Wanner Engineering, Inc.

WATER AND WASTEWATER

THE PUMPING SOLUTION SPECIALISTS FOR WATER AND WASTEWATER TREATMENT

TOUGH TO PUMP CHEMICALS HAVE MET THEIR MATCH.

Water and wastewater treatment involves some pretty aggressive and corrosive chemicals. No one single pump can address all of the unique issues facing each plant. Materials, options and technologies must all be taken into consideration when selecting a pump. This is why more and more wastewater treatment plants are turning to Wanner Engineering and our complete line of pumps. We have the selection. We have the expertise and most importantly, we deliver the reliability you seek.

WE MAKE DIFFICULT FLUIDS EASY TO WORK WITH.

Wanner pumps are specifically engineered to handle difficult fluids like those found in wastewater treatment applications. From transferring corrosive fluids to accurate dosing and reliable operation, our pumps have proven themselves time and time again. Be it corrosive resistant, non-metallic pump components, specialized hose materials that are immune to the ravages of difficult fluids and solids or a completely custom pump, Wanner designs pumps that last.

SERVING THE NEED FOR CHEMICAL FEED APPLICATIONS.

You need to accurately and reliably meter fluids. Wanner has what it takes. Our complete line of positive displacement and sealless pumping solutions are designed to handle the challenges associated with pumping fluids in water and wastewater treatment.

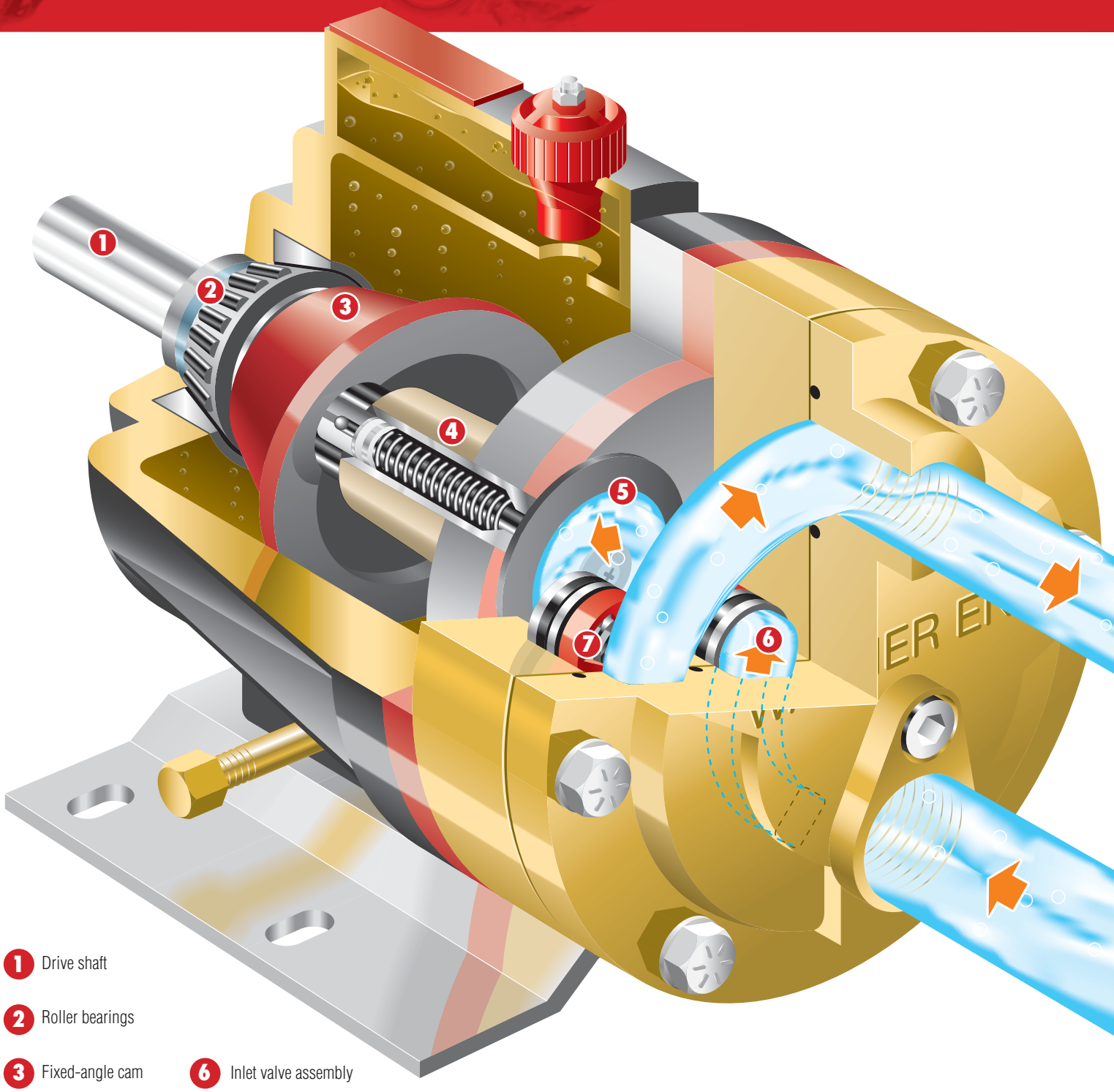
Whether you need a small, compact metering pump delivering less than 1 GPH, or a transfer pump that can deliver more than 150 GPH, Wanner has a solution.

