



# **Water and wastewater treatment**

World-class pumps for today's challenges

# The right pump, with the right support



Plant operators need reliable, low maintenance pumps to ensure water quality, meet budgets and adhere to changing environmental legislation. Combining our water and wastewater industry expertise with continual investment in pump innovation, Watson-Marlow Fluid Technology Group delivers a wide range of pump solutions that help our customers meet their objectives with confidence.

## Water and Wastewater applications

### Metering and Transferring

Sodium Hypochlorite/Sodium Bisulfite  
 Peracetic Acid/peroxyacetic acid/PAA  
 Sodium Hydroxide/Potassium Hydroxide  
 Phosphoric Acid  
 Sulfuric Acid  
 Hydrogen Peroxide  
 Ferric and Ferrous Chloride  
 Lime and Carbon Slurry  
 Hydrofluorosilicic Acid  
 Sodium and Potassium Permanganate  
 Aqueous Ammonia  
 Alum/Alum Sludge  
 Orthophosphate  
 Methanol/MicroC/MicroCG  
 Polymers

### Sludge and Abrasives

Sludge Feed to Belt Filter Presses and Centrifuges  
 Magnesium Hydroxide  
 PAC (powder activated carbon)  
 Lime  
 Sampling  
 Scum  
 Thickened Sludge  
 Digested Sludge  
 Waste and Return Activated Sludge (WAS and RAS)  
 Alum Sludge  
 Dissolved Air Flotation (DAF)

**For decades, Watson-Marlow Fluid Technology Group has helped water and wastewater treatment plants safeguard end-product quality, reduce cost of ownership, and minimize risk.**

Our peristaltic pumps have no valves, diaphragms, rotors, stators, universal joints or lobes to fail. The risk of siphoning and gas locking, common in diaphragm pumps, is eliminated. They're simple to operate, accurate, self-priming and capable of being run dry. This results in pumps that deliver:

- ▶ accurate, contamination-free metering and dosing
- ▶ reliable handling of slurries, viscous, abrasive and corrosive fluids
- ▶ significantly lower total cost of ownership

The combination of the right products, supported by a global network of experienced support, is the reason leading water engineers turn to Watson-Marlow Fluid Technology Group to help them meet today's challenges.





## Accurate, reliable chemical metering—reducing maintenance and risk

Worldwide we help water treatment engineers to reduce contamination risks, meet growing demand, and keep costs low. They trust our chemical metering pumps and hose pumps to achieve consistent water quality.



### Accurate, versatile chemical pumps

Qdos metering pumps are an easy, drop-in replacement for diaphragm pumps, without the headaches. There is no ancillary equipment and the patented ReNu® pumphead can be replaced quickly and easily, with no tools for fast and safe maintenance. With flow rates from 0.001 to 32GPH, Qdos pumps are ideal for disinfection, pH adjustment and accurate dosing of coagulants.

#### ▶ Accurate chemical metering – with no gas locking

- ▶ Issues with off-gassing in sodium hypochlorite metering eliminated
- ▶ No valves, seals or glands in the fluid path to clog
- ▶ Significant reduction in process downtime and maintenance

The Victoria Water Treatment Plant in Minnesota, uses carefully metered fluoride, chlorine and polyphosphate during filtration, clarification and distribution.

The diaphragm pumps at the plant were susceptible to gas locking problems. Faced with regular downtime to bleed the lines of gas, Victoria looked for a more reliable alternative.

Since turning to Qdos peristaltic pumps the plant has significantly reduced maintenance downtime to replacing the Qdos ReNu pumphead just once a year, achieving constant, reliable performance between changes.



### Process pumps - One minute maintenance pumps

To reduce operational expenditure there are increased demands on chemical metering pumps for higher flows, greater accuracy and quicker maintenance. Watson-Marlow 530, 630, and 730 series process pumps are self-contained and easily integrated into your process control system - offering multiple drive options and intuitive menu structures to provide visual status indication. Superior flow stability up to 14.5GPM and backed by a 5 year warranty, Watson-Marlow process pumps offer users the complete confidence needed in harsh industrial applications.

#### ▶ Aluminum sulfate application at water treatment plant

- ▶ Reliability issues with corrosive chemical eliminated
- ▶ Increased performance and reduced process down time
- ▶ Reduction in cost of maintenance

A water treatment plant in Atlanta was encountering problems when using a high-end progressive cavity (PC) pump to pump aluminum sulfate.

The PC pump kept failing due to the corrosive nature of the aluminum

sulfate. It destroyed the pumps' rotors, even with a low duty cycle. Frequent breakdowns led to increased maintenance and costly downtime to repair the PC pumps.

Plant engineers installed a 500 series pump as a replacement. Since the aluminum never touches the rotor in a peristaltic pump, chemical attack is not an issue. The 500 series pump solved a major problem by increasing performance and decreasing down time.



