



Clearwater Digimix RO



- Consistent dampening water preparation
- Total control over dampening water preparation
- 100% non-IPA printing
- Improved printing quality and consistency
- Less consumption of water and fountain solution
- Integrated Reverse Osmosis system
- Supplies several presses



Clearwater Digimix RO is a total system for preparation of consistent, high quality, dampening water. It has its own powerful reverse osmosis system, digital doser pumps for hardness liquid and fountain solution, and an integrated storage tank for fresh dampening water. It can be installed in- or outside the pressroom and used for several offset presses. It just requires access to tap water, a water drain and a power plug.

**UNIFORM PRINTING QUALITY
REQUIRES A CONSISTENT
INK/WATER BALANCE**

The ink/water balance is the basis for all conventional offset printing. If this balance fluctuates, the printing quality fluctuates. This leads to two questions: “how much fluctuation can be accepted in relation to a sellable printing quality, and how much fluctuation can the offset process accept?”

It is not our mission to determine the level of sellable printing quality, but nobody can live with so much fluctuation that the offset process collapses. Adding IPA to the dampening water reduces surface tension, increases viscosity and secures more water to the plate, so this is an easy way to prevent the offset process from collapsing. But IPA does not make the dampening water more consistent, on the contrary, because it functions as a kind of screen, which makes it possible to print with even rather significant fluctuations in the ink/water balance (and printing quality). But is this a good objective in today’s high quality

printing industry?

There are mainly two things, which have an impact on fluctuations in the ink/water balance: The temperature in the printing unit, which has an impact on the viscosity of inks and dampening water, and the quality of the dampening water. High quality, consistent dampening water can only be obtained with full control over all elements in the dampening water (raw water and additives), highly accurate production equipment and efficient production control. Clearwater Digimix RO is designed with exactly these objectives in mind.

**IF YOU CANNOT MEASURE
YOU CANNOT CONTROL**

Clearwater Digimix RO has a big storage tank for premixed dampening water. The objective is to separate the fresh dampening water from what is already circulating to the press, because used and fresh dampening water definitively have different characteristics. If fresh and used dampening water is mixed during the process of

preparing the fresh batch, it is impossible to control its quality, because there is no place to measure. The only way to maintain a proper control of fresh dampening water is in a separate storage tank prior to the dampening water circulator.

RAW WATER MUST BE CONSISTENT

The raw water, which is the basis for the dampening water, normally comes from the tap. But most tap water suppliers use different water sources and additives at their discretion. This might be good enough for the normal consumer, but absolutely not for the printer, who wants consistent raw water.

The best way to produce consistent raw water is to run the tap water through a reverse osmosis system. In this way “everything” is removed, and the pure raw water will always be consistent not depending on the source. Therefore Clearwater Digimix RO has its own high performance reverse osmosis system integrated in the cabinet.

**RAW WATER HARDNESS
MUST BE CONSISTENT**

Pure raw water is highly aggressive and cannot be used in an offset press. To make it useable a calcium solution is added to make it harder. But it cannot be too hard, because diluted calcium then deteriorates tubes, rollers and pans in the dampening system.

The absolute hardness of dampening water can be decided within limits, but it is highly important that it is kept extremely consistent. The calcium solution is added to the raw water in a concentration of 0,5%, and only a highly accurate pump can perform this job.

**DAMPENING WATER MUST HAVE
A SPECIFIC pH AND A
CONSISTENT CONDUCTIVITY**

Dampening water requires a pH around 5,0, which is obtained by adding an acid fountain solution, which also holds chemicals to protect the press, as well as tensides to reduce the surface tension.

Fountain solutions are “buffered” to maintain a specific pH and will maintain the same pH even if the fountain solution concentration changes. pH is a logarithmic measure, while all other additives in fountain solutions are measured in linear concentrations. Consequently, it is virtually impossible

to control anything via the pH reading.

Conductivity is the water’s ability to transport an electric current and this is proportional to the concentration of fountain solution. Any fluctuation in the raw water or the quality/quantity of the added solutions will immediately give a different conductivity. Conductivity is the ideal indicator for quality control of fresh dampening water. Clearwater Digimix RO controls the conductivity during dampening water preparation, and it also controls the dampening water in the storage tank. This gives the ultimate control over the fresh dampening water.

A consistent concentration of fountain solution is extremely important for the correct ink/water balance and the overall printing quality. It is normally added in concentrations of 2% - 4% (depending of the supplier) to obtain the stipulated conductivity (and pH), and only a highly accurate pump can perform this job.

**CONSISTENT DAMPENING WATER
FOR NON-IPA PRINTING**

Consistent dampening water eliminates fluctuations in the ink/water balance and makes it is much easier to print without IPA. But if small quantities of fresh, consistent dampening water are added to big quantities of dirty dampening water, it will still be difficult to print without IPA. But also printing with IPA would in this case be complicated. Printing without IPA also requires that the filtration and circulation of the dampening water is maintained at high levels. It is also important that the temperature in the printing unit is maintained within reasonable levels.

