



PERIPRO® Peristaltic Pump Solution

OPTIMIZATION OF LIME SLURRY PUMPING

Midwestern Water Treatment Plant Selects PERIPRO® Pumps with the XXL roller design

A municipal water treatment plant in the upper Midwest needed to raise the pH levels of its water supply to meet state and federal water quality standards. The plant uses lime slurry (calcium hydroxide) as a cost-effective and reliable method to adjust pH.

Lime slurry can be a particularly challenging material to pump for most pumping technologies; but it is an ideal application for a peristaltic hose pump. Hose pumps are unaffected by the slurry's abrasive and corrosive nature, or by its high solids content. The flexible hose and the unique pumping action of the peristaltic pump prevents the lime solution from settling and eliminates scaling that can be a common cause of restricted flows and failure in other pumping technologies.

However, this facility was experiencing frequent maintenance and performance issues with its existing peristaltic pumping system. Although hose pumps are typically a great pump-

ing solution for lime slurry, not all hose pump designs are created equal! The municipality replaced their existing faulty and costly stationary shoe hose pump design with the PERIPRO® hose pump with the XXL roller design.

Peristaltic pumps with the older stationary shoe design are still widely used, but they have some significant disadvantages that the PERIPRO® pumps eliminate with their newer, state of the art XXL rollers.

The stationary shoe pump design creates enormous heat-generating friction between the shoe and the hose. This process puts a tremendous amount of stress on the hose and requires a large lubricant bath to dissipate the heat, and prevent pump failure. The very high starting and operational torque of the shoe designs require larger motors, resulting in much higher energy cost than a PERIPRO® XXL roller pump with equal performance capabilities.

By comparison, the PERIPRO® XXL rollers provide a near frictionless and optimal compression of the hose, minimal starting and operating torque, smaller motors, and significantly reduced power requirements. PERIPRO® hose pumps offer energy savings of up to 30% and significantly longer hose life! The lack of heat-generating friction means the PERIPRO® pumps require 90% less lubricant – only a very small amount for the sole purpose of aiding the rollers in gliding along the hose.

Another key feature of the PERIPRO® design versus the stationary shoe pumps is how remarkably easy it is to change the hose. The shoe designs require the hose to be fed through the front of the pump, often requiring the use of the motor to assist with the process of threading it around the shoes inside the housing. An especially difficult and cumbersome process if space is limited as it was in this customer's case.



Three NETZSCH PERIPRO® pumps in series metering lime slurry for pH control at a Midwest water treatment plant.

Conversely, the hose changeout on all PERIPRO® models is done through the open side panel of the pump; it is extremely fast and easy, especially when space is at a premium.

PERIPRO® hose pumps also eliminate a potential safety concern that can exist with some shoe pump designs that have the hose connection outside the pump housing. This outside connection allows for a potential escape path for chemicals to contaminate the workplace. The PERIPRO® hose connection totally encloses the hose which eliminates this potential leak path.

Lime slurry can be harmful if it comes in contact with the skin and eyes. The PERIPRO® is a safer solution and provides peace of mind to the customer, knowing any potential leaks will be entirely contained within the pump housing.

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Solution

During the spring of 2024, this municipal water treatment plant began replacing the competitor's shoe style hose pumps with the NETZSCH PERIPRO® Pump Model C10/5.1, a hose pump using the XXL roller design. The NETZSCH pump addressed the shortcomings of the stationary shoe pump by offering a newer and more robust technology specifically designed for handling abrasive and corrosive slurries with minimal friction, reduced hose stress, and an increase in performance.

The PERIPRO® design has no valves, seals, or stationary parts in contact with the slurry. Any product leaks are contained inside the pump housing which eliminates this as a safety concern in the workplace.

Plant personnel especially like the PERIPRO® XXL roller design and the ease of removing and replacing the hose through the spacious side panel.

Since the startup of the PERIPRO® pumps, this water treatment plant has realized the following results:

- The PERIPRO® pump conveys a higher volume of fluid per revolution. Fewer hose compressions and significantly gentler pumping action results in a longer hose life.
- Minimal lubrication is required as compared to shoe pumps.
- Increased reliability: Pumps have performed to specifications and customer expectations.

WWTP Application Data

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| Pump type: | PERIPRO® C10/5.1 |
| Flow Rate: | 20.5 gpm / 4.6 m ³ /hr |
| Pressure: | 30 psi / 2 bar |
| Medium: | Lime Slurry with 30% solids, abrasive |
| Viscosity | 500 cp |
| pH | 12 |
| Temperature: | ambient |

Contact NETZSCH:

NETZSCH customers rely on our rigorous 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.

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- Reduced operating and maintenance costs, extended hose life, and reduced HP requirements.
- Improved pH control due to precise and consistent metering.

Conclusion

Selecting the right pump for your specific application challenges can lead to measurable improvements in performance, operations and maintenance costs, and compliance with water quality standards.

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