### Robust performance with aggressive fluids

APEX hose pumps are designed to reduce costs by increasing your uptime and process continuity. The precision machined hose element and optimized hose compression ensures accurate and repeatable performance. They're robust, easy to maintain, and more reliable than AODD or PC pumps—perfect for transferring or metering aggressive or abrasive fluids. The pumps deliver unmatched flow stability from 0.012 to 27.3GPM, at up to 116psi.

#### ▶ More accurate pH – and a 90% maintenance time saving

- ▶ Flow consistency aids process quality
- ▶ Pump runs longer without maintenance
- ▶ Maintenance is quicker and spares less expensive

At the Canyon Regional Water Authority (CRWA) plant in Texas, engineers used a PC pump to dose abrasive lime slurry. However abrasive wear to the rotor and stator left pH accuracy poor and maintenance costs high.

Instead, CRWA installed an APEX35 hose pump—and the difference was immediate. The plant has reported consistent water quality with a radical drop in maintenance.

With expensive consumables like stators and rotors to replace, the PC pump had needed up to five hours of

maintenance, every three months. By contrast, replacing the hose on the APEX35 takes no more than 30 minutes on site.





## Safe, accurate chemical metering pumps and heavy duty pumps for challenging tasks

There are few fluid engineering challenges harder than managing wastewater. Unpredictable composition, high solid content... even the chemicals you use for treatment are tough. We help engineers keep processes running, and protect product quality within strict environmental limits.

### ▶ Removing phosphates and a 98% reduction in process downtime

- ▶ Highly accurate and clean metering solution
- ▶ Maintenance time cut from 1.5 hours to 5 minutes
- ▶ Longer maintenance intervals compared with diaphragm pumps

Eliminating phosphates is a vital part of purification. This means adding precipitants such as ferric chloride.

These aggressive and abrasive chemicals are extremely sensitive to changing conditions. Fluid viscosity can vary, affecting performance in diaphragm pumps.

One wastewater plant grew tired of reducing flow in their diaphragm pumps to 25% and recalibrating constantly to meet changing chemical demands. The aggressive

chemicals meant the plants engineers were replacing pump diaphragms far too often.

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## Bredel

Hose Pumps

### Minimum maintenance; maximum performance

Bredel heavy duty pumps handle abrasive sludge at 100% volumetric accuracy. Unlike rotary lobe, and PC pumps, no moving parts come into contact with the product, and there are no expensive mechanical seals or seal water flush systems. That adds up to high performance, minimal maintenance, and consistent, dependable flow at up to 350GPM and pressures to 232psi

### ▶ Reducing maintenance and downtime in sludge thickening

- ▶ Bredel 2100 pumps transfer up to 12% abrasive, fibrous thickened sludge
- ▶ Each pump is capable of handling up to 300 GPM
- ▶ Reduction in maintenance and process downtime compared with progressive cavity pumps

Bredel hose pumps are proven to reduce operating costs when used with mechanical thickening systems. Dissolved air flotation sludge has high air entrainment which can cause progressive cavity (PC) or lobe pumps to overheat and fail.

At a large Water and Wastewater treatment plant in upstate New York, engineers turned to Bredel pumps after experiencing regular maintenance issues with their PC pumps. They were using PC pumps to transfer fibrous thickened sludge from gravity belt thickeners to an anaerobic digester. The pumps experienced stator failures on average every two weeks, due to the highly abrasive nature of the sludge.

Since installing the Bredel pumps they have enjoyed lower operating costs and a reduction in process downtime.



### ▶ Repair costs for highly abrasive FOG (fat, oil, grease) pumps reduced significantly

- ▶ Problems with progressing cavity pumps eliminated
- ▶ Bredel pumps successfully transfer floating fats with waste matter
- ▶ Significant savings in maintenance costs and resources

At one of Northern California's largest wastewater treatment plants, the progressive cavity pumps used to pump FOG (fat, oil, grease) for cogeneration, required rotor/stator replacement every 2-6 weeks due to the extremely abrasive properties of the FOG.

The solids were so abrasive that the plant referred to the FOG as 'FROG' (forks, rocks, obsidian, glass).

Watson-Marlow Fluid Technology Group replaced the original progressive cavity pumps with rugged Bredel hose pumps which have operated successfully for over 12 years in this demanding 24/7 service.

The plant plans to replace rotary lobe pumps with Bredel hose pumps in a similar service.



## Bredel

Hose Pumps

## ENVIRONMENTAL SOLUTIONS



### Watson-Marlow Fluid Technology Group

Watson-Marlow Fluid Technology Group supports its customers locally through an extensive global network of direct sales operations and distributors

[wmftg.com/global](http://wmftg.com/global)

