



SERFILCO® CASE HISTORY

PRESTIGE INSTALLS SERFILCO® AIR-FREE AGITATION SYSTEM FOR EMISSION COMPLIANCE

The Prestige Group (UK) plc of Burnley Lanes, England is a household name for high quality kitchenware the world over. Many of their products are electroplated in nickel and chrome. When legislation set a maximum emissions threshold limit value (TLV) of 0.1 mg/m from their nickel plating tank, Prestige was faced with a major capital expenditure for a fume extraction system to meet the stringent atmospheric emission compliance level.

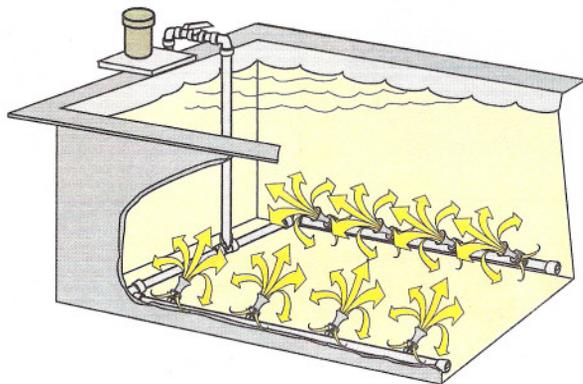
Air agitation in the bath was the biggest cause of nickel emissions due to bursting air bubbles at the solution surface. Prestige decided to deal with this problem by replacing their traditional air agitation equipment with SERFILCO's Ser-Ductor pumped agitation system instead of pursuing the fume extraction approach.

Ser-Ductor® nozzles use the venturi principle to amplify and direct solution flow from the system's pump toward the work being plated, providing excellent agitation precisely where it is needed. The nozzles convert a high pressure, high velocity, low volume flow to a low pressure, low velocity, high volume flow with the main benefit being a closed loop agitation of the solution in the area surrounding the nozzles.

from the bottom to the top of the plating rack. Now, with this new concept in agitation, they achieved uniform brightness and, much to their surprise, they found that the metering rate for brightener additions was substantially reduced, providing a 20% reduction in brightener consumption and a correspondingly large savings in brightener costs. In addition, they have a cleaner, safer environment in their plating department.

Agitation in a plating tank must accomplish three major requirements:

1. Circulate and disperse maintenance chemicals throughout the bath
2. Maintain bath chemistry throughout the tank without stratification or depletion of components in a given area of the bath
3. Enhance the deposition rate by replacing metal ions being deposited with fresh ions at the surface of the work



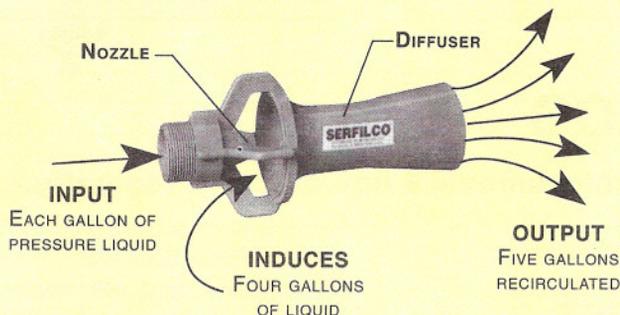
Benefits of Ser-Ductor agitation in plating applications also include:

- Eliminating misting and fumes caused by air agitation — a cleaner and safer environment
- Eliminating bath contamination from air blowers — cleaner bath, less rejects
- Reducing oxidation of bath chemistry — better plating quality
- Reducing heat loss and preventing temperature stratification — lower heating costs
- Reducing gas pitting — less rejects

In addition to plating applications, Ser-Ductor agitation can be used in pre- and post-treatments as well. The success of these operations may also be dependent upon good agitation, whether it is for a cleaner tank, rinse tank or other process tank. Proper agitation of cleaner, rinse or other solutions keeps soils and other unwanted solids in suspension where they are more easily removed by the tank's filtration system before they migrate to subsequent steps in the process and result in costly rejects.

At Prestige, Ser-Ductor agitation did the job in the plating department by cutting operating costs and keeping the company in compliance at the same time!

PRINCIPLE OF OPERATION



Liquid pumped into the eductor nozzle exits at high velocity, drawing an additional flow of the surrounding solution through the eductor. This additional flow (induced liquid) mixes with the pumped solution and multiplies its volume five-fold. The source of the pumped liquid (input) can be a pump or filter chamber discharge.

The system Prestige installed in their 20,000 liter nickel plating tank consisted of a seal-less vertical pump and pre-assembled distributor piping to effect a quick changeover from air to pumped agitation with a minimum disruption in production.

As a result of the change, Prestige measured a nickel emission level as low as 0.01 mg/m³ — just 10% of the maximum legal emission level and well below the level previously recorded with their air agitation system! Furthermore, the installation resulted in a capital saving of over 50% of what a fume extractor system would have cost.

It was quickly apparent that there were other benefits, too. With air agitation they had always had variations in brightness



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