

Customer Switches from Vapor Degreasing to Aqueous Cleaning by Utilizing the Guardian Program

Challenge

An automotive fuel injector manufacturer was very concerned with the increasing cost of trichloroethylene and the environmental/health risks associated with this material. The plant used trichloro in vapor degreasers to remove machining lubricants, polishing compounds and metal chips from the fuel injector parts prior to heat treating and assembly. The cost of the trichloro had increased to about US\$3,000/month.

The plant was concerned about the compatibility of alternative cleaning methods on the downstream processes due to the tight tolerance required for the injectors. Additionally, it was important that no residue be left on the part after cleaning.

The goals of the program were to:

- To develop a water-based cleaning process that produces parts that are clean and spot free
- To limit the complexity of this process to less than three steps
- To automate the process as much as possible for a “hands-off” operation
- To consistently provide quality parts
- To control the escalating costs associated with vapor degreasing

Solution

The existing vapor degreasing process was very simple. Room temperature dirty parts were placed into the vapor degreaser where pure solvent vapors condensed on the parts until they reached the temperature of the solvent vapors. Typically, at that point the parts were clean enough for assembly or further processing.

To find an alternative to this process, GE Water & Process Technologies employees worked with the washer manufacturer that was selected by the customer. The customer began screening products on sample parts by using a test washer. Once the best product was found for the two operations, a run off was scheduled for the proposed washer/ cleaner combination. This was to confirm the process met the customers’ requirements. When this was completed, the customer ordered a washer for each application.

In the round cell washer, Kleen 181 was recommended to remove the coolant from the parts. The flat cell area parts have a lapping compound on them which can be difficult to remove. We recommended Kleen 132 because of its ability to remove difficult soils. Permatreat* 314A is also utilized to produce a corrosion-resistant coating on the parts and in the final stage we add Solv* 104, which produces parts that are clean and spot free.

AccuTrak* controllers are used to automatically add the chemicals as needed, meeting the customer's need for a “hands-off” operation.

Results

When the washers were delivered and installed, GE personnel assisted with the start-up. A few adjustments were made to the process to maintain the level of performance that was required as the operation scaled up to full production.

This has led to the following goals being achieved:

- The cleaning costs were reduced to 40%
- The use of trichloro was eliminated in this operation, resulting in increased safety and reduced environmental concerns



Find a contact near you by
visiting gewater.com or
e-mailing custhelp@ge.com.

Global Headquarters
Trevose, PA
+1-215-355-3300

Americas
Watertown, MA
+1-617-926-2500

Europe/Middle East/Africa
Heverlee, Belgium
+32-16-40-20-00

Asia/Pacific
Shanghai, China
+86 (0) 411-8366-6489

- Water-based cleaning produced parts equal to vapor degreasing parts
- GE control equipment was used to automate the feeding of the chemicals and met the customer's desire to have a "hands-free" operation.
- A long-term partnership was established

Opinion

The GE team worked closely with the washer manufacturer so that the transition from vapor degreasing to aqueous cleaning went smooth. Technical support was provided during the selection of the cleaning equipment and start-up of the actual production, and this support continues on a daily basis.