



# Case Study

## Tough Choices: Re-designing Nestlé Michigan Plant wastewater solids-handling system

### Overview

Meeting multiple regulatory agency requirements for pharmaceutical, food, beverage and product safety and quality is paramount for global industrial manufacturer Nestlé. In order to meet Nestlé's standards for food safety, a Michigan-based manufacturing plant needed a stainless steel wastewater pumping solution that could stand up to very specific and challenging requirements.

The plant managed several wastewater streams in its industrial production process. Ingredients for various products are washed in the early stages before being sent to various production areas for processing. After processing, the remaining wastewater is disposed of efficiently - while adhering to strict environmental rules and regulations. This requires a reliable solids-handling submersible pump system that can withstand caustic and acidic wastewater filled with solids such as fibers, fats, pits, and peels.

To build such a robust system, Nestlé's sought the assistance of their local pump distributor. Together they defined the highly specific criteria, including that the pumps be able to withstand erosion from hard solids, be clog-resistant, reliable to minimize production down time, and maintain a small footprint for space efficiency.

### PROBLEM

- Potential damage from abrasive solids
- Costly downtime from delays due to clogging
- Waste acidity and CIP solutions are corrosive
- Redundancy requirement for reduced downtime



## Solution

The Nestlé Michigan plant and their pump distributor installed Industrial Flow Solutions™ BJM® SKX series submersible solids-handling pumps with a redundancy and back-up system. By installing three SKX pumps with a custom triplex control, which operates all pumps in parallel for increased efficiencies, they could operate one, two or all three pumps at the same time to regulate the changing rate of inflow to the sump. It also allowed plant managers to alternate lead and lag pump positions to promote even wear over the pumps' operating lives.

SKX series pumps feature corrosion-resistant 316 stainless steel cutting and wear elements that can easily withstand caustic and abrasive elements. Their wear-resistant shredding and cutting system is designed to tear, break and rip solids up to 3.5" in size. The shredding action is caused by tungsten carbide-tipped impellers positioned against a suction plate that grabs debris for the impeller to shred. The single-vane impeller allows for high volume and lift performance, which was perfect for the plant's wet well application.

SKX series pumps have submersible motors that are protected by a three-seal design to help prevent abrasives from entering the seal chamber. Winding protection and (NEMA) Class F motor insulation allow motor temperatures to rise up to 230°F, which is superior to pumps with Class A and B insulation. An automatic switch turns the pump motor off if temperatures and/or amp draw rise too high. In addition, water is circulated around the motor's housing, cooling it off while the submersible pump is in action. To plant managers, this ensured lower failure rates and the level of reliability needed to meet their standards.

The full system was installed in 2013 and continues to meet Nestlé's high



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## FEATURES

- Corrosion-resistant, 316 stainless steel shredding/cutting solids handling pump
- Wear-resistant shredding and cutting system designed to tear, break, rip solids
- Tungsten carbide-tipped impeller
- Max solids 1.6" - 3.5"

## APPLICATIONS

- Food & Beverage
- Commercial Buildings
- Municipal Water & Wastewater
- Pharmaceutical & Medical
- Power Generation & Utilities

## RESULTS

- Wastewater management for highest standards food production
- Continuous non-clog, abrasion-free production
- Minimized downtime with highly reliable pump solution