

NETZSCH Progressing Cavity Pumps Lower Maintenance Costs and Reduce Downtime for Municipal Sludge Processing Facility

For a large wastewater authority in Illinois, NETZSCH has provided NEMO® progressing cavity pumps for the difficult job of transferring high-solids sludge cake to a processing facility.

Like many municipal treatment facilities across the country, a wastewater authority in Illinois was looking for a better way to dispose of the large volume of treated sludge produced on a daily basis. The municipal agency serves over 300,000 residents within its service area with three advanced sewage treatment plants, over 125 miles of interceptor sewers and a combined average design capacity of 63.4 million gallons a day.

In 2006, the municipality built an award-winning sludge recycling plant. The plant dries the waste sludge and processes it into glasslike pellets that can be used in various industrial applications, such as paving and roofing, for fertilizer, or as potential low-grade fuel for power-generating plants.

Looking for Efficiencies in Transferring High-Solids Sludge Cake from Silo to Processing Plant

At the wastewater authority's three wastewater treatment plants, the solids are thickened and dewatered by belt filter presses. The dewatered sludge is then loaded into trailers and transported to their Sludge Recycling Facility where it is stored in two silos prior to the drying and pelletizing process.

At the bottom of these large silos are pumps (four pumps per silo) that feed the sludge into a dryer. With the sludge being a very heavy cake – up to 22% solids – the operators of the recycling facility were experiencing maintenance problems with the existing progressing cavity pumps. A major issue for the plant operators was the



NETZSCH engineers designed the NEMO progressing cavity pumps with a customized hopper that allowed the customer to use the existing silo bolt pattern, simplifying installation

expense of pump down time and servicing due to a design that was unable to adequately handle the heavy sludge cake. Additionally,

the customer was not pleased with the frequent, intensive and messy work they had to perform when servicing the pumps.

According to a local sales representative for NETZSCH, "One of the main objectives for replacing these pumps was that the plant operators wanted the pumps to last longer before maintenance and they wanted pumps that were easier to service. The original silo pumps needed to have the stators replaced too often and when they did, it was a major undertaking. NETZSCH was able to specify progressing cavity pumps that would reduce wear and were easily serviced." The NETZSCH progressing cavity pumps were designed to transport dewatered municipal sludge with a solids content of 16 to 22% at a rate of 11-16 gpm (2.5 - 3.6 m³/hr) with a discharge pressure of 350 psi (24 bar).

NETZSCH engineers designed these progressing cavity pumps with a number of advantages for the customer. A customized hopper let the customer use the existing silo bolt pattern, saving them time and money by eliminating unnecessary modifications to install the NETZSCH pumps. The segmented, oversized auger with the patented positioned feed screw auger prevents bridge-building in the hopper and allows for the optimum filling of the rotor stator cavities – effectively dealing with auger-related problems that the customer was having with the previous pumps.

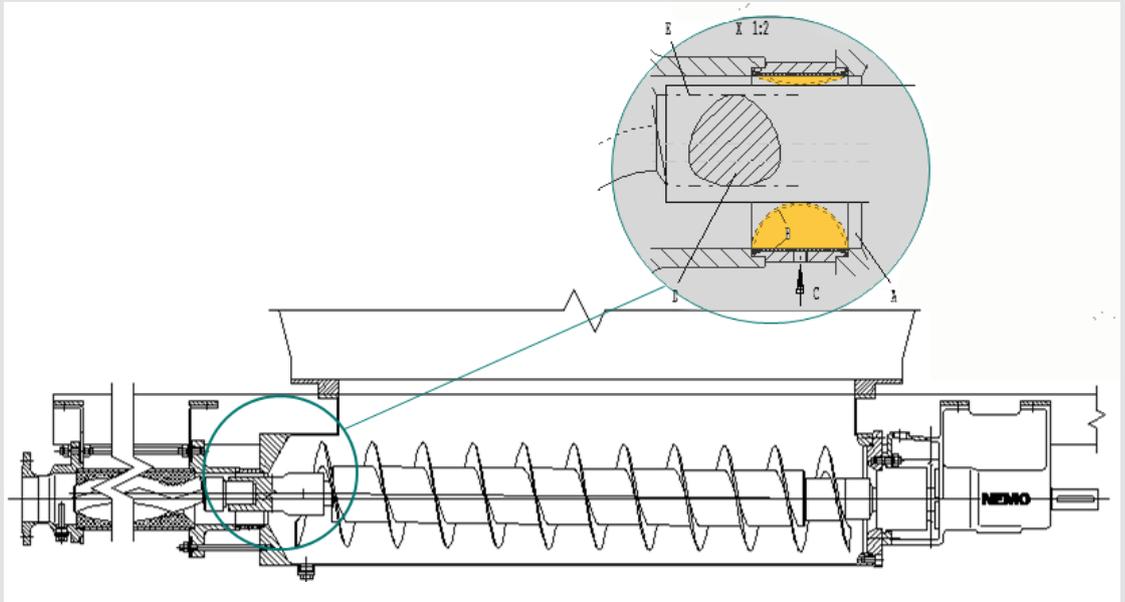
Additionally, an exclusive rotor release system was provided that eliminates downtime and the mess the customer experienced with having to remove the entire pump from the silo every time they had to change the rotor or stator. With this system a patented, shut-off bladder (EP1 083 336 B1) can be inflated that



The NETZSCH progressing cavity pump seen here with the segmented, oversized auger with the patented positioned feed screw auger.



Integrated rotor/stator replacement system with inflatable shut-off (or seal-off) bladder to isolate hopper contents allows for the exchange (or repair) even with a full silo.



isolates the sludge in the hopper from the rotor and stator. The rotor is connected to the joint with a polygonal profile connector which allows a quick removal without the need to disassemble the entire hopper as was the case with the former competitor's design.

Since it opened, the sludge processing plant has reduced the amount of waste from 200 tons a day to just over 30 tons a day. To date, the NETZSCH pumps have reduced maintenance costs and downtime for the plant operator since they were installed in October 2012.

Pump Data

Pump type:	NEMO® Model NM076SF04S24K/Z
Capacity:	11-16 gpm / 2.5-3.6 m ³ /hr
Pressure:	350 psi / 24 bar
Medium:	Dewatered sludge 22%
Temperature:	Ambient
Speed:	30 to 40 rpm

Contact NETZSCH

NETZSCH produces NEMO® Progressing Cavity Pumps for a wide range processing and conveying applications. They are used for the continuous, pressure-stable, gentle and low-pulsation conveyance of almost any substance including sludge, chemicals, adhesives, and petroleum. NEMO® Progressing Cavity Pumps are available in four rotor/stator geometries and a selection of engineered joints are sure to suit your application.

NETZSCH customers rely on our strict standards in design, engineering and manufacturing to deliver products with absolute functional reliability and exceptional quality. NETZSCH service, like NETZSCH quality, is geared to surpass our customers' expectations.

For more information on this customer application and NETZSCH products and services:

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