Spray-Dryer Optimization
Read more on page 12

Paddle Dryer
Drying to mixtures of 0.5 to 0.1% of lower requires uniform heating and residence time. This paddle dryer allows users to reach these objectives with a continuous process. The mixing action of the dual intermeshing agitators with heated wedge-shaped paddles provides for uniform heat transfer to the product and high heat-transfer rates. Since the product moves through the dryer by displacement, residence time is controlled by the feed rate. The dryer is indirectly heated so that the amount of off-gas is minimal. Heating can be done with steam or thermal fluid, up to 760°F.

Komline-Sanderson, Pequannock, NJ 800-225-5457
www.komline.com

Powder Transfer System
A self-contained powder transfer system can transfer powdered products that are either hazardous or subject to contamination when exposed to the workplace environment. Designed for products such as pharmaceuticals, fine chemicals, and metal powders, the totally sealed pneumatic system requires no external filters or vents, allowing dust-free charging or powder directly into closed vessels—including those under vacuum or pressure. The system transfers materials at velocities up to 6 feet and can move non-free-flowing powders, including some wet cake. In addition, it can handle thermally and exothermic products safely.

De Dietrich Process Systems Inc., Mountainside, NJ
908-317-2515 www.ddpssinc.com
Stainless-Steel Separator Classifies Abrasive Ferrotitanium Granules

Ferrotitanium, an additive used in steel alloys, makes an ideal material. It enables the formation of thinner body panels for automobiles and appliances such as washers, dryers, and refrigerators. As a result, the metal has played a significant role in reducing the weight of vehicles, thereby enhancing their fuel efficiency. However, ferrotitanium is an abrasive material that can ruin the proper equipment that is used to manufacture it.

Global Titanium Inc., one of the world's top 10 manufacturers of ferrotitanium, makes ferrotitanium in granular form for shipment to steel producers. However, the product was literally tearing holes in the screen separator used to classify the granules by size. The problem was solved by installing a new stainless-steel separator from Kason Corp. (Millburn, N.J.).

Global Titanium buys titanium scrap around the world and blends it with iron to make ferrotitanium. The materials are charged in an induction furnace, and then a reaction takes place to form ferrotitanium at an average temperature of about 2659°F. Finally, the metal is poured into molds to form approximately 54 x 54 x 6-in. ingots that weigh 1900 to 2000 lb each.

Being extremely brittle, ferrotitanium tends to shatter as it cools, explains Adam Perry, Global's assistant operations manager. "When we put the metal through two jaw crushers, then send it to the separator for classification to 8, 10, or 12 mesh, depending on what the customer wants."

The Kason machine, a Vibroscreen classifier, is a circular unit that can accommodate up to five horizontal screens. Material is fed to the top screen, which separates the coarsest particles. Then progressively finer material is removed by the lower screens. The entire assembly is vibrated by a high-voltage 2.5-hp motor that is located below the housing and supported by rugged springs that allow the machine to vibrate freely without transmitting vibration to the plant floor.

Global's classifier is made entirely of stainless steel and has two 60-in.-diam screens that separate oversized material for recycling to the crushers. Oversized particles migrate to the periphery of the machine and are discharged from a port hole into a chute. Finer material falls through the screen onto a deflector plate that diverts it to the middle of the next screen. The desired product is recovered from the bottom of the unit.

The classifier replaced an old separator that operated in a similar manner but had mild-steel sidewalls that were torn by the ferrotitanium. "We had to repair the machine about once a month," says Perry. By comparison, the stainless-steel Kason separator has been on-line since the spring of 2003 and has shown no signs of wear.

Perry notes that the 60-in.-diam Kason machine also meets the company's production needs, which had outgrown the capacity of the old 48-in.-diam unit. The newer separator processes 1200 to 1500 lb/hr of material, which is filled into 1000-lb bags for shipment to Midwest steel mills. A standard shipment weighs 45,000 lb. The base of the machine rests on a stand about 2 ft off the floor, enabling bags to be filled. The product comes down the chute into the bag, which is then set on a scale. The plant typically runs two and sometimes three shifts.

Screens are changed regularly to match customer needs. For smaller particles below 6 mesh, Global uses a heavier backup screen with a larger mesh to support the fine screen. "This allows us to add more weight and increase capacity without damaging the fine screen," says Perry.

Global uses an identical Vibroscreen separator for screening sponge titanium, which the company receives from customers and vendors as mixed scrap that ranges from fines to rock-like chunks. This material is passed across a magnetic drum to remove ferrous metal and then crushed to the customer's requirement, which may range from 10 to 60 mesh.

For more information, contact Kason Corp. at 973-497-0140 or e-mail at info@kason.com. Visit the Web site at www.kason.com.