Epicore BioNetworks Inc. produces biologicals and aquaculture feed products that nurture shrimp over their lifecycle, which necessitates producing feed particles in diameters from 300 to 1,200 microns.

Epicore had been using a 30 in.-diameter circular vibratory screener with a 14 mesh screen to scalp oversize particles prior to packaging, but the high lipid content in the feed caused particles to agglomerate and plug or “blind” apertures in the screen. After attempts to rectify the problem, Epicore decided to replace its vibratory unit with a centrifugal screener.

Epicore needed to boost productivity to meet growing demand for its feeds, which it sells to shrimp farms worldwide. “We tried a number of solutions,” Epicore production manager Sam DeMore said. “We purchased an anti-blinding device that essentially acted like a set of rubber windshield wiper arms that swept across the vibrating screen. We also tried anti-blinding rings, which vibrated against the underside of the screen. Both helped, but not enough.”

Converting from a vibratory to centrifugal screener manufactured by Kason Corp. has resolved the problem and netted a 60-fold screen opening improvement. The equipment’s reserve capacity is also expected to accommodate Epicore’s projected expansion over the next several years.

Improved throughput

The centrifugal screener’s rotating action boosts the rate of on-size particles passing through the screen and breaks up agglomerates that can plug circular vibratory screens. While vibratory screeners rely on gyratory motion to promote the passage of on-size particles through apertures in a horizontally oriented screen, centrifugal screeners utilize rotating paddles that accelerate the flow of particles against the interior wall of a horizontally oriented, stationary screen cylinder.

In addition to boosting the rate at which on-size particles pass through the screen, increasing the speed at which particles impact the screen also serves to break up soft agglomerates of the type that were plugging Epicore’s vibratory screens and being ejected as oversize clumps.

“We typically filled one 20 kg drum per hour of our high-lipid feed or about 150 kg per hour of our lower-lipid feed,” DeMore said. “Of course, throughput was highly dependent on the lipid content of the feed.”

The conversion to centrifugal screening overcame Epicore’s screening bottleneck.

Epicore tested 100 lb. of bagged products using a Centri-Sifter model MO centrifugal screener at Kason. In 17 seconds, the Centri-Sifter processed what would have taken more than 17 minutes with Epicore’s previous circular vibratory screener.

**Sifter specifics**

The centrifugal sifter consists of a vertically mounted feed inlet and a horizontally oriented, cylindrical sifting chamber. As material enters the feed inlet, a feed screw redirects it into the cylindrical screen, where a rotating helical paddle assembly continuously propels the material against the screen without coming in contact with it.

Particles either pass through apertures in the screen, break apart and then pass through the screen or, in the case of oversize particles, travel to the open end of the cylinder, where they are ejected through an “overs” discharge spout.

The MO Centri-Sifter Epicore uses is a medium-capacity unit developed for food, dairy and pharmaceutical applications. It has a cantilevered shaft mounted on three external roller bearings located on the motor end, near the material feed point and at the hinged cover at the discharge end.

When the cover swings open, the other two external bearings support the shaft. This allows internal components to slide freely from the opposite end for rapid cleaning, screen changes and inspection. During operation, the shaft is supported on both end bearings for vibration-free operation at high speeds required for high capacities.

The Kason screener is powered by a 3 hp direct drive motor and uses nylon screening media, which works well with the soft shrimp feed.

DeMore designed a waist-high support for the screener and a 6 ft.-high platform above it. Forklifts now deliver 2,205 lb. pallets of bagged extrudate to the top of the platform.

One employee works on the top of the platform, opening bags and pouring their contents through a magnetic screen (to trap any metal contaminants) and into the sifter. A second employee below the platform weighs the sifted product and rolls it onto a conveyor for shipment.