Wanner pumps excel in the following water and wastewater chemical pumping applications:

- **DISINFECTION**
- **PH BALANCING**
- **PRECIPITATING AGENTS**
- **FLOCCULANT ADDITION**
- **POLYMER FEED**

SUPPORT, SERVICE, PARTS AND MORE

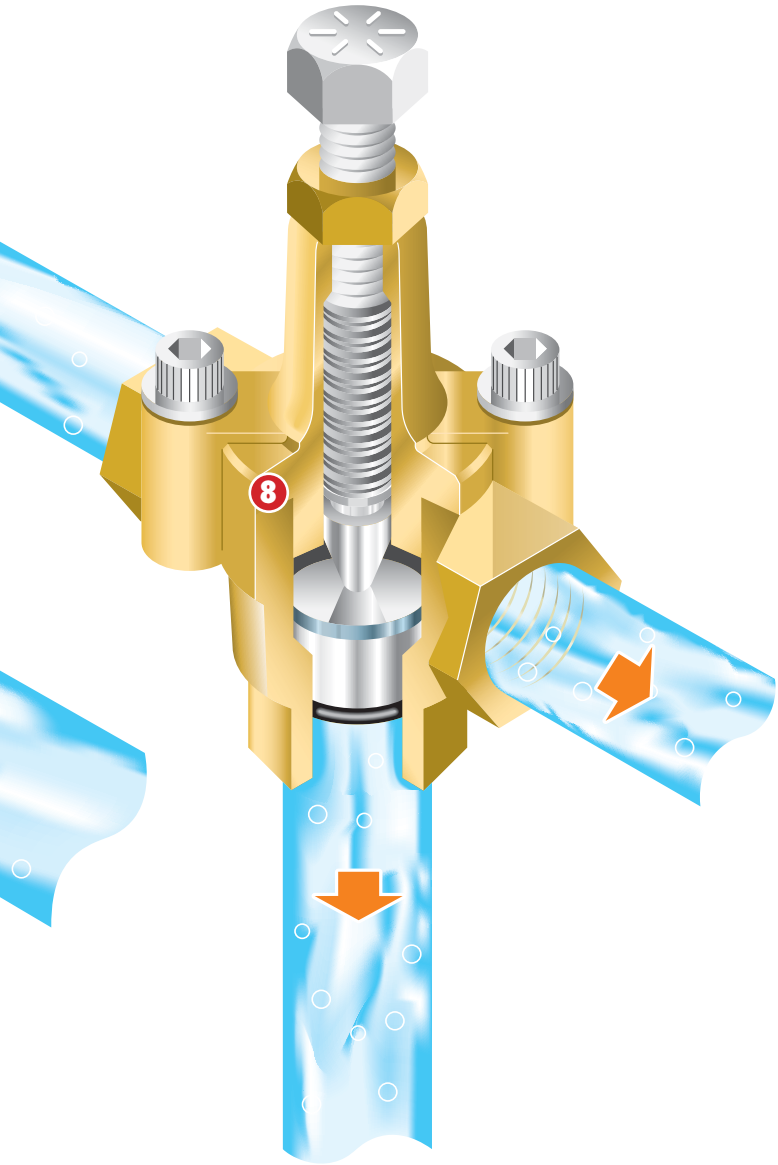
Wanner maintains inventories for quick shipment, offers responsive factory customer service and features a global network of factory-trained distributors to assist with local tech support and service.



1. Drive shaft
2. Roller bearings
3. Fixed-angle cam
4. Oil filled pistons
5. Diaphragm
6. Inlet valve assembly
7. Outlet valve assembly
8. Pressure regulating valve

BUILT TO LAST. PROVEN TO PERFORM.

Hydra-Cell® is engineered and manufactured to handle the toughest, nastiest, hottest, most caustic and abrasive fluids imaginable without leaks, breakdowns or issues. It's designed to save you money, improve performance and optimize efficiency.



The patented Hydra-Cell design employs no cups, packing, seals or stuffing boxes, so there's little to no chance of leaks or other failures. In fact, Hydra-Cell has 30% fewer parts than conventional pumps. That's fewer things to go wrong and a lot fewer pieces that need replacing – saving you time and money while optimizing performance.

LONG LIFE

Heavy-duty industrial grade construction and streamlined design maximizes work life.

LESS MAINTENANCE

No cups, seals, or packing to repair or replace.

EFFICIENT OPERATION

Low energy consumption reduces costs.

