



# PERIPRO® Peristaltic Pump Solution

## Sodium Hypochlorite Service Success with NETZSCH PERIPRO®

### Sodium hypochlorite (NaOCl) is widely used by municipal water treatment plants

Sodium hypochlorite (NaOCl) is an effective water disinfectant to treat the raw, filtered water before distribution. But sodium hypochlorite can be an unstable solution when exposed to heat and light, that needs to be stored in tightly closed containers and kept in a cool place away from direct sunlight. Otherwise elevated temperatures will cause it to decompose or “off gas” creating gaseous oxygen (O<sub>2</sub>) that builds up gas bubbles in the chemical metering feed system.

A common metering feed pump technology used to meter the sodium hypochlorite is Electrically Operated Double Diaphragm (EODD) pumps that can precisely inject the volume of chemical the system requires. However, EODD pumps are very prone to vapor locking when gas bubbles build up in the feed system, causing them to bind and stop pumping the sodium hypochlorite. To fix these situations, the EODD pumps must be manually vented to release the built up gases, so the EODD pumps can begin pumping

again. This manual venting process can occur as many as several times a month during warmer periods of the year, requiring plant personnel to be on hand each time or even make a special visit to the treatment station if after hours, to vent the EODD pump and get it back online.

The required labor cost to manually vent the EODD pumps can be significant over the course of a year, adding up to several thousand dollars per pump. There’s also additional pump maintenance parts and maintenance labor costs as well, adding well over another thousand dollars per pump, per year of expense. All totaled, the EODD pump’s annual operation and maintenance cost can be in excess of \$3,600 per pump, per year. The following calculations provide typical EODD expenses in this service.

An alternative pumping technology for sodium hypochlorite metering services that is immune to vapor locking and capable of dry-running is

the NETZSCH PERIPRO® peristaltic pump technology. It’s simple but robust design transfers products by compressing a precision machined, multi-layered elastomer hose with large, heavy-duty rollers to pull in the product and force it out the pump discharge connection at the desired pressure and flow rate. The only pump components that come in contact with the product are the elastomer hose and pump connections, making the PERIPRO® ideal for pumping aggressive chemicals and corrosive products. And the only wearing component is the elastomer hose, which is available in multiple materials for a wide variety of services and applications.

The PERIPRO® is available in three versions for specific applications in various industries. They are the; Chemical Series, Food & Beverage Series and the Industrial Series. The designs for all three versions are essentially the same, just the materials of construction differ to meet unique market requirements.

Annual Diaphragm Pump Maintenance Cost per Pump  
(Electric Operated Double Diaphragm - EODD)  
Sodium Hypochlorite Metering Service

**Call Out Labor Cost**

Minimum labor time hours charged to vent pumps	3		
Average labor cost to vent pumps per call out	\$100		
<b>Diaphragm Pump Vapor Lock Call Out Frequency</b>	Annually		
Summer months	9		
Times per summer month	2	Summer	18
Winter months	3		
Times per winter month	1	Winter	3
Total annual venting call outs			21

**Venting Labor Costs per Pump - Operations**

Annual Operations labor (call outs x call out labor cost) **\$2100**

**Diaphragm Pump Maintenance Frequency**

Venting cycles per pump repair maintenance	5
Annual maintenance repairs (venting calls / cycles)	4.2

**Venting Labor Costs per Pumps - Maintenance**

Annual Maint. labor (repairs x call out labor cost) **\$420**

**Diaphragm Pump Maintenance Parts Costs**

Parts cost per maintenance repair	\$200
Annual parts cost (maintenance repairs x parts cost)	<b>\$840</b>

**Diaphragm Pump Dampener Costs**

Dampener replacement cost	\$500
Average number of years dampener life span	2
Annual dampener replacement cost (cost / years)	<b>\$250</b>

**Total Annual Diaphragm Pump Maintenance Costs Per Pump**

Oper. Labor + Maint. Labor + Maint. Parts **\$3610**

Calculations based on pump installations in climate with summer temperatures of 85 °F / 29 °C

**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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WTP Pumps Data

Pump type:	PERIPRO® C10/0.1
Flow Rate:	29 gph / 0.11 m <sup>3</sup> /hr
Pressure:	70 psi / 4.8 bar
Medium:	12% sodium hypochlorite
Temperature:	ambient

The version used for sodium hypochlorite metering services is the PERIPRO® Chemical Series, having a TEFZEL® coated pump housing and cover, hose leakage sensor, drainage system, and PVDF or polypropylene pump connections.

Due to its ability to run dry indefinitely, pump harsh chemicals and accurately meter the product flow to ±1%, the PERIPRO® peristaltic pump was selected to replace EODD pumps on sodium hypochlorite services, to reduce the operations and maintenance burden and costs. Numerous PERIPRO® pumps have been successfully installed, with zero vapor locking problems caused by sodium hypochlorite off gassing and forming gas bubbles in the feed system, saving the water utilities end-users thousands of dollars per pump, per year.



PERIPRO® C10/0.1 pump on sodium hypochlorite metering service skid

The only maintenance required will be the replacement of the elastomer hose, an easy and quick process, when the hose reaches the end of its life. The initial pumps were installed in May, 2023, operating 24/7, with hoses still in good condition, performing well one year later in May 2024.