

Manufacturers and plant managers face a difficult challenge when choosing a surface cleaner. There are many options on the market, ranging from aqueous or semi-aqueous solutions, to flammable hydrocarbon solvents, or to fluorinated/brominated solvents. In this crowded field, one process is exceptional in its ability to produce a clean, dry part at a modest price, the chlorinated solvent.

Over the last two decades, manufacturers moved away from chlorinated solvents due to misunderstood environmental concerns. Chlorinated solvents such as perchlorethylene, trichloroethylene, and methylene chloride dumped into the same category as 111-trichloroethane (methyl chloroform) which was phased out of production, due to its ozone depletion potential. Meanwhile worldwide the other chlorinated solvents continue to be viewed as acceptable substitutes for ozone depleting solvents.

It would be unwise to rule out chlorinated solvents. They are not appropriate for every part, but there are times when they are the proper cleaner for the application. In these instances, it is better that the manufacturer invest in a machine able to make use of chlorinated solvents, rather than attempt to clean the part with an alternative that does not produce the same quality.

Hermetically sealed solvent cleaning systems perform their cleaning operations within a sealed chamber in which solvent is introduced only after the chamber is closed. By sealing the process, the machine shields operators from exposure to the chlorinated solvent vapors. The used soil laden solvent is then distilled, then condensed back to fluid for re-use in the next cleaning operation.

The process is particularly effective with parts that contain recesses, blind holes, perforations, crevices, and welded seams. The solvent vapors are able to effectively penetrate these hard to reach areas, as well as complicated assemblies. In addition, solid particles left in the part from the manufacturing process are removed by the mechanical washing action of the machine, which can include an ultrasonic transducer to implode heavy soil and oil deposits by breaking the surface tension from the metal surface.

Hermetically sealed machines are ideal for many different manufacturing processes. They are able to remove tough soil from parts as well as reaching into tiny crevices contained in parts with convoluted shapes. The stages of a hermetically cleaned parts include solvent spray gross cleaning, immersion, and vapor rinsing before exiting the machine, leaving them perfectly cleaned. Air re-circulation and vacuums dry the parts in their final stages, removing solvent still present on the part and also reducing the consumption of the machine to a near 0 emission rate.

After drying is complete, the vapors travel through an activated carbon recovery system, which reduces further the already negligible emissions produced by the machine.

Using a sealed chamber system prevents solvent loss. By distilling the soil laden solvent for re-use, hermetically sealed units also save companies on cleaner costs over that of alkaline based blends that are used in aqueous systems and must be replaced due to drag out and steam exhaust continuously.

These hermetically sealed units are appropriate for a wide range of industries. Cutlery, Electrical contact Manufacturing, shoe soles, metallic lights, working polyurethane, turned steel, steel pipes, steel coils, aluminum parts, small diameter steel and copper pipes up to 25 feet, brass parts, heat exchangers, locks, keys, padlocks, small bearings, plumbing fittings, glasses, TV components, circuit boards, micro chips, switch components, measuring instruments, lighting articles, refrigerator parts, aircraft and

weapon components, medical implant, surgical appliances, dental parts, dental equipment, dental supplies and frames, eye wear, toys, ball point pens, Teflon seals, fasteners, and needles are all industries that benefit from the hermetically sealed process.

Chlorinated solvents will continue to be available. PERC demand has remained steady or increased in recent years as a result of their use as raw materials in the production of refrigerant alternatives to CFCs. The producers of this solvent remain committed to serving their markets for many years to come.

PERC can be used safely. From the point of view of health and the environment, the chlorinated solvents are among the most thoroughly studied industrial chemicals. Animal tests and epidemiological studies indicate that when the solvents are handled, used, and disposed of in accordance with recommended and mandated practices, they do not cause adverse health or environmental effects. Last complete study covering this subject was carried out by ACSH and published in July 2001.

Picking a cleaner is a critical part of the production process. The proper chemistry must be used, in the right concentration, and at the correct temperatures in order to properly clean the part. If the right chemistry is not chosen, then it is possible that the part will be damaged or not cleaned to customer specifications.

Far from replacing chlorinated solvents with alternative cleaning technologies, manufacturers may wish to seriously consider surface cleaning with chlorinated solvents as the most efficient, effective and economical cleaning process for precision products.