

The Case for

CLEANING

**Understanding the consequences
and costs of not cleaning well.**

by Steve Kline



Abstract

Presented by:

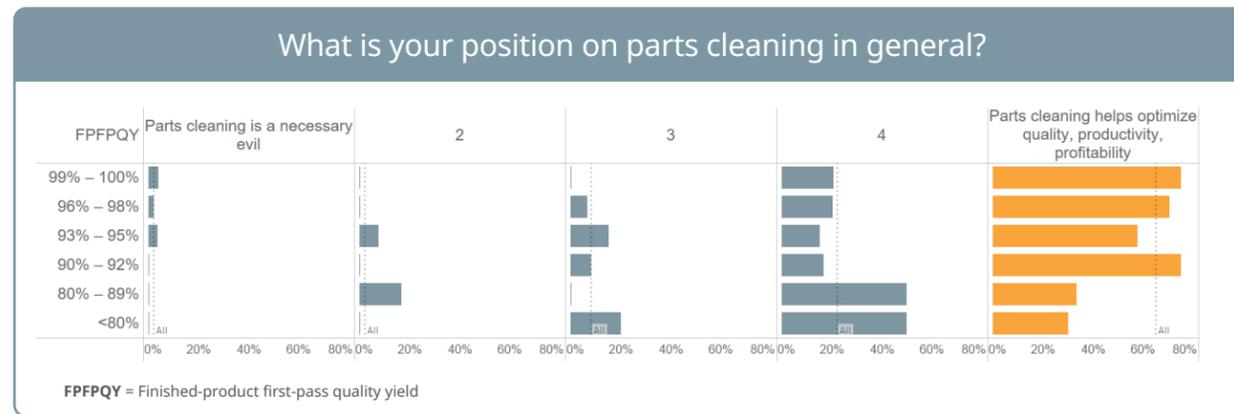


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The majority of finishers state that they believe parts cleaning helps optimize quality, productivity and profitability. Yet, despite the fairly uniform beliefs and claims from shops about their cleaning processes, variances in quality yield persist. Hubbard-Hall commissioned objective third party, Gardner Intelligence, to conduct a custom survey and analysis of Products Finishing Top Shops benchmarking survey results for data-based insights to help understand attitudes and practices concerning cleaning. While a majority of respondents claim to invest in cleaning, there are some important differences in the stated reasons for poor quality.

A common premise in the finishing industry is that there exists a wide range of attitudes and beliefs regarding cleaning – the costs, the risks, the impact – presenting the perfect opportunity for data to shed some light on the cleaning landscape. The analysis presented by Gardner Intelligence in this paper is based on survey questions pertaining to cleaning attitudes, concerns, and practices, along with questions about product quality and financials.



The results of the survey indicate that attitudes and beliefs about cleaning are essentially the same across facilities regardless of their quality yield. So, what is driving the difference in quality yield for finishers? How do cleaning and pretreatment processes alter quality yield? And, what is the relationship between quality yield and the bottom line?

Analysis of Data

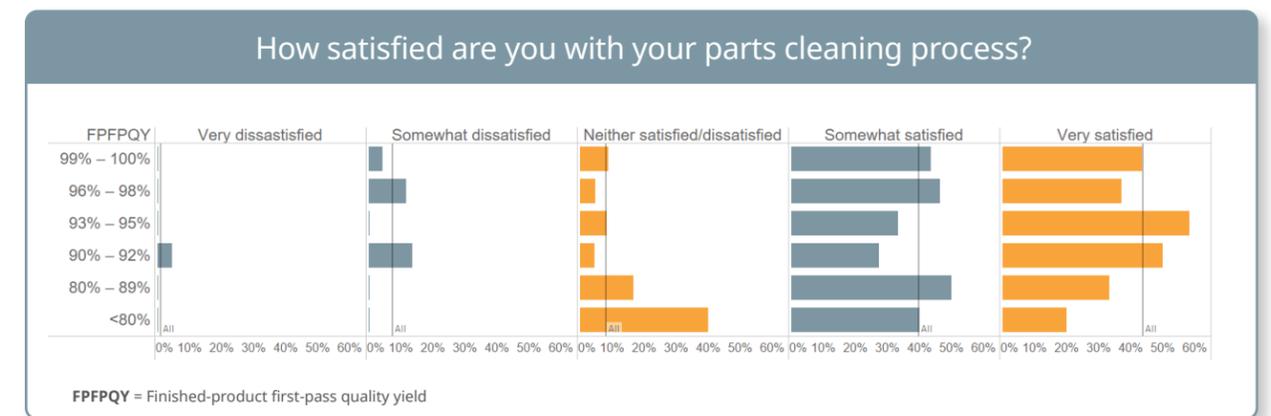
Regardless of quality yield, 67% of finishers state that they believe parts cleaning helps optimize quality, productivity and profitability. And, the vast majority of the remaining shops are close to this view as well. So, it would seem there is very little difference in the general position on parts cleaning based on quality yield. As finished-product, first-pass quality yield increases, it does appear that a higher percentage of respondents state that parts cleaning helps optimize quality, productivity and profitability. At the very least, there is a notable difference in the position on parts cleaning when finished-product, first-pass quality yield is more than 90% versus less than 90%.

