



Case Study

Thicker Sludge Pumping Cuts Costs

City of Akron Wastewater Treatment Plant, OH

The Challenge

Frequent clogging and breakdown from stringy and large solids

Wanted to increase solids percent to reduce disposal costs

Keep retrofit costs low

The Discflo Solution

Discflo pump's clog-free design ideal for large and stringy solid

City increased % solids and cut disposal fees substantially

Discflo pump retrofit in piping for previous centrifugal pump



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Discflo's unique pump technology has solved a tough pumping problem at the City of Akron Wastewater Treatment Plant in Ohio. Installed in August last year, the disc pump has increased the percent solids pumped from the gravity thickeners by almost 2%, saving the City a substantial sum in waste disposal costs, as well as reducing maintenance and downtime.

Raw primary sludge from the gravity thickener process is one of the most difficult materials to pump. It contains solids up to 2 1/4" in size, ranging from 4.5% to 8.2% in concentration, as well as including stringy particles, such as hair and rags. The City processes around 0.78-0.90 million gallons per week of primary sludge from the gravity thickener process and mixes it with approximately 0.5 million gallons per week at 5.5% solids from its DAF thickener process. For the past 12 years, this mix has been sent to a 5-acre indoor compost facility nearby, built specifically for recycling municipal wastes.

"We wanted to increase the percent solids we were pumping, to reduce the cost of disposal," says Mike Mesek, Operations Foreman for the Solids Section at the Akron WWTP. "We knew the centrifugal pumps we were using couldn't handle any higher solids content than around 5%. The sludge could get so thick that the pump rate would slow down, and eventually come to a standstill."

"The solids were staying in the tank too long and the blanket depth would get too thick, as much as three feet, during storm conditions. At times, we would need two centrifugal pumps operating if the solids level was too high, and they would be pumping at less than 200 GPM combined!"

"Another factor that convinced us to try the disc pump was the cost of the pump compared to a progressive cavity unit. Not only was the PC pump more expensive, but also it would have required more retrofitting to install," says Mesek. "Because the disc pump is similar to a centrifugal, I knew it would be much easier to retrofit, with fewer piping modifications required."

A Discflo disc pump, model 604-14-2HHD, was installed in August 1997. "I noticed immediately, overnight, that the sludge being pumped was thicker," remarked Mesek. "And we have been able to increase the pump rate from 270 GPM with the centrifugal unit to a cutoff point of 370 GPM with the disc pump."

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After installing the disc pump, the plant achieved an increase in solids concentration of about 1.8%, which has reduced the volume of sludge to the composting plant by around 25%. This equates to a substantial saving in composting costs, by cutting the quantity of chemicals in the process and the manpower required. From these savings alone, the disc pump paid for itself in less than a month.

A second key benefit is that downtime has been virtually eliminated with the disc pump. The clarifier process runs seven days a week, 24 hours a day, with the solids being pumped from the bottom of the clarifier in cycles of two to 30 minutes.

"Downtime is critical", says Mesek. "If there's a problem removing the solids from the clarifier tanks, the tank becomes overloaded and slows down the entire disposal process. The previous pumps would frequently clog due to the density and the presence of stringy particles in the sludge."

Also since start-up eight months ago (as at May 1998), the disc pump has required virtually no maintenance and no spare parts have been purchased. "The disc pump has definitely made life easier." The City of Akron will be installing a second disc pump later this year (1998) for pumping sludge from a new gravity belt thickener, which will replace the older DAF units.

Call Discflo now to find out how our pumps can solve your problems.



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