



SERFILCO® CASE HISTORY

Depth filtration slashes rejects, lowers maintenance costs

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with CP Staff

Depth filtration with tank turnovers of 2.6 to 3.0 times per hour has effectively stopped the problem of contamination in plating baths at Precision Anodizing and Chrome, Inc., Anaheim, California, with the results that rejects have dropped from 10 to less than one per cent. Replacing the old plate-and-bag filters with cartridge filter systems has lowered filter maintenance costs while simplifying filter element changes.

The contaminants were principally iron in the acid zinc and nickel baths, buffing compounds (organic), and oil from metal forming operations.

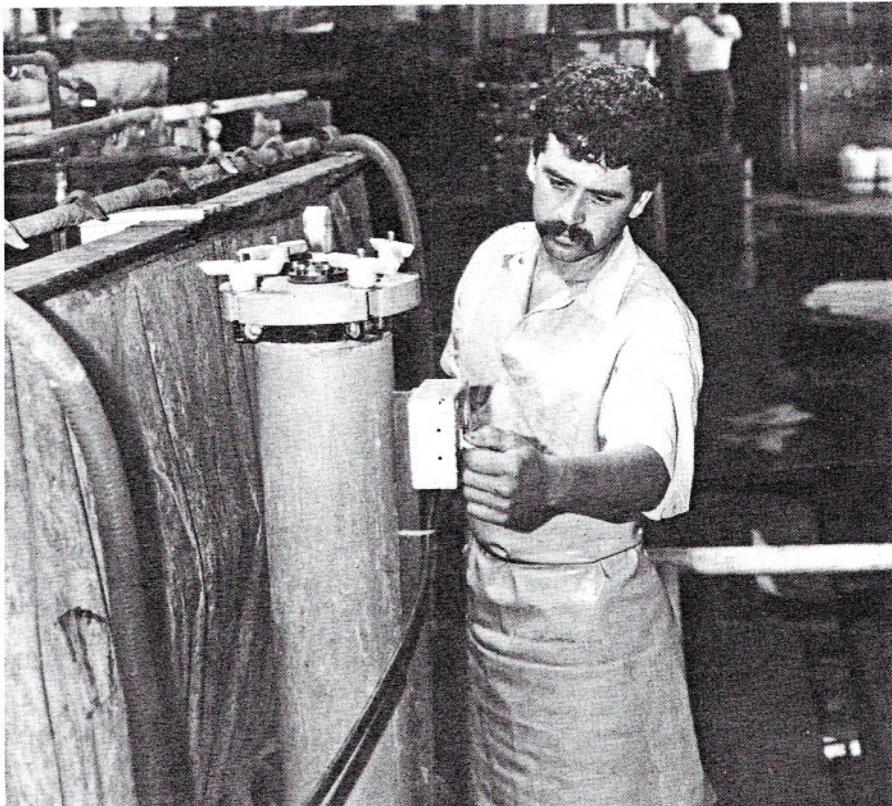
Precision is a job shop handling a wide variety of parts, mostly steel—frames and structural components for motorcycles, bicycles, and exercise/recreational equipment; gas valves; automotive and truck parts; and more. Many of the parts are tubular, a familiar problem to most platers since oil and drawing compounds in hard-to-reach areas come out in the plating bath and contaminate them.

Problems evidenced themselves as roughness on the plated part, cloudiness caused by the organic contaminants, and pitting. Reject parts were redone in house, which consisted of complete stripping and replating, a cost that had to be borne by Precision.

The switch to depth filter cartridge filtration was not done overnight. Precision has used a small filter with nine 10-inch cartridges for about 10 years; a few years ago a carbon chamber was added to handle the problem of organics contamination.

Plating Improvement, Lower Rejects

The results proved to be uniformly and consistently good; parts plated in the baths served by that filter were better than others. A year ago, Precision replaced



This small depth filter started Precision on the road to converting all filters to depth cartridge units

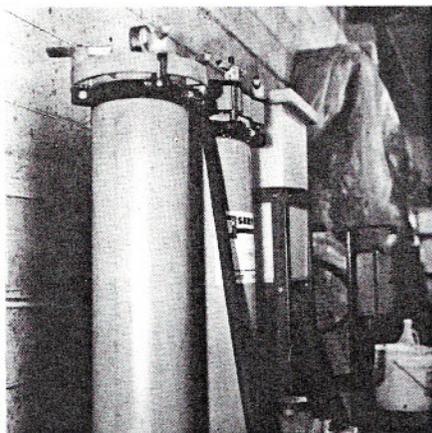
one of the plate-and-bag filters with a 48-cartridge depth filter which now serves a 2300-gallon brite nickel bath. The filter has a capacity of 6000 gph, so tank turnover is 2.6 times per hour.