Interestingly, only those with a finished-product, first-pass quality yield of more than 93% stated that their general position on parts cleaning was that it was a necessary evil. This indicates that facilities having this opinion must recognize the importance of parts cleaning to high quality parts.

The research conducted in this study also indicates that nearly 67% of respondents, regardless of quality yield, claim to have a strict, standardized, regular cleaning practice. Most of the remaining respondents claim to have a defined cleaning practice that they apply most of the time. It is therefore important to note that poor quality parts are not a result of individuals thinking, or even more claiming, that cleaning is not important.

While there isn't necessarily a linear correlation with quality yield, it is evident that cleaning practices are quite different for finishers with the highest quality yield versus those with the lowest quality yield. Nearly 80% of shops with a quality yield more than 99% state that they have a strict, standardized and regular cleaning practice. However, only 11% of shops with a quality yield below 80% also claim this. These shops are more likely to claim their cleaning practice is somewhat loose and variable and equally likely to claim their cleaning is occasional or on an exception basis. One might suspect that the shops with quality yields between these extremes are claiming something that seems true in theory, but in reality isn't when the actual practices of the shops are examined.

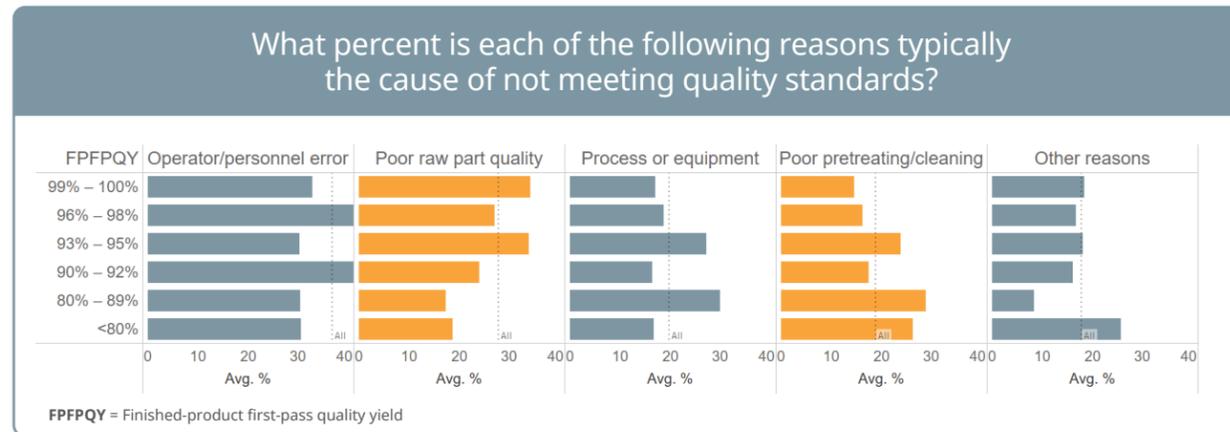
The survey responses also show that most finishers are fairly satisfied with their cleaning process. Nearly 85% of finishers are very or somewhat satisfied with their parts cleaning process. Shops with a quality yield greater than 90% are much more likely to be very satisfied with their cleaning process. Meanwhile, shops with a quality yield less than 90% are much more likely to be neither satisfied nor dissatisfied with their cleaning process. Somehow only 10% of finishers are dissatisfied, either somewhat or very, with their cleaning process – none of these dissatisfied finishers have a less than 90% quality yield.



