



Medical Component Manufacturer Uses Vertrel® for Precision Cleaning

Synopsis

A small subcontractor for precision metal assemblies used in medical products selected MicroCare CCA as the best replacement for HCFC-141b.

Application

Medical products demand a level of cleaning performance that exceeds almost any other application. Manufacturers worry about inorganic particulate, like metal fining, which could impair the operation of a device. They worry about organic contamination which could cause biological problems -- light oils, grease, and fingerprints can carry all sorts of microscopic dangers. The electronics in these systems carry ionic contamination which must be removed. Water cleaning systems used early in the assembly process also generate potential problems with water spots, entrapped cleaning agents, and dry residues. To resolve all of these problems, a small medical subcontractor in Connecticut is keeping their customers happy by using MicroCare CCA as a final cleaning process after assembly.

This company had previously used CFCs for their cleaning process and over the years found it and their vapor degreaser system to be trouble-free. When the Montreal Protocol phased out the use of CFCs, the company migrated to HCFC-141b as an interim step. They used that solvent for about six years. When the E.P.A.'s regulations banned the use of HCFCs in vapor degreasers, they began to search for alternatives.

MicroCare CCA requires cleaning cycles of 2-8 minutes, with an average of 10-15 parts in the basket during each cycle.

While they have an aqueous system for some of their primary cleaning applications, they felt it was too large, slow and energy-intensive for use as their final cleaning process. In terms of solvents, they considered three main products: HCFC-225 from Japan, HFE solvents from 3M Corp. and HFC solvents from DuPont. All three products performed adequately, but in their mind MicroCare CCA came up the clear winner:

- The HCFC-225 solvent is an ozone-depleting material, with a phase-out dated mandated by the Montreal Protocol and the Clean Air Act. Top management did not want to specify in a new solvent only to have to repeat the job a few years down the road.

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- The HFE products worked fine but were considerably more expensive than the MicroCare CCA, by about 30%.
- The HFC products from DuPont worked very well and were backed by DuPont's 50 years of experience in solvent cleaning. Top management felt that their customers would be most comfortable knowing they were using cleaning products from the cleaning experts.

Customer Experiences

Overall, the company has been very pleased with the conversion to MicroCare CCA. They purchased a brand-new Branson vapor degreaser to run the HFC solvent processes, so the transition was made easy by using state-of-the-art cleaning technology.

All of their parts were then tested for a day immersed in the solvent and no compatibility problems were found (which is to be expected, as HCFC-141b is a very aggressive cleaner). All of their parts were then test-cleaned in the new solvent to confirm the programmed settings on the automatic hoist would deliver the cleaning each assembly required. A few assemblies required some adjustments to their cleaning cycle. Finally, all of their key customers were advised of the change, and as expected none had any problems or questions with the proposal.

The actual change-over took about four hours, as the company took the opportunity to boil-down the sumps and clean the system thoroughly. System set-up was fast and predictable -- a few thermostat changes were all that was required. In addition, the refrigeration system is now operating at all times, even at night and at weekends, to minimize stand-by losses. By lunchtime the new solvent was in the machine and parts were being cleaned.

At this point the customer is using the machine at about 50% of its maximum capacity. Solvent losses are averaging 2-3 quarts (3.5 liters) per week. Cleaning cycles vary from two minutes to eight minutes, depending upon the assemblies. Labor costs are trivial as the entire process is automated, which frees workers for more productive tasks.

The company expects to use about three drums of solvent annually, and return a substantial portion of that solvent to their vendor for recycling credit. While top management agrees that the cost of the cleaning process is higher than it was when they used HCFC-141b, in terms of each individual part the cleaning cost "is less than pennies," according to the floor supervisor. "Everybody likes the new solvent," she adds.

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