FLEXIBLE POWERING

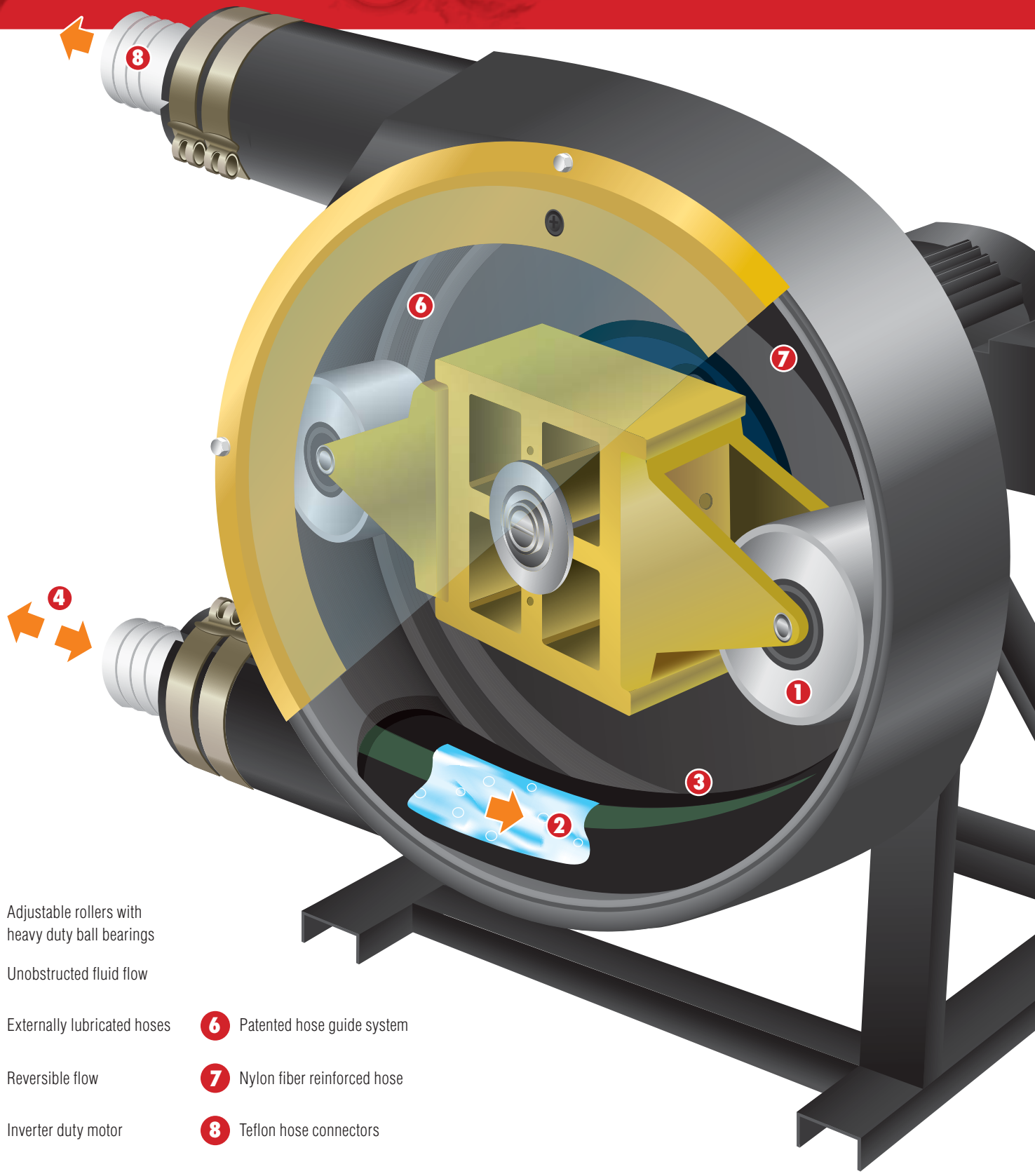
Use a belt, gear or direct drive powered by air, gas, electric or hydraulic motors.

HIGH PRESSURES

The Hydra-Cell line includes models capable of 2,500 psi.

BROAD FLOW RATES

Hydra-Cell models range form 0.2 GPM to 37 GPM.

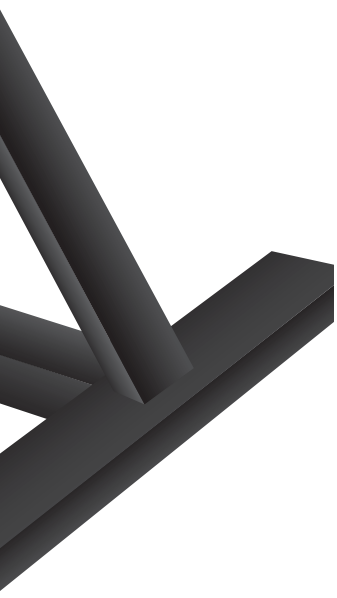


1. Adjustable rollers with heavy duty ball bearings
2. Unobstructed fluid flow
3. Externally lubricated hoses
4. Reversible flow
5. Inverter duty motor
6. Patented hose guide system
7. Nylon fiber reinforced hose
8. Teflon hose connectors

VECTOR
PERISTALTIC PUMPS

WHEN OTHER PUMPS CAN'T, VECTOR CAN.

To handle excessively thick fluids, soft solids, highly corrosive chemicals and abusive, abrasive materials you need a Vector pump.



Its peristaltic design separates fluids from the pump mechanism for a completely isolated transfer. With Vector, fluids and materials only come into contact with the hose and connectors. Nothing else. And there are very few parts to fail, ensuring long life and easy maintenance.

ISOLATED CONTAINMENT

Fluids only come into contact with the hose, never any pump mechanics.

RUN DRY OPERATION

Vector will not overheat, seize or fail when running dry.

SELF-PRIMING

The peristaltic action draws fluids with no additional equipment needed, making it ideal for lift operations.

LONG LIFE

Heavy-duty roller bearings and innovative horseshoe design that reduces hose friction.

