

Michigan Goes T2. This tough Rotary Lobe Pump also yields cost savings

The TORNADO® T2 rotary lobe pump from NETZSCH has been doing a remarkable job solving difficult pumping application requirements in Western Michigan.

The communities of Plainwell and Otsego have benefited with huge cost savings and reliable service. Both are relatively small cities, so this translates into a significant reduction to their operating costs.

The City of Plainwell, was initially using a reciprocating pump to move raw sludge and biosolids from primary clarifiers to the anaerobic digesters. The percentage of solids was approximately 4% by volume and, in some cases, could get as high as 6% by volume. Due to the lack of a screen, the size of the solids could not be controlled which often caused the pump to jam. The wear on the moving parts was excessive and maintenance, requiring replacement of parts, was frequent and expensive. The spare parts were large and heavy because of the general design of the reciprocating pump. This created safety issues during handling in addition to the cost.

The Plainwell water treatment plant is a relatively small facility so space is a consideration. The reciprocating pumps not only required a large footprint for their installation, but also additional elbow room for maintenance work. The plant is managed by three people, and the frequent maintenance also resulted in schedule disruption for the personnel who handle multiple tasks. The entire arrangement was inefficient and the cost, in terms of time and money, was too high.

Centrifugal pumps were installed as an alternative, but they presented their own set of problems. The centrifugal pumps had to be sized much larger as a result of their low efficiencies and ended up raising the cost of power consumption. The varying solid content in the sludge also caused this pump type to be unsuitable for this application.

Bryan Pond, Facilities Supervisor, started looking for a reliable and cost effective solution, and solicited bids for new lobe pumps. These pumps were to be installed in consecutive years for budgetary reasons.

The NETZSCH TORNADO® T2 rotary lobe pump was selected for the application as it offered a competitive price along with ease of maintenance. The first pump was installed in February 2015. It was installed with temporary piping until the second pump was purchased and made operational in 2016.

After both pumps were in place, the piping was converted to a permanent arrangement. The pumps were coupled with VFD's and a flow meter was added to optimize flow control. As reflected in the picture above (right), the two pumps fit nicely on just one of the old pump pads. They have a nice small footprint, and provide extra space around the installation.

The first pump has been operating for more than 2 years with no problems.



The NETZSCH TORNADO® T2 Rotary Lobe Pumps in the Plainwell Water Renewal facility requires only a small footprint while providing easy access for maintenance.

During this time, it has been periodically inspected, but did not require any maintenance nor replacement of parts. The customer has been very satisfied with the performance of the pump, and is impressed by the low wear observed after a long period of usage.

Bryan Pond stated that the installation of the NETZSCH TORNADO® T2 rotary lobe pumps has been the best choice they could have made. These pumps have solved the problems they were experiencing with other pump types, and has freed up their time for other projects. They have a high confidence in the reliability of the T2 pumps and no longer worry about the pump side of their operations at all.



The City of Otsego WWTP installation of NETZSCH TORNADO® T2 Rotary Lobe Pumps.

News travels fast, and good news travels faster.

In the neighboring community of the City of Otsego, the water treatment plant was experiencing similar difficulties, and were at a loss for finding the right solution. They too had tried different pump types, including reciprocating and centrifugal pumps.

At that time, the Otsego Waste Water Treatment plant had plunger pumps that had been rebuilt many times throughout their years of usage. They were installed in a small pump room which made service a struggle as the pumps were piped together with cross tie piping so that the Primary and Secondary sludge pumps could back each other up. This significantly reduced access to the pumps making maintenance extremely difficult.

Luke Keyzer, the Facilities Manager at the Otsego WWTP, happened to discuss

his facility's pumping setbacks with Bryan Pond, and learned that the NETZSCH TORNADO® T2 rotary lobe pump could be the right solution for them, too.

So when the Primary sludge pump was again in need of a rebuild requiring a piston, packing gland, packing, and several other components, it was a pleasant surprise for the City of Otsego personnel to find that the price of a new NETZSCH TORNADO® T2 rotary lobe pump was close to the price of just the spare parts for the plunger pump!

The Primary plunger pump had to be disassembled in parts for removal so that the new NETZSCH TORNADO® T2 rotary lobe pump could be installed. The Primary T2 pump was installed in March of 2016. The Secondary T2 pump was installed in June of 2016. The piping was also modified to enable better access to both of the pumps. Now, each pump can easily be inspected and serviced.

It should be noted that while the layout of the pump systems was modified to allow this easy access and more space for inspection, maintenance and service, to date the pumps have been operating without trouble. There has been no need for maintenance and the plant is very pleased with their new rotary lobe pumps.

As the word continues to spread about the success of the NETZSCH TORNADO® T2 pump, more communities are reaching out to solve their Waste Water Treatment problems with this pump solution.

Plainwell Pump Data

Pump type: TORNADO® T2

Capacity: 60 gpm /
13.6 m³/hr

Pressure: 45 psi / 3.1 bar

Medium: raw sludge

Temperature: 70°F / 20°C

Speed: 255 rpm

Otsego Pump Data

Pump type: TORNADO® T2

Capacity: 100 gpm /
22.7 m³/hr

Pressure: 30 psi / 2.06 bar

Medium: digested sludge

Temperature: 75°F / 25°C

Speed: 340 rpm

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