BY DAVID LEVITT | NOV 03, 2016

RAISIN THE BAR

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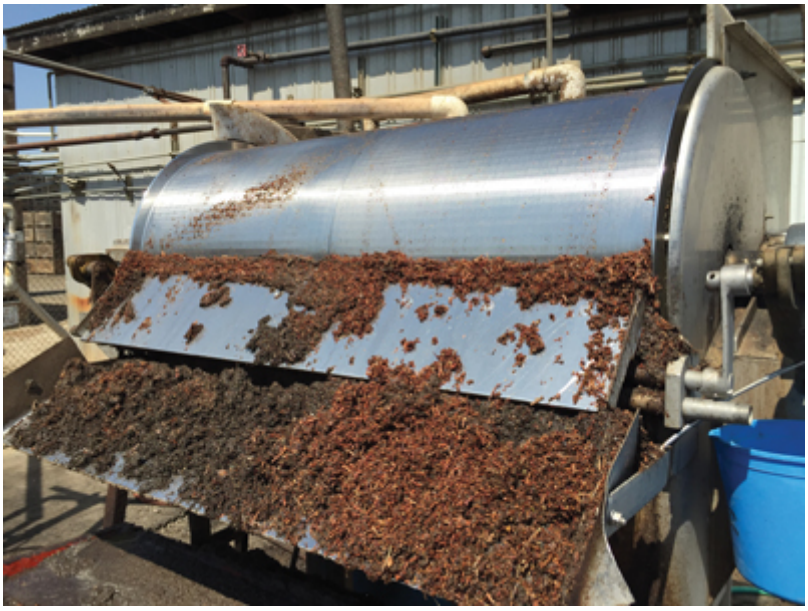
Finer filtration gives food industry a new wastewater solution



Above: The drum screen at Del Rey Packing Co.

Central California food processor Del Rey Packing Co. manufactures and packages high-quality raisins for worldwide distribution. But the dehydration and packaging of raisins creates a continuous wastewater stream that cannot be reused. The discharge from Del Rey Packing Co. well exceeded the limits of the publicly owned industrial treatment plant on a regular basis, and the Community Services District expects many more food-processing plants to open in the future. The district approached Del Rey for help.

Del Rey Packing Co. is an established family-owned business that has been handed down for three generations. Management takes pride in both its product and in the company's contribution to the local economy. Del Rey has

continually upgraded both its processing and wastewater technology, and the company wanted to work with the district to find long-term solutions.

Exceeding Limits

Publicly owned treatment works are well suited to receive food-processing wastewater with biochemical oxygen demand (BOD) values no greater than 250 to 300 mg/L. The discharge from Del Rey Packing Co. exceeded these limits regularly.

With the prospect of a growing food processing industry in California's Central Valley, the district built an industrial wastewater treatment plant in 2007. Del Rey Packing Co. was the first rate payer to be connected to the plant, and remains the only rate payer discharging to the plant. Though this is a financial burden on
Del Rey, it provides an opportunity to study the effects of wastewater discharge on the operation of an industrial treatment plant.

The plant operators came to Del Rey with a request to lower Total Suspended Solids (TSS) and BOD in Del Rey's wastewater. The company tried everything from filter screens to a reverse osmosis (RO) system. Marginal improvements were made by implementing a food processing shaker bed with a 5-mm mesh to remove the coarse solids, followed by a rotary drum screen with a 250-µ mesh to remove finer solids. But the drum screen did not provide the reductions in TSS that were needed. Beyond that, traditional automatic filters plugged up, and MF/UF/RO systems were orders of magnitude too expensive to operate.

The food processing shaker bed.

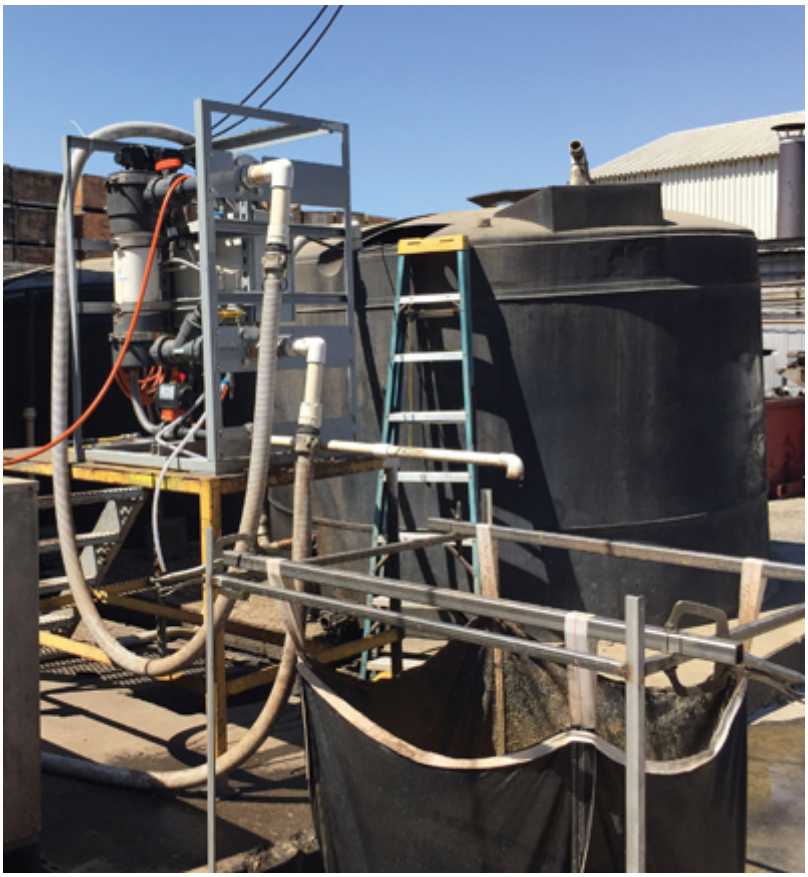
A Filtration Fix

Spiral Water Technologies, a California company specializing in difficult-to-treat waters, assessed the situation at Del Rey in the summer of 2016. After making its recommendations, Spiral Water installed a 25-µ filter following the drum screen.