EASY MAINTENANCE

No cups, seals or packing to replace or repair.

REVERSIBLE DRIVE

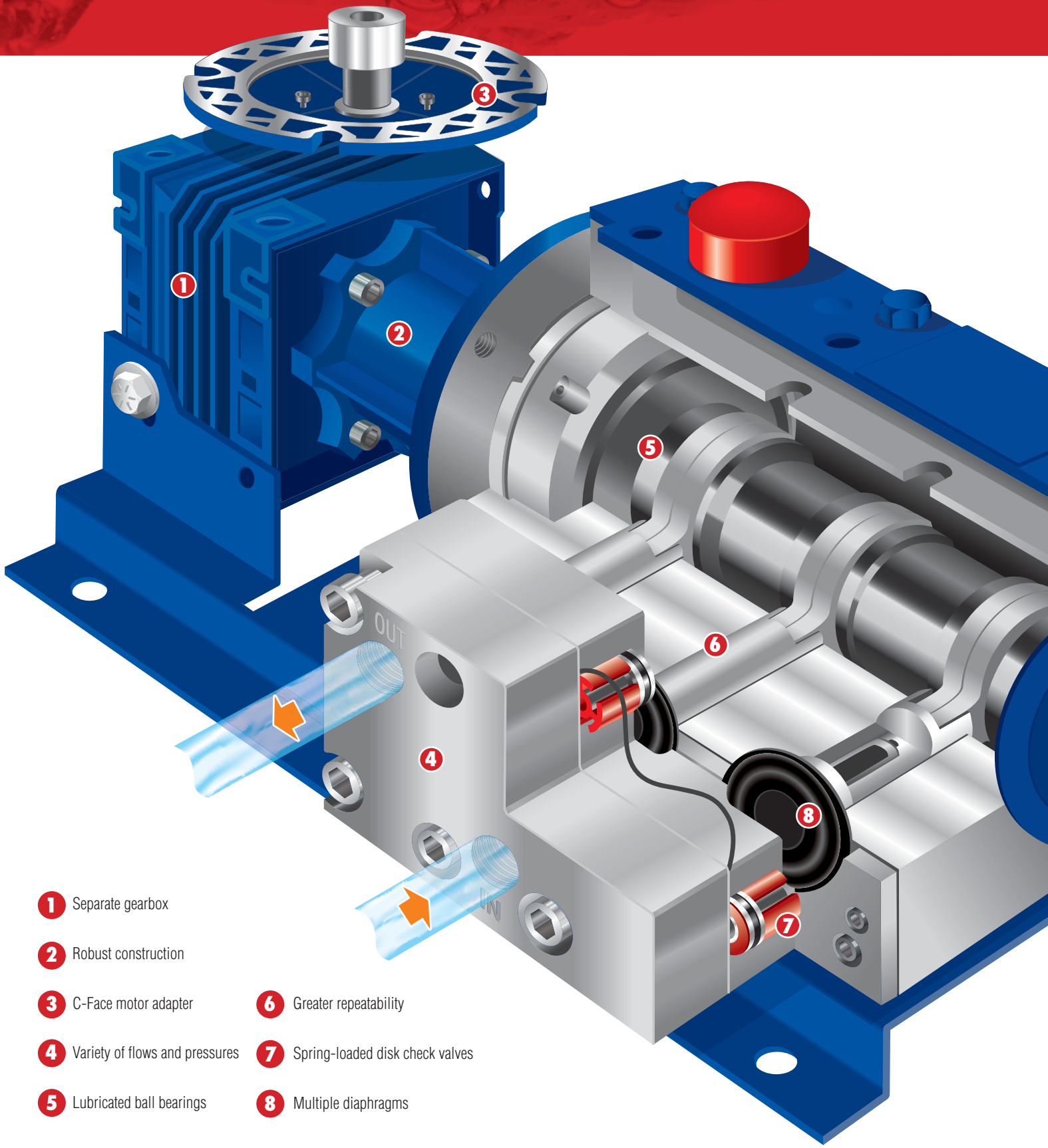
Vector can function bi-directionally to move fluid forward or backward as needed.

HIGH FLOW RATES

Vector models can pump up to 200 GPM

GENTLE MOVEMENT

Move fluids and soft, shear sensitive materials with little or no damage.



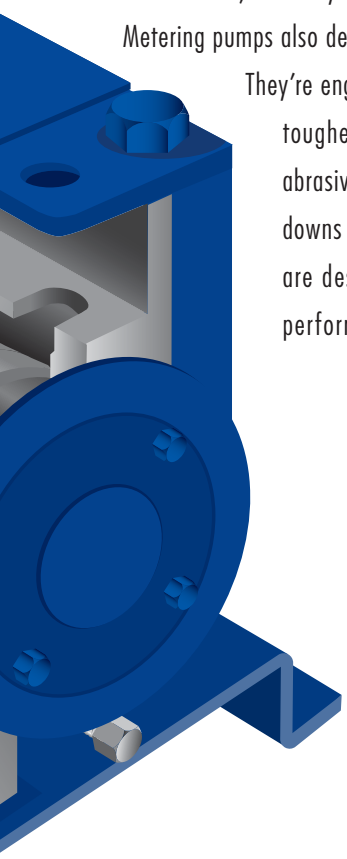
1. Separate gearbox
2. Robust construction
3. C-Face motor adapter
4. Variety of flows and pressures
5. Lubricated ball bearings
6. Greater repeatability
7. Spring-loaded disk check valves
8. Multiple diaphragms

Hydra-Cell® METERING SOLUTIONS™

IT'S ACCURATE TO SAY WE'RE EXCEPTIONALLY ACCURATE.

