Water Use Assessment for Coating Technology

Client
Coating Technology, Inc (CTI) is a metal finishing job shop in Rochester, NY that specializes in advanced and proprietary industrial coatings and chemistry. The metal finishing services offered include electroless nickel plating, anodizing, passivation of stainless steel, zinc plating, aluminum conversion coatings, and other specialty processes.

Opportunity Areas
Coating Technology, Inc. requested technical assistance to improve their water use efficiency (water use reduction).

Objectives
NYSP2I conducted plating sub-projects as described below:
- Evaluation of reactive rinses and spray rinses as a means of reducing rinse water use.
- Evaluation of the use of RO as an alternative to the three existing deionization (DI) systems.

Work Performed
Rinse water flow rates and rinse water contamination levels were measured on plating lines having known high water use. Temporary double reactive rinse systems were set up and monitored for rinse water contamination levels and adverse changes to the tank chemistry or parts. The cost of the existing leased DI systems was compared to the cost of an RO system and purified water storage.

Results
Summary of water savings for the areas of evaluation:

1. Water consumption (methods of rinse water minimization)
   a. Control high flow rinses with conductivity controlled valves:
      Anodizing rinse tank estimated savings of $2,500/yr. (396,000 gallons saved)
   b. Reactive rinses: Six rinse tank pairs converted: $9,600/yr. (1.8 million gallons saved)

2. Replacement of deionized water (DI) system with Reverse Osmosis (RO) system
   a. Single RO system replacing multiple DI systems, estimated at 1 year payback