

# Kenosha Wastewater Treatment Gets Better Control of Cake at Lower Costs



## **HYBRID THICKENER REPLACES DAF SYSTEM, DELIVERS BEST CONTROL OF CAKE AND RAPID ROI**

Think back to the 1980s. Teens listened to cassettes on their Sony Walkmans. The occasional businessman talked on a brick-sized portable phone. NASA launched the space shuttle program. And the city of Kenosha, Wis., installed a Dissolved Air Flotation Thickening (DAF) system at its wastewater treatment plant on the shores of Lake Michigan. Much has changed since then – cassettes have turned into iPods, phones fit in your pocket and the space shuttle is now retired. So when it came time for Kenosha's POTW (publicly owned treatment works) to decide whether to repair its aging, Cold War-era DAF system or explore new technologies, it took a bold leap forward. The results have been unprecedented.

### **Operators face a choice in upgrading plant systems**

Over the years, parts of the 26-MGD treatment plant had been repaired or rebuilt. But the DAF system, occupying two floors of a 10,000-square-foot building, still contained an array of pumps and aeration equipment that would either have to be replaced or retired.

That's when Centrisys President Michael Kopper approached Kenosha officials about a new thickening system Centrisys engineers had been developing that could produce thicker sludge entirely without the use of chemicals.

## **THK Series Specs**

**Feed capacity** – 100-1,000 GPM (20-220 M3/H)

**Weight** – 5,000-30,000 lbs.

**Flow rate** – Up to 1,000 GPM/machine

**Cake solids** – 3-10%

**Total installed power** – 15-150 HP (11-120 KW)

**Power consumption rate** – 0.11 KW per gallon per minute

The treatment plant was already operating a Centrisys Corporation CS21-4HC centrifuge system for biosolids dewatering. Installed in 2010, that system quickly proved to be a great leap forward in efficiency, saving the utility \$420,000 in chemical and operational costs in its first year.

That success gave the forward-thinking officials in Kenosha the confidence they needed to move forward with the THK.

### **Kenosha leadership seizes opportunity to implement a smarter approach**

In August 2011, faced with the decision of either repairing the DAF system or embracing new technologies, the city took the bold step of installing a Centrisys THK 18-3 thickening centrifuge.

Kenosha Water Utility General Manager Edward St. Peter recalled that the decision process was relatively easy, particularly for a utility that has long demonstrated industry leadership in pioneering smarter technologies: "We felt as if the new unit offered process flexibility, especially the thicker level of cake solids required for energy-efficient designs. We were aware of other thickening technologies that were available, but they all required expensive chemicals derived from non-renewable petroleum resources."



**THK Thickening System** –  
2013 WEF Innovative Technology Award Winner

**The value of the thickening centrifuge is still being realized in many aspects of the plant's operations. The benefits so far include:**

- **Savings on pump and equipment upgrades** – The aging DAF system would have required \$80,000 to \$100,000 in repairs.
- **Achieving thicker sludge** – The THK thickens the sludge to 5 to 6 percent solids, whereas the DAF system only produced about 3 to 4 percent.
- **The potential to thicken to 7 percent solids** – A thicker sludge is possible after necessary upgrades to the plant's pumps.
- **Dramatically smaller footprint** – The THK sits in a walkway between two DAF tanks and requires about 1,000 square feet of space, as opposed to the two floors and 10,000 square feet that the DAF system required.
- **Less odors and reduced ventilation needs** – The THK is enclosed, making the building more pleasant and safer to work in. This also eliminates the need for two large exhaust fans that provided air circulation.
- **Less equipment maintenance** – The THK requires very little oversight and considerably less maintenance compared to the daily maintenance needs of the DAF system, freeing up staff to perform other tasks.
- **Improved digester operation** – The system sends less water to the digester, reduces the amount of supernatant and reduces the heating demand.
- **Organic production of more gas** – With improved digester operations, more methane gas is produced organically for on-site heating use.
- **More efficient electricity use** – The power consumption of the THK is about 50 percent compared to the DAF.
- **Integrated computer terminal** – The THK came with a computer terminal that integrated with the plant's operating system, saving \$30,000 otherwise needed to upgrade the DAF's computer system.



*“The Kenosha Water Utility is very excited to work with Centrisys Corporation because they are a company committed to innovation, excellence and the technological advancement of the wastewater industry. The Kenosha Water Utility is very proud to be able to purchase equipment that is not only manufactured in the United States, but at a manufacturing facility in our hometown. We highly recommend Centrisys and look forward to continuing our partnership with them for many years to come.”*

**Edward St. Peter**  
General Manager  
Kenosha Water Utility

### Thickening centrifuge continues to impress Kenosha staff

The THK has quickly proven to be as reliable as other innovations from Centrisys, a team that has introduced several proven technologies to the industry over the last two decades.

“After the THK was in a short while, I really gained confidence in it,” said Dave Lewis, Assistant General Manager of the Kenosha Water Utility. “We’ve got enough runtime on the machine now, and overall, it’s been very reliable. It’s been running 24/7, and it’s trouble free.”

The plant’s test run with the THK has gone so well, Lewis said, that Kenosha has plans to install another THK thickening centrifuge to handle primary sludge in the near future. “In the beginning, one of the guys called it ‘that little toy back there.’ They don’t call it that anymore.”