Hydra-Cell® Metering pumps meet and exceed all API performance standards for metering pumps. With models containing 3 to 5 diaphragms the Hydra-Cell delivers near pulse-less, linear flow with no acceleration losses or pressure flow variances.

Of course, accuracy is only half of the equation. Hydra-Cell Metering pumps also deliver unsurpassed reliability and performance. They're engineered and manufactured to handle the toughest, nastiest, hottest, most caustic and abrasive fluids imaginable without leaks, breakdowns or issues. Hydra-Cell Metering pumps are designed to save you money, improve performance and optimize efficiency.



In addition, the advanced design features of the Hydra-Cell pump not only lower your acquisition costs when compared to ordinary metering pumps, its simple yet elegant engineering keeps your maintenance and operating costs down as well. Rugged construction and long-lasting durability will provide economy and value over the lifetime of your Hydra-Cell metering system.

ACCURATE METERING

Low-pulse linear flow with no acceleration losses for accurate, repeatable measurements.

CERTIFIED

Exceeds all API 675 performance standards.

VERSATILE

Multiple diaphragm materials to handle a variety of fluids.

LONG LIFE

Heavy-duty industrial grade construction and streamlined design maximizes work life.

LESS MAINTENANCE

No cups, seals, or packing to repair or replace.

EFFICIENT OPERATION

Low energy consumption reduces costs.

FLEXIBLE POWERING

Can be powered by air, gas, electric or hydraulic motors.

HIGH PRESSURES

The Hydra-Cell line includes models capable of 2,500 psi.

APPLICATION: PH BALANCING WITH LIME SLURRY

HANDLING ABRASIVE LIME WITHOUT HASSLES.

WANNER SOLUTION:

HYDRA-CELL H25/D35

The power industry is one of the biggest users of lime slurries for ph control. Many facilities have turned to Hydra-Cell pumps. The nature of their design allows a Hydra-Cell to pump abrasive slurries without problems.

- **Rugged construction** — handles more abrasives with less wear then gear, screw or plunger pumps
- **Positive displacement** — accurate flow per revolution
- **Externally lubricated** — can run dry indefinitely without incurring any damage, eliminating downtime and repair costs
- **Industrial design** — provides long life and low maintenance
- **Lower operating costs** — compared to sealed centrifugal or packed progressive cavity pumps

VECTOR 2007

The Vector 2007 eliminates caking problems and abrasive damage caused by lime. With its peristaltic pumping operation, the lime slurry only comes into contact with the hose and connectors.

- **Sealless** — no valves or seals to leak and clog with caked lime
- **Only one wear item** — natural rubber hose handles abrasives with minimum wear
- **Straight-forward design** — allows for easy hose replacement
- **Self-priming** — can be installed above the lime slurry as shown in photo
- **Externally lubricated** — can run dry indefinitely without damage

CASE HISTORY: SAINTE GENEVIEVE

A LOT OF LIME WITH VERY LITTLE HASSLE.

In Sainte Genevieve, Missouri, the city's lone treatment plant, serving 4,500 residents, uses a Vector 2004 peristaltic pump to discharge roughly 250 lbs. of lime slurry per hour into the plant's water softening process. "The only real maintenance is to periodically replace the hose," said Jeffery Crannick, water department superintendent.

Vector has been on the job in Sainte Genevieve for seven years now. "At previous facilities I've used the powdered lime slurry and a volumetric pump. I was never really crazy about that particular system because you run into all types of problems with the lime, especially when it cakes up. With Vector, we don't run into those types of problems," said Crannick. He added, "since I've been here it's worked like a champ."

APPLICATION: DISINFECTION WITH SODIUM HYPOCHLORITE

CLEANING UP THE CHALLENGES WITH DISINFECTANT PUMPING.

WANNER SOLUTION:

HYDRA-CELL H25

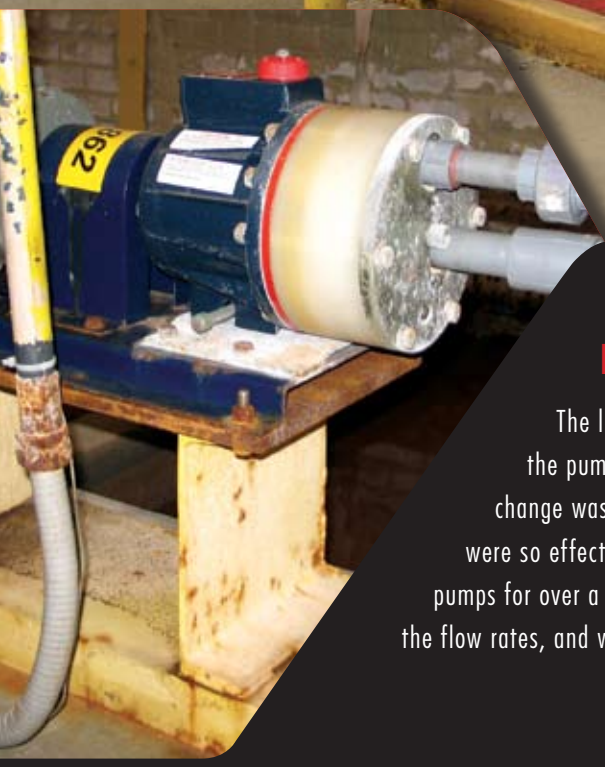
There's not a better-suited, smoother running positive displacement pump for ph control and disinfection applications using sodium hypochlorite than the Hydra-Cell D10. By operating at high speeds, problems associated with outgassing are eliminated.

