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## THE ADVANTAGES OF PROCESSED WATER

PriscoTech® water management systems offer complete process control over all aspects of your press-ready water supply and fountain solution. The AquaFlo® II Water Processing System is the initial treatment step, taking your incoming water ( regardless of its properties ) and transforming it into process water. Process water is water specifically designed for printing. Due to its consistency, you eliminate one of the critical variables in your pressroom. By controlling your variables, you minimize operating problems, reduce waste, and improve the quality of your finished product—ultimately increasing your profits.

With the AquaFlo II Water Processing System, your water benefits from multiple procedures, including particulate filtration, advanced membrane separation, carbon adsorption, and chemical component stabilization technologies.

Frequently, we're asked to define the difference between process water and the water that is produced by reverse osmosis or deionization methods. Let's discuss the differences and the advantages of using process water from an AquaFlo II Water Processing System.

### WHY SHOULD A PRINTER AVOID USING TAP WATER?

Your local water supplier is primarily concerned with producing safe drinking water. Because of seasonal changes and chemical additives put in by local water suppliers, fresh water can vary and cause you real problems on the press! Even pure, clean water may not be compatible with the printing process. Printers don't need pure water—they need water that is stable, consistent and which supports the chemical process represented by their fountain solution concentrates, enabling them to get the maximum benefit from their ingredients.





## Why isn't process water from the AquaFlo® II system the same as water from a reverse osmosis or deionization process?

One of our crucial treatment steps, advanced membrane separation technology, is similar to reverse osmosis—but we don't stop there. The AquaFlo II system utilizes special, selective rejection membranes.

To reduce variability in your fountain solution chemistry, these membranes remove the mineral salts that cause hardness and increase alkalinity. They are customized, however, to allow some mineral salts to

remain in the water, to help make it less aggressive and to minimize the harmful effects of dissolved gases.

Special pre-filtering and chemical post-treatments give our process water the specific characteristics and chemical stability required by today's printing industry. The AquaFlo® II system has a user-friendly design, with indicators that provide system status information.

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### REVERSE OSMOSIS (RO) vs DEIONIZED (DI) WATER

Reverse osmosis is a mechanical process in which water is forced through a semi-permeable membrane. Almost all the mineral salts dissolved in the water, including the salts that contribute to hardness and alkalinity, are removed. This method concentrates oxygen and carbon dioxide gases in the water.

Deionization (or Demineralization) however, is a chemical process. Almost all the ionized minerals and salts in the water are removed via exchange with hydrogen and hydroxide ions which are present on small plastic beads—the resin beds—in the DI tanks. In this chemical interaction, the ions in the resin beds and the water unite to form water molecules, resulting in “pure” water. This method is best suited to operations with a constant throughput and demand for the treated water.

### POTENTIAL ISSUES WITH DI OR RO WATER

DI water is very aggressive from a chemical perspective—which means that it can begin to dissolve almost anything it contacts, increasing corrosion on your plates and press components. This type of water can also lead to over-emulsification of inks.

Because DI resin beds “age,” towards the end of the exchange cycle they can begin to add ions that contribute to conductivity and pH variation. From the time the tank is new until the time you exchange it, the quality of the water changes. This means your printing process can change as well. With DI tanks, the resin beds must be closely monitored so that you schedule tank exchange with your service company at the correct time.

The advanced separation membranes in the AquaFlo II will last for several years without a reduction in the consistency of your pH and conductivity. When you do need to make a change, replacement is quick and easy. The AquaFlo II is an automatic system and constant monitoring is not required.

The AquaFlo II post-treatment chemical stabilization step makes the water less aggressive and provides conductivity between 35 and 70 microsiemens with a very stable pH.

When water moves through the DI resin beds, it can create channels, allowing untreated water to pass through the resin bed without being completely deionized. This results in untreated water mixing with your DI water. Chemical changes in the resin beds can be caused by organic substances, excess chlorine, or high levels of oxygen in the incoming water supply.