Despite the fairly uniform beliefs and claims from shops regarding cleaning processes, there are some important differences in the stated reasons for poor quality.

Before we get to the differences, our research indicated that labor is the most cited reason for poor quality regardless of quality yield. Basically, labor is the scapegoat of poor quality for finishers. Also, there is no clear trend for process, equipment or related factors as the reason for not meeting quality standards. Such considerations maintain a relatively constant percent of the problem across quality yield.

The research did indicate that there is a fairly clear linear relationship for both poor raw part quality and poor pretreating/cleaning with quality yield. Poor raw part quality receives a higher percentage of the blame for not meeting quality standards as the quality yield goes up. The reverse is true for poor pretreating/cleaning – as quality yield goes down, poor pretreating/cleaning is assigned a higher percentage of the blame for not meeting quality standards.



As quality yield increases, profit margin increases.

For every two percentage point increase in quality yield, there is about a one percentage point increase in profit margin.

So, despite the similar stated claims and beliefs about cleaning regardless of quality yield, shops with lower quality yields do realize that poor pretreating/cleaning is more of a problem for them. In essence, as quality yield goes down, the real culprit is poor pretreating/cleaning.

Based on more than 1,300 responses to the PF Top Shops benchmarking surveys for coating and plating, Gardner Intelligence identified that there is a correlation between quality yield and profit margin. As quality yield increases, profit margin increases. For every two-percentage point increase in quality yield, there is about a one percentage point increase in profit margin. In other words, for every \$1 million dollars of revenue, increasing quality yield by two percentage points results in \$10,000 of profit. Because this is an increase in net income, the additional expense of achieving the higher quality yield is already factored into the equation.

Since the research shows that the controllable variable in quality yield in finishing shops is the cleaning and pretreatment process, finishers can achieve improved quality yield and additional profit through better pretreatment/cleaning processes despite the claims that most finishers have at least a well-defined, if not strict and standardized, process that they are satisfied with.

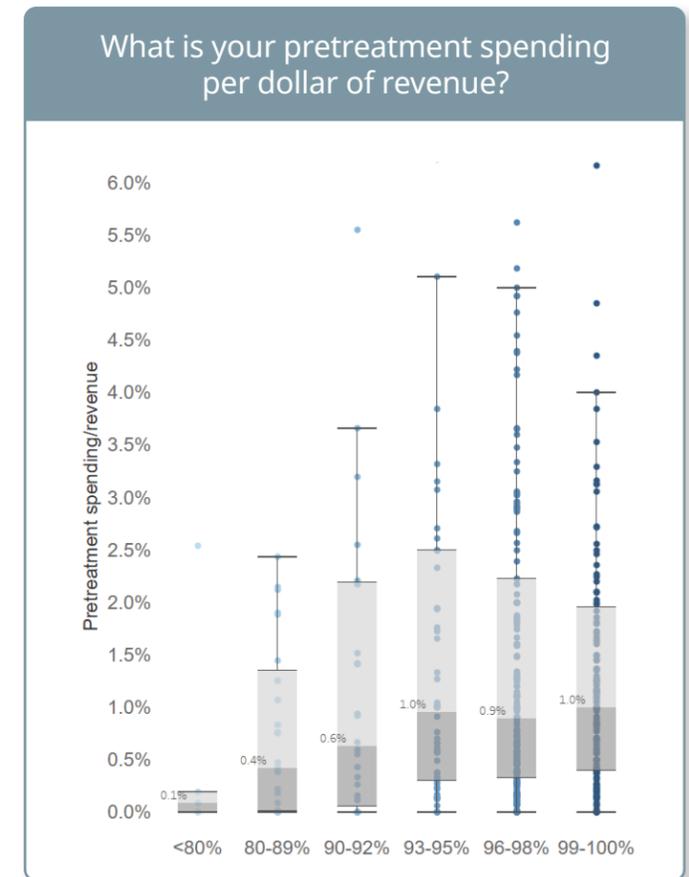
Recommendations

So, what does a better pretreatment/cleaning process look like?