- **Sealless design** — protects operators from dangerous fluids and eliminates clean-up costs from leaking seals or packing
- **Rugged construction** — for long life and low maintenance
- **Multiple fluid ends** — can handle sodium Hypochlorite including PVDF, ceramic and hastelloy
- **Externally lubricated** — can run dry indefinitely without any damage to give you longer service life where installation and process conditions are not optimum

VECTOR 3005

The Vector 3005 eliminates concerns of out gassing because it can pump gas as well as fluid without vapor locking or damage.

- **Peristaltic pumping action** — pumps gaseous fluids without vapor locking
- **Sealless design** — protects operators from leaking seals
- **Gasketed case** — provides a secondary containment
- **Self-priming** — pump can be installed above the sodium hypochlorite
- **Externally lubricated** — can run dry indefinitely without damage



CASE HISTORY: POWER PLANT

PREVENT COSTLY MAINTENANCE HEADACHES.

The largest power plant for New York City was having a costly time maintaining the pumps used for feeding sodium hypochlorite. Realizing that an immediate change was needed, the plant chose Hydra-Cell® pumps, manufactured by Wanner Engineering. "The pumps were so effective that rather than using four pumps as we had previously, we were able to run on just two pumps for over a year. And, we've been happy ever since. They have a small footprint, you can easily adjust the flow rates, and with few moving parts its simple, yet reliable...just what we were looking for."

APPLICATION: POLYMER FEED

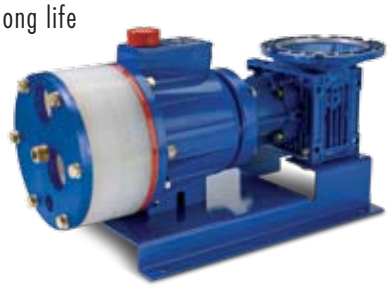
PERFECT DOSING WITH PERFECT POLYMER DELIVERY.

WANNER SOLUTION:

HYDRA-CELL METERING P400

The Hydra-Cell P400 is an excellent metering pump, perfectly matched to the needs of any polymer feed system. It creates very low sheer, thus protecting the integrity of the polymers while pumping.

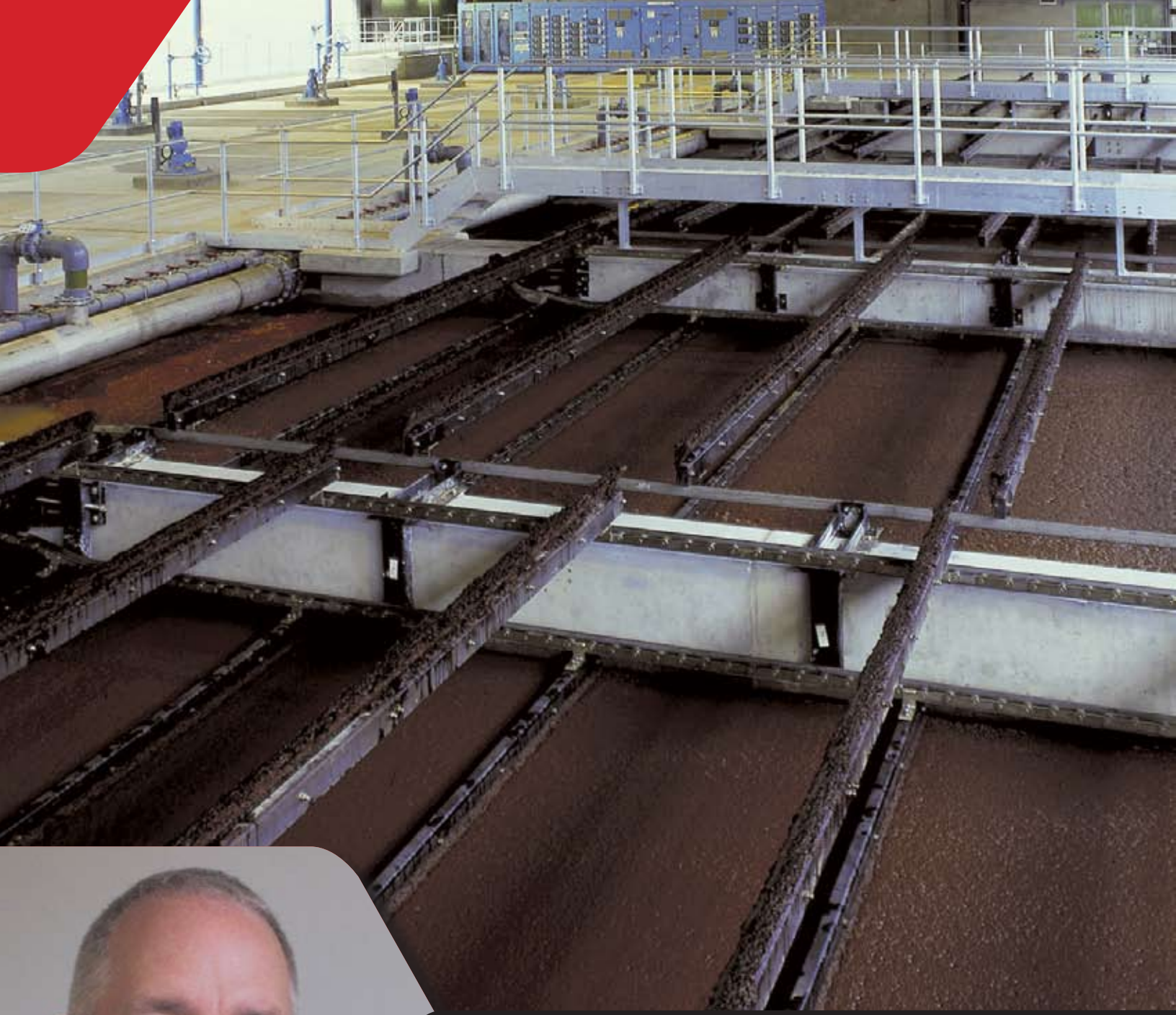
- **Multi-diaphragm design** — delivers near pulse-less flow for accurate injection
- **Certified** — exceeds API 675 performance standards for accuracy, repeatability and linearity
- **Precise and repeatable** — perfect flow adjustment with sensor-less vector variable speed controller
- **Externally lubricated** — can run dry indefinitely without damage eliminating downtime and repair costs
- **Gentle operation** — creates low shear on product
- **Rugged** — designed for long life