Recently, another depth filter, this one with 36 cartridges, replaced the final plate-and-bag filter and now serves a 1400-gallon brite nickel tank. It has a capacity of 4200 gph, for a tank turnover rate of 3.0 times per hour. The data collected by the industry on tank turnovers and plating quality have been reflected at Precision. Results closely follow the performance curves that have been developed as a result of studies on

plating quality as affected by tank turnover frequency.

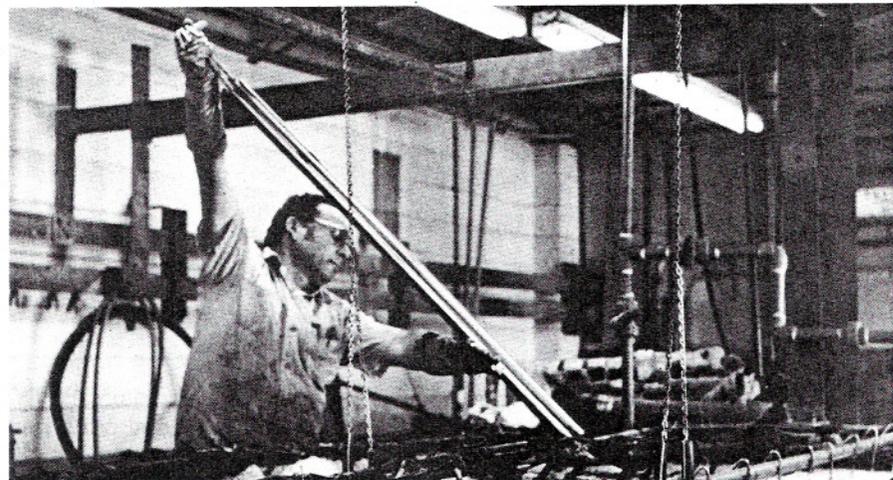
Tank turnovers coupled with depth filtration are an even more powerful combination. Depth cartridges have intrinsic high dirt holding capacity, which improves with operation because solids already retained enhance the ability of the cartridge to trap impurities.

The filters at Precision use 20-micron cartridges when they are used on brite nickel baths. When they are used on copper cyanide, 10-micron cartridges are used. Even better results would be achieved with finer cartridges, but a balance between economics and plating



The 36-cartridge unit was recently placed on line, completing the conversion to depth cartridge filtration

Tubular parts such as the one being held sequesters contaminants that come out in the plating bath



quality must be achieved, and this comes only from experience.

Lower Filter Maintenance Costs

Costs on filter cleaning and element changes have been lowered about 90 per cent at Precision. The old filters were cleaned and repacked every two weeks, requiring three man-hours at \$10.00 per hour direct and indirect labor costs. That was \$30.00 per time, for a yearly cost of \$780.00. Maintenance consisted of removing the plate and bag assemblies, hosing them down, repacking them with carbon, and reinstalling them.

Cartridges on the 36-cartridge unit and the 48-cartridge unit are now re-

placed only once a month, requiring about 20 minutes each. On the small 9-cartridge unit, the cartridges are replaced every three months; it takes 15 minutes. Thus, nine man-hours per year are spent recartridging. At the same labor rate of \$10.00 per hour, that is \$90.00 per year, a savings of \$690.00 per year in filter maintenance labor costs.

The cost of the replacement depth cartridges is cancelled out by the materials and solution loss cost experienced on the old plate-and-bag filters.

One reason the filters can be recartridged more quickly is that 20-inch cartridges are used in conjunction with

10-inch elements. This also holds down cartridge cost, since one 20-inch element costs less than two 10-inch elements.

Although the company does not keep ongoing records on the cost of rejects (the accounting would be horrendous) estimates are that the combination of savings through lower maintenance and fewer rejects is enough to pay back the cost of converting to depth filtration in about two years' time. The small unit was paid off several years ago, the second unit will soon be paid back, and the third in another year, at that rate.

All filters are fitted with carbon chambers to handle the organics problem; the two large filters have slurry tanks.

Plating Quality—A Constant Vigilance

Although Precision does no work for the government, much of its plating is done to Mil Specs, because that is the standard used by most of its customers. The company does Type K and II, and Class I, II, and III plating.

To maintain plating quality at high levels, the company uses an independent laboratory to perform analyses each week on plating baths in use. Checks are made for nickel chloride, nickel sulfate, boric acid, brightener level, and trace metals. Hull cell tests are performed to reveal the presence and level of organic contaminants.

Constant checks on quality and better filtration equipment help Precision stay competitive. Staying competitive was the principal reason they converted to depth filtration. Lower costs and attractive pay-backs were important factors, as was the need to obtain higher flow rates in less space, but the prime consideration was quality. Depth filtration has made the difference. ■

All filters, including the small one in use 10 years, are made by Serfilco Ltd., 1234 Depot St., Glenview, IL 60025.