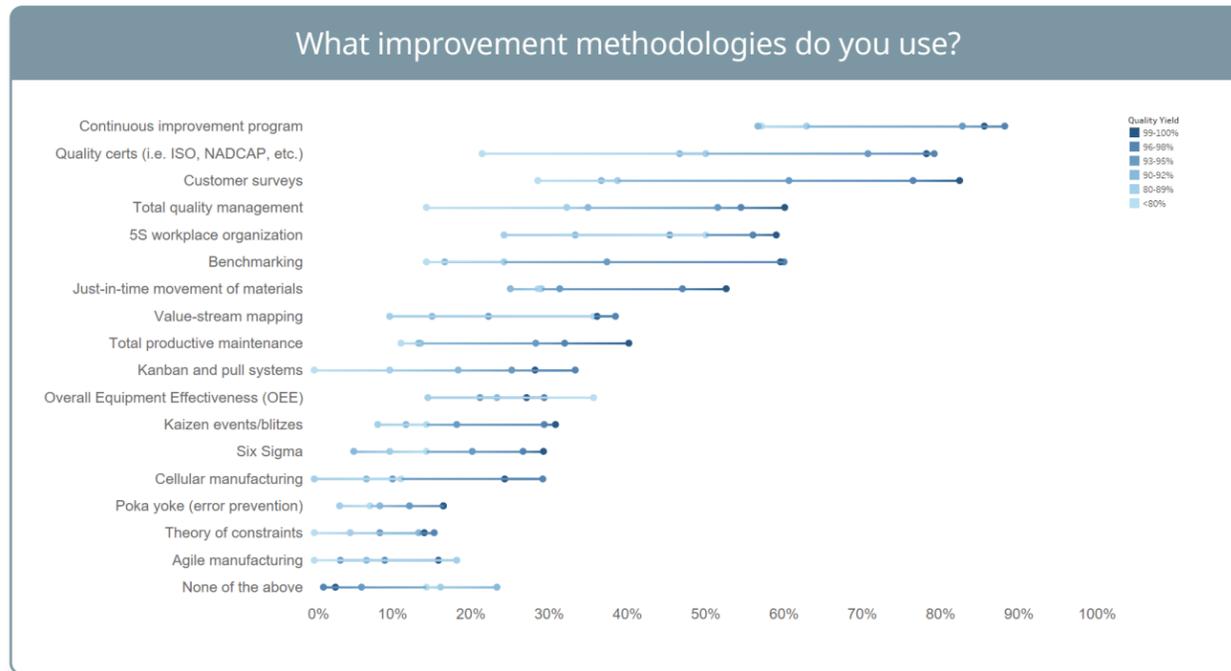
First, finishers need to ensure that they are spending an adequate amount on pretreatment chemicals as a percent of revenue. To achieve a quality yield of 93% or higher, the median finisher spends 1% of revenue on pretreatment chemicals. So, for every \$1 million in revenue that is \$10,000 spent on pretreatment chemicals. Some finishers will spend a higher or lower percent of revenue depending on the quality standards required and the types of contaminants that need to be removed.

For quality yields less than 93%, pretreatment chemical spending per revenue drops off quickly. So, finishers with a quality yield below 93% need to increase their spending on pretreatment chemicals to have a better cleaning process that matches their stated claims about pretreatment.

