

Advantages of RO Water In Finishing Systems

The powder coating industry demands quality water to clean and rinse parts. By using reverse osmosis (RO) technology, finishers have found ways to help reduce water consumption and the overall volume of wastewater in their plants. In addition, purified RO water leads to better finish quality, huge savings in chemicals and energy usage, and the elimination of many mechanical problems with the washer.



- 1** Significant increase in salt spray hours due to a more precise control of the washer chemistry. Using a water standard and getting more control over chemistry is helping many companies become ISO9001 and ISO14001 certified.
- 2** Spot-free final rinse water quality. Less than 15 mg/L of total dissolved solids will not leave a "white spot" residue on the surface of the parts, resulting in better paint adhesion and a higher quality finished part.
- 3** Reduces overflow rate for washer rinse stages and thereby reducing water consumption and wastewater volume.
- 4** Eliminating scale and sludge damage to heat exchangers. Dissolved calcium (hardness) in raw water supplies is soluble at ambient temperatures. However, when temperature rises over 105°F, calcium then becomes insoluble and precipitates out of solution and forms scale on heat exchanger surfaces. 1/8" of calcium carbonate scale will reduce the heat transfer coefficient by half, thereby requiring up to 2 times as many BTU's to maintain temperature.
- 5** RO water reduces chemical usage and dump frequency of the chemical stages since the washer chemistry does not need to overcome the hardness in the city water supply.



Example of how total dissolved solids in city water contaminate a washer

Typical, Stage 1 cleaner, has 2,000 gallon volume and requires approximately 500 gallons per day makeup for evaporative losses due to 135°F temperature. The local city water supply has 400 mg/L of dissolved salts, much of which is calcium/magnesium hardness.

500 gallons per day in makeup water into Stage 1 x approximately 3.8 liters/gal x 400 mg/L = 760,000 milligrams = 760 g. One pound of salt equals 454 grams, so we have added 1.67 lbs. of salt into Stage 1 each day, just from the city water.

Our Stage 1 tank holds 7,600 liters (from the 2,000 gal volume) and we have added 760,000 milligrams into 7,600 liters, which equals a rise of 100 mg/L in the TDS (total dissolved solids) for Stage 1.

In this example, the TDS of Stage 1 will keep rising 100 mg/L every day until, after 1 to 2 months of operation, the TDS content of the bath will have increased by 2,000 mg/L just from the dissolved salts in our raw water (city water) makeup source. Dissolved solids build up will require this stage to be recharged more frequently.