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Dewatering:
Grain screening for Alaskan beer

A centrifugal dewatering screener from Kason improved the situation for a brewery in the icy wilds of Alaska. It needed an efficient solution to clean compacted grains from its beer vessels – and required a screener that could be easily installed and maintained.

Nearly any expansion of a process entails complicated considerations – where to add space, what equipment to install, how to arrange it, when will it pay back, and how it will impact the waste stream. But when the plant is located in an extremely remote area, advanced planning and reliable equipment takes on added significance.

Such is the case with the Alaskan Brewing Company, which in 1986 became the first US brewery in Alaska. Winning more than 50 awards for its bottled beer since opening, the company's rapid growth called for the addition of a 100-barrel brew house in 1995. A year later, an automated keg line was added for filling stainless steel kegs which, combined with a new bottling line added in 2001, provided sufficient capacity for the company to serve the entire US West Coast.

Beer making begins with cooking grains. Between batches, the brew vessels must be cleaned and rinsed. According to plant manager Curtis Holmes, as production grew, "a lot more grain was going down the drains and into the wastewater system's settling tank." A pump on the bottom of the tank pulled off waste sludge, but "the bigger grain kernels settled down to the bottom of the tank and packed in densely, bonding with the sludge and setting up like concrete. The mass could be pumped with difficulty, but sometimes the combination would jam
the pump. Then we would need to remove, service and reinstall the pump."

The problem was resolved with an inclined Centri-Sifter centrifugal dewatering screen from Kason which was installed in the waste stream between the brew vessels and the treatment plant. As solids-laden wastewater flows into the screener, a full-length, low-pitch auger moves the material longitudinally into and through an inclined cylindrical screen. Helical paddles rotating within the screen create centrifugal forces that accelerate the liquid and fines through the screen apertures and onto the interior wall of the screening chamber.

**Brewing beer in Alaska may seem romantic, but the location incurs logistical challenges.** The paddles, which never contact or scrape the inside of the screen, also serve to breakup soft agglomerates. The variable-incline design of the unit increases the dwell time of material within the chamber and, accordingly, the amount of liquid removed from the solids, which are ejected through the open end of the screen cylinder and transferred to the brewery’s waste grain dryer.

The brewery decided against using rotary drum screeners due to the loudness of their chain drives and their large size, which would have denied them the access needed for maintenance in the restricted installation space. Currently, the brewery produces about 500,000 bottles of beer per week, generating roughly 22,700 litres of wastewater from the brewhouse vessels, from which the Centri-Sifter screener removes about 360 kg of solids. This “saves us a lot of headaches with our wastewater plant,” says Holmes.

The Alaskan Brewery dewatering screener is equipped with 200-micron screens that operate without particulate “blinding,” according to Holmes. To determine the appropriate screen size, the brewery drained a prescribed volume of slurry from a brew vessel, allowed the heavier solids to settle and drew off a measured amount of liquid. The solids-laden material remaining was frozen and shipped overnight to the Kason laboratory, where liquid was added to reconstitute the slurry. The procedure served to keep the solids wet, maintain its structure and allow the lab to conduct tests with greater accuracy than if dry, uncooked grains had been provided.

Brewing beer in Alaska may seem romantic, but the Juneau location incurs logistical challenges. The 2700 square mile city and borough of Juneau has a population of over 31,000, and the pure water from the surrounding icefields and glaciers is ideal for beer production; however, the ice also blocks road access to major highways leading to the rest of Alaska and beyond. Shipments are transported mostly by water and typically depart from Seattle on a barge that docks in Juneau every five days, so supplies and equipment must be ordered two to three weeks in advance.

The Centri-Sifter screener’s design reportedly made installation a simple ‘plug-and-play’ operation, which saved Alaskan Brewing Company some additional capital. “We did our own install,” remarks Holmes. “We very rarely have crews come up – housing costs are prohibitive, especially if the project is large. And since Juneau doesn’t have a large industrial base to begin with, if someone comes up but leaves some tool back at the office, they’re just out of luck.”

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