RO water is chemically unstable. The RO membranes act to concentrate dissolved gases in the treated water, at a level 2 to 4 times greater than the incoming water supply, depending on its characteristics. This means that carbon dioxide variations in the incoming water are actually amplified during the RO process, with the result that your press may require differing amounts of buffers in its fountain solution.

This can be an operating headache! Another problem can result from storing the water in translucent plastic tanks with the unprotected air vents that are common on many RO systems. Light promotes biological growth, and the air that is introduced into the tank carries spores and organic matter that can encourage contamination of the stored, treated water.

Due to the AquaFlo II's advanced separation technology with its exclusive selective rejection membranes and different post-treatment stage, these harmful concentrated gases are eliminated, creating a stable platform for your fountain chemistry. In addition to storing our process water in an opaque blue storage tank to protect it from various light sources, air filters protect the storage tank from airborne pressroom contaminants, including fungus, bacteria and offset spray powder.

## HOW TO MINIMIZE FUNGUS OR SLIME IN PRESS FOUNTAINS

DI resin beds and storage tanks can be contaminated by bacteria and other organic compounds found in the pressroom. Separation membranes in the AquaFlo II act to remove bacteria from the water before it physically processes. The opaque storage tank with its air filters protects the water until it reaches your press fountains.

During your workweek, demands for water fluctuate significantly, from heavy flow and volume for a Monday morning start-up to virtually no demand during most of the week. DI water systems do not perform well with this usage pattern and may need a recirculation loop so that the water is pumped through the resin bed continuously.

When the resin beds are fouled or oxidized, their exchange capacity is reduced, resulting in higher costs for your DI water. The AquaFlo II does not use resin beds, so there is no channeling issue: 100% of the water is treated 100% of the time. Special pre-filters in our system remove components that could impact the treatment process.



**MANAGING WATER  
IS CRITICAL FOR  
PRINT QUALITY**

## MAINTENANCE TIP

When changing filters in a Prisco AquaFlo II system, do not touch the replacement filters with your hands as the oil from your skin can promote bacterial growth.

This motion helps prevent contamination of the water sitting in the resin bed, with its resultant pH shift and risk of biological contamination. The downside of this water movement is the promotion of the adverse effects of channeling. As demand for more water builds, a DI resin bed needs to be changed more often, or additional tanks need to be added. This increases your monthly rental charge and exchange fees.

The AquaFlo II can sit idle for several days with no adverse effects on consistency or stability of the water. The system is automatic, so it turns itself off when the storage tank is full. As we discussed above, the stored water is stable and protected. The AquaFlo II is available in different processor and storage tank sizes, with the flexibility to quickly increase your production. Your Prisco technical service rep will size your system to allow for some growth.

### WHAT ABOUT COST COMPARISONS?

DI water is costly pure water initially designed for lab, semiconductor or chemical applications—and it doesn't completely meet the needs of the printer. Every purchase plan can be structured differently, but remember that when you commit to DI water, you usually commit to ongoing tank rental and

exchange fees. An RO system is typically sold as capital equipment but has maintenance costs based on the system design, its type of filters and their replacement schedule.

With the AquaFlo II, you have a one-time purchase price with a short payback period, as we will demonstrate in our proposal to you. Maintenance of our system is minimal: three filters and a post-treatment cartridge can be changed quarterly by your maintenance department. The AquaFlo II provides more significant value to your operation when compared to an RO system because its process water is designed to optimize your productivity on the press.

### LEARN MORE ABOUT PROCESSED WATER SYSTEMS

Contact your local PRISCO sales office. Your sales and technical service representatives will help you analyze your operation and recommend a system specifically suited to your needs. We'll help you understand how the AquaFlo II Water Processing System can have a positive impact on your productivity, your quality, and your profits.

Your local Prisco office is happy to answer your questions:

ATLANTA	(800) 241-6049
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CHICAGO	(800) 241-6049
DALLAS	(800) 241-6049
LOS ANGELES	(800) 825-4846
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