep," Oldaker continues. "Russell Finex gave us the best price, the right physical size we needed, and the ability to handle the capacities that we were quoting. That's why we went with them."

Russell Finex has over 70 years of experience manufacturing and supplying separators, screeners and filters to enhance productivity and ensure product quality. The company serves a variety of industries in over 100 countries with applications that include

adhesives, ceramics, chemicals, colors, enamels, explosives, food, inks, latex, metal powders, paint, paper coatings, pharmaceuticals, plastisols, powder coating, and waste oils.

Traditional designs incorporate a spring-mounted separator and a custom motor with a pair of eccentric weights at the end of the motor shaft. However, this design lacks accuracy in controlling the force of vibration, which can be imparted to the mesh, and is typically limited to a speed of 1200 rpm.

In contrast, the separators from Russell Finex omit the need for springs via an innovative arrangement that employs a separate vibrator assembly. This allows much higher forces to be put into the machine and focuses the majority of the energy on the screen itself.

The infinitely adjustable weight system of the vibrator assembly creates a more finely-tuned and vigorous action, significantly raising sieving efficiency and running as standard at 1800 rpm.

The design of these separators goes one step further in increasing throughput by utilizing a Vibrasonic debinding system in conjunction with the screen. By energizing the wires of the screen mesh with an ultrasonic vibration, the friction between the product and the screen is effectively reduced. In the case of the Russell Finex machines, mesh "blinding" is reduced down to 20µ, helping to move material through the screens faster.

Quick screening yields quick payback

"After we replaced the five original separators with new ones from Russell Finex, we increased throughput by almost 50%," notes Oldaker. "Per each screen, we can now get about 4 to 4.5 tons per hour. Not only that, but with the new screens, when we feed 4 tons per hour, we're going to put 3.9 tons in the bag with only 0.1 ton of reject. Our plant output has definitely increased."

For more information, contact your local sales office



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