The Spiral Water automatic self-cleaning filter is designed for ultra-high and variable TSS up to 25,000 mg/L. It provides continuous filtration with no backflush or cross flow at filtration ratings of 10 to 100 µ. At this level, TSS and BOD reductions are possible at a fraction of the cost of expensive membrane technologies. The ability to handle high solids loading even in the presence of fats, oils and grease, makes the filter suited for the food and beverage industry.

In addition to providing low-micron filtration, the solids-pumping action of the filter concentrates solids up to 5% by weight, making it easy to dispose of collected waste. Combined with a simple dewatering sack, the filter can produce dewatered solids for fertilizer or landfill.

Commissioning of the filter system at Del Ray Packing Co. took less than a day and required only a simple sump pump to operate. Del Rey continues to be the only discharger to the industrial wastewater treatment plant. In the first month of Spiral Water operation at Del Rey, the industrial treatment plant witnessed average influent TSS levels drop by 61% and BOD fall by 48% from the previous five months of operation. With the success of this initial 25-µ implementation, Del Rey plans to expand its use of Spiral Water filters and filter down to 10 µ.



Spiral Water's filter system provides low-micron filtration and concentrates solids.

Industry-Specific Solutions

Wastewater is generated in all areas of food processing, including dehydrating, washing, peeling, blanching, sorting and sanitizing. The reuse and recycling of

wastewater onsite is the optimal solution to food processing wastewater issues. Spiral Water is working with customers to reuse and recycle wastewater whenever possible. In the past, high levels of suspended solids in most food processing streams have made this uneconomical. Technologies like the Spiral Water filter help to make this a possibility. And when water must be discharged, Spiral Water's fine filtration provides a solution for BOD and TSS reduction that helps food processors avoid surcharges by the treatment plant.

The Future of Filtration

When recycling wastewater is not practical, food processors must treat and discharge large volumes of wastewater. More and more water is being used in food processing, and wastewater treatment facilities are being overtaxed. Food processing companies can decrease the cost of off-site treatment by capturing, dewatering and drying their waste on site. This technology demonstrated that effective BOD and TSS reductions are possible through the use of fine filtration. The ability to filter high levels of suspended solids, even in the presence of fats, oils and grease, provides an industry-specific solution.

ABOUT THE AUTHOR

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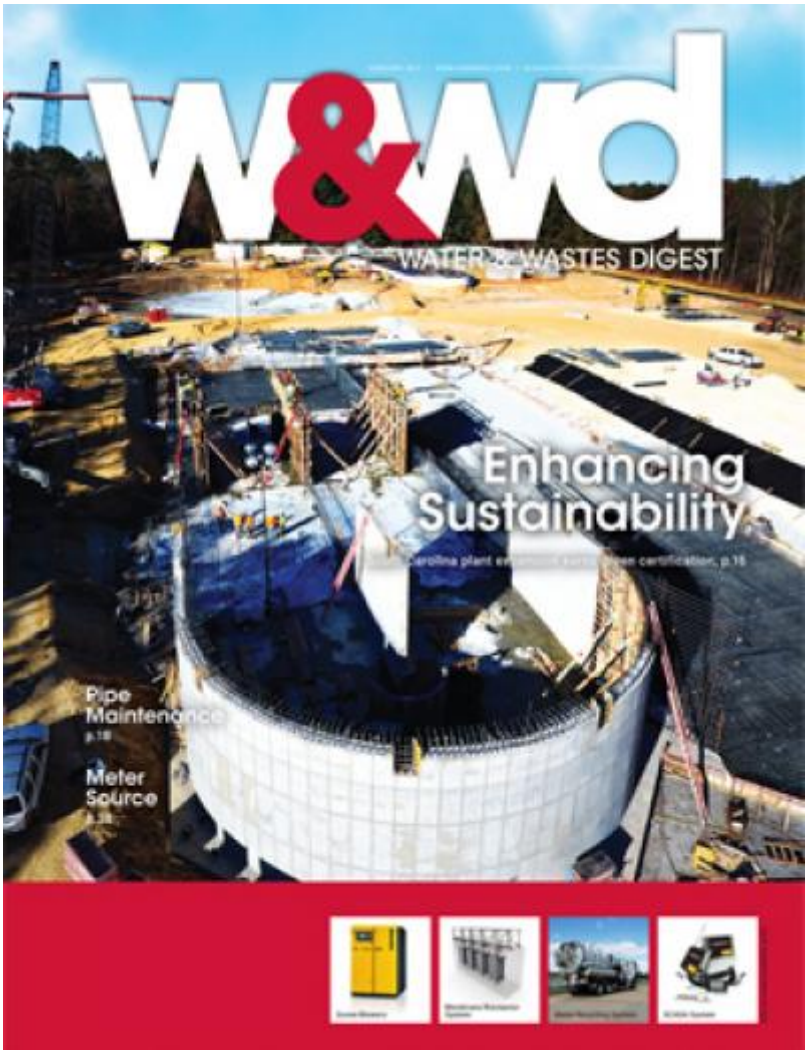

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