VECTOR 2007

The gentle, low shear pumping operation of Vector peristaltic pumps make them ideal for transferring polymers.

- **Heavy-duty design** — handles polymers up to 15,000 Cps
- **Unobstructed smooth fluid passage** — for low polymer shear
- **Isolated mechanics** — only the hose and connectors contact polymers for contamination free pumping
- **Sealless** — no packing or mechanical seals to leak or maintain
- **Gasketed case** — provides a secondary containment



CASE HISTORY: ATLANTIS TECHNOLOGIES, LLC

PUMPS THAT PERFORM UNDER PRESSURE.

Plant operators using Chemical Feed Systems from Atlantis Technologies LLC, have reduced maintenance concerns and down time thanks to Hydra-Cell® pump solutions. "In using the Hydra-Cell® pumps for feeding highly corrosive chemicals into spray bars for cleaning screens, we also discovered additional applications in which the pumps could offer intrinsic benefits to the end user, namely our polymer feed equipment products. Their reliable performance essentially provides the user with an insurance policy for applications where the opportunity exists to run a pump dry. The Hydra-Cell® pump also delivers a near continuous feed of polymer and is easy and inexpensive to maintain. Most pumps can't perform under such high pressures with such corrosive elements. However, the Hydra-Cell® pumps, with their ability to perform at a linear rate over a wide pressure range and their ability to run dry made it an easy choice to use in our systems."

APPLICATION: COAGULATION WITH FERRIC CHLORIDE

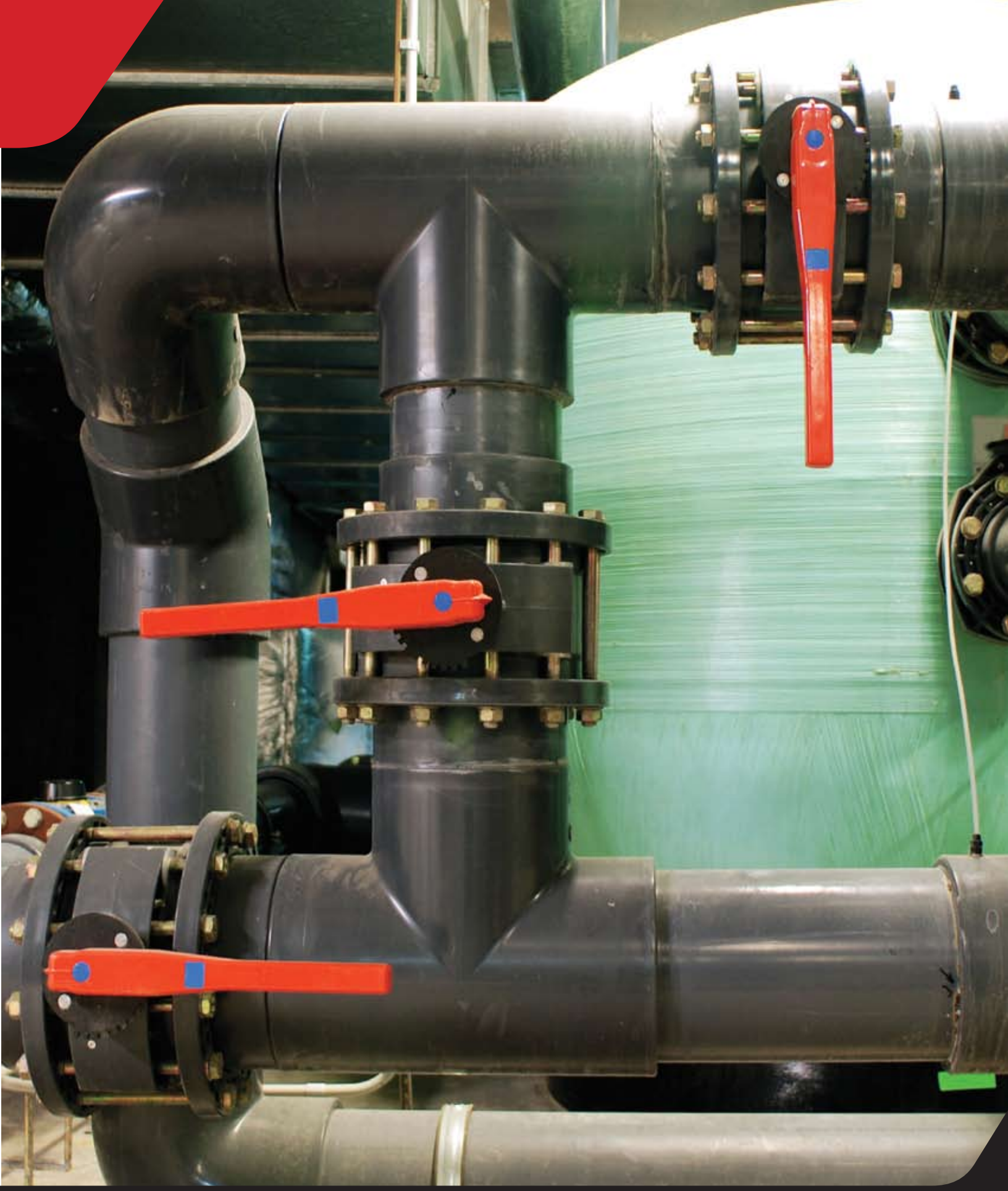
NON-METALLIC PUMPS MEANS NO DAMAGE DONE BY FERRIC CHLORIDE.

