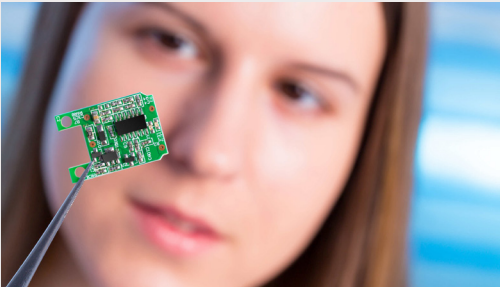


Cleaning Analysis Suggests Surprising Results

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Vapor degreasers typically are better at cleaning small shapes — such as printed circuit boards.



The cleaning experts at MicroCare completed a highly detailed study comparing the costs of aqueous cleaning to the costs of vapor degreasing cleaning. This study was managed by Mr. Rob Lee, of MicroCare, and incorporates the latest information from industry sources, customer experiences and equipment makers.

“In many companies and regions of the world, there is very little knowledge about solvent cleaning,” Mr. Lee explained. “People default to the water-based cleaning choice because they are not aware that proven, reliable and safe solvent alternatives are available and will cost less.”

The results of the study were surprising. “The cost-per-part-cleaned of a well-tuned vapor degreaser can be as little as 1/10th the costs of an aqueous cleaner,” Mr. Lee reports. His team further calculated the capacity of a vapor degreaser is almost three times greater than the capacity of a similar-sized aqueous cleaning systems, all other factors being equal.

Difficult Comparisons:

The catalyst for the study, according to Mr. Lee, was the repeated confusion amongst customers about the difference between the cost of aqueous cleaning fluids — which often are 99% water — versus the cost of solvent cleaners, which are carefully engineered synthetic molecules formulated specifically for cleaning. Vapor degreasing systems are preferred for critical cleaning applications involving complex shapes, delicate substrates, maximum throughput or the highest cleaning standards.

At the heart of the confusion is the fact that aqueous cleaners and solvent cleaners operate completely differently. Aqueous cleaners generally use longer cleaning cycles, high-pressure sprays, expensive detergents and complicated drying systems to clean parts. In contrast, vapor degreasers use subtle chemical engineering to replace the brute-force cleaning of aqueous systems.

These differences mean that vapor degreasers typically are better at cleaning small shapes — such as printed circuit boards — or complex shapes, tight stand-offs and/or blind holes. They also clean more quickly and more gently. A simple, ill-formed comparison of the per-liter cost of the cleaning fluids leads to distorted conclusions.

Study Design:

The study analyzed the main cost elements of operating two comparable precision cleaning systems. The comparative unit was “equivalent basket size” which defines the size of the largest components that can be cleaned in any given machine. To enable meaningful comparisons, the total cost of ownership then is normalized as a “cost-per-part-cleaned” over the life of the cleaning system.

“This actually was a ‘best-case’ scenario for the water cleaning option because, size-for-size, a vapor degreaser has far higher throughput than an aqueous cleaner,” Mr. Lee noted. “If we had modeled costs based on ‘equivalent throughput’ (parts-per-hour) then the aqueous cleaner would typically have been three or four times larger and even more expensive.”

Tech Article

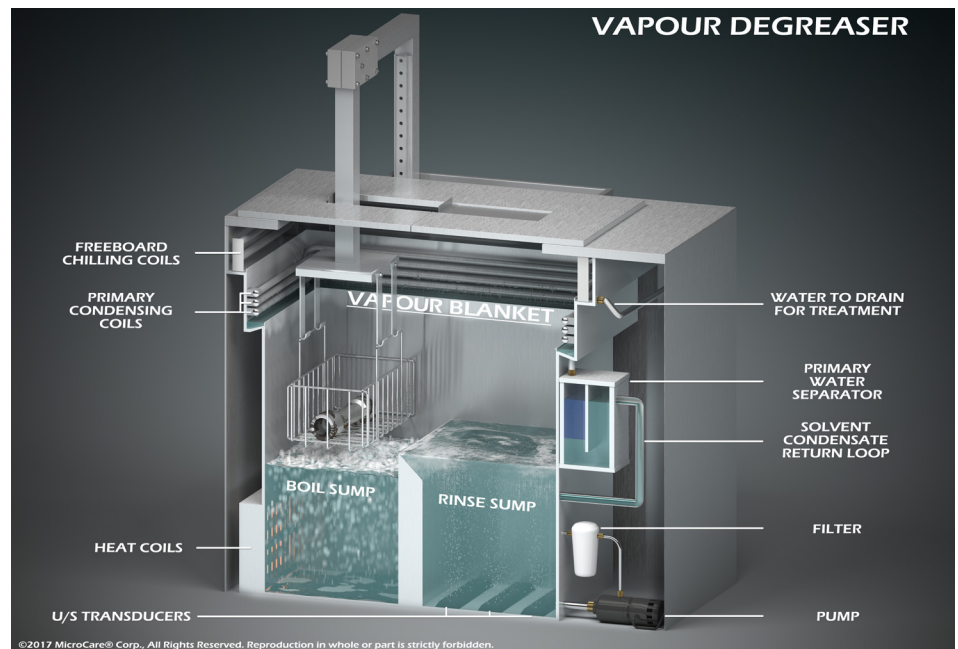


Rob Lee, MicroCare Senior Market & Technical Manager.

Mr. Lee's team analyzed the costs in two general categories: acquisition costs and operating costs. Acquisition costs included the price of the machine, installation, retrofits to factory spaces and the cost of capital. Operating costs included consumable solvents and detergents, electrical, floor space and incidental expenses such as filters and waste disposal.

Many assumptions were required in this analysis. For example, the specifications from different equipment manufacturers indicated benchmark vapor degreasers used 7 kilowatts of power while equivalent aqueous cleaners used 19 kilowatts. U.S. electrical costs were assumed, although energy costs in Europe and Asia are far higher. Mr. Lee's team also assumed a floor space cost of \$125/sq. ft. (approx. \$1345 per sq. mtr.); obviously this will vary by region. Similar calibrations were developed on labor, waste disposal costs, and other significant factors to analyze and compare the cost per part cleaned.

To learn more or schedule cleaning and chemical review with MicroCare Critical Cleaning Expert, visit MicroCare.com



Vapor degreasers use subtle chemical engineering to clean.

About the author:

Mike Jones, retired Vice President of International Sales for MicroCare, has over 30 years of experience in the critical cleaning industry. He is a prolific writer and educator focusing on critical cleaning in general and vapor degreasing and benchtop cleaning in particular.

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