WANNER SOLUTION:

VECTOR 3005

The Vector 3005 peristaltic pump is ideal for handling ferric chloride. When using a peristaltic pump, the ferric chloride only comes into contact with the hose and fittings, so there's no opportunity for metallic components to corrode.

- **Sealless** — no packing or mechanical seals to leak or maintain
- **Self-priming** — pump can be installed above the ferric chloride supply
- **Natural rubber, fiber-braided hoses** — chemical resistant to ferric chloride
- **Straight-forward design** — allows for easy hose replacement



APPLICATION: FLOCCULANT WITH ALUM

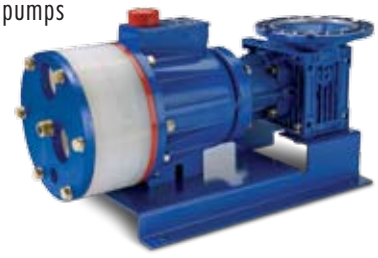
REMOVING THE IMPURITIES ONE COLLOID AT A TIME.

WANNER SOLUTION:

HYDRA-CELL METERING P400

For flocculant pumping solutions that demand a significantly higher psi rate than peristaltic pumps can achieve. We suggest using the Hydra-Cell P400. The metallic headed P400 can achieve pressures up to 1000 psi (70 bar). When opting for a non-metallic Kynar head, the P400 can still achieve up to 350 psi (24 bar).

- **Multiple fluid ends** — choose between PVDF, stainless steel and hastelloy
- **Sealless design** — eliminates clean up costs from leaking seals or packing
- **Certified** — exceeds API 675 performance standards for accuracy, repeatability and Linearity
- **Multiple-diaphragm design** — delivers near pulse-less flow for accurate metering
- **Precise and repeatable flow** — with sensor-less Vector variable speed controller
- **Externally lubricated** — an run dry indefinitely without any damage eliminating down time and repair costs
- **Gentle operation** — handles more abrasives with less wear than other positive displacement pumps



VECTOR 2007

The peristaltic operation eliminates mechanical seal and packing issues that go along with handling abrasive, corrosive fluids while the slow roller speed minimizes hose wear.

- **Sealless** — no valves or seals to clog with solids
- **Positive displacement** — accurate flow per revolution
- **Externally lubricated** — can run dry indefinably without damage
- **Gasketed case** — provides a secondary containment
- **Large hose I.D.** — for handling solids up 1 1/8"

IF IT'S TOUGH TO PUMP, IT'S TIME FOR WANNER.

At Wanner Engineering, we offer innovative, reliable and highly-accurate positive-displacement, centrifugal, and peristaltic pumps under the Hydra-Cell, Vector, Stan-Cor and Hydra-Cell Metering Solutions brands.

Each line is designed to handle the most miserable and problematic pumping fluids. These include fluids that pose significant challenges such as:

- Viscous Fluids
- Abrasive Fluids
- Corrosive Fluids
- Slurry Fluids
- High Purity Fluids
- Stringy Fluids
- Shear Sensitive Fluids
- Hot Fluids

Headquartered in the United States, but serving the global marketplace, Wanner Engineering has offices spanning the world in more than 50 countries.

When difficult fluids need to be pumped, Wanner Engineering has the solutions.

Hydra-Cell®

STAN-COR

VECTOR PERISTALTIC PUMPS

Hydra-Cell® METERING SOLUTIONS™

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