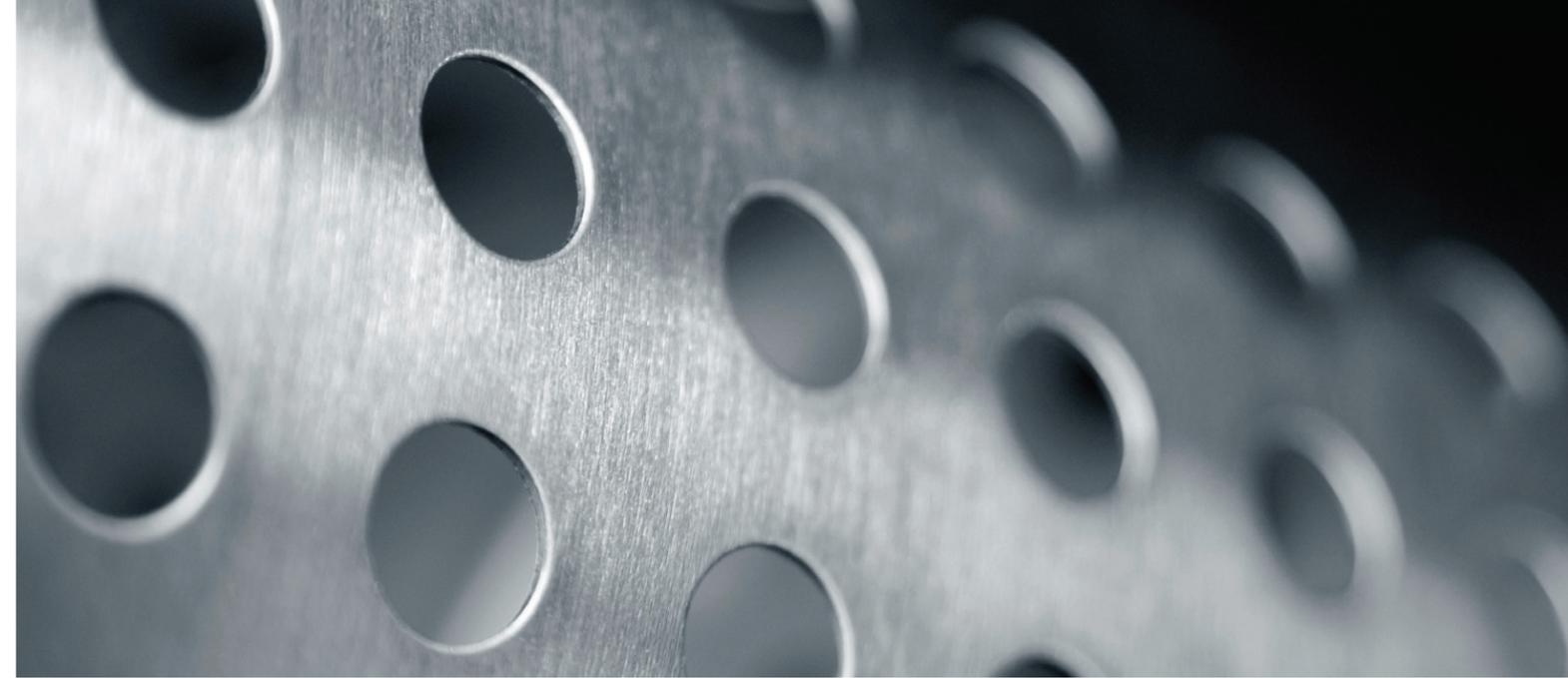
However, there is some evidence that spending more on pretreatment chemicals per dollar of revenue doesn't automatically lead to higher quality yield. The top quartile of finishers with 93-95% quality yield spend at least 2.5% of revenue on pretreatment chemicals. Yet, the top quartile of spending goes down as the quality yield goes higher than 95%. This indicates that the process control becomes more important than increased spending as quality yield increases above 95%. Further, this means that there are differences in actual practices even though finishers claim similar beliefs and practices about cleaning and pretreatment.



Improvement methodologies are the broadest practice (they apply to cleaning/pretreatment but not exclusively so) to improve quality yield. Finishers with a 99-100% quality yield are generally more likely to use any of the improvement methodologies available when compared with finishers with a lower quality yield. The improvement methodologies most directly related to cleaning and pretreatment and likely having the most impact on quality yield and profit margin are a continuous improvement program, quality certifications, total quality management, 5S workplace organization and benchmarking. These improvement methodologies are an essential part of having a strict, standardized, regular cleaning process and supporting the belief that cleaning/pretreatment helps optimize quality, productivity, and profitability. One should also note that 15% to almost 25% of shops with a quality yield less than 93% do not use a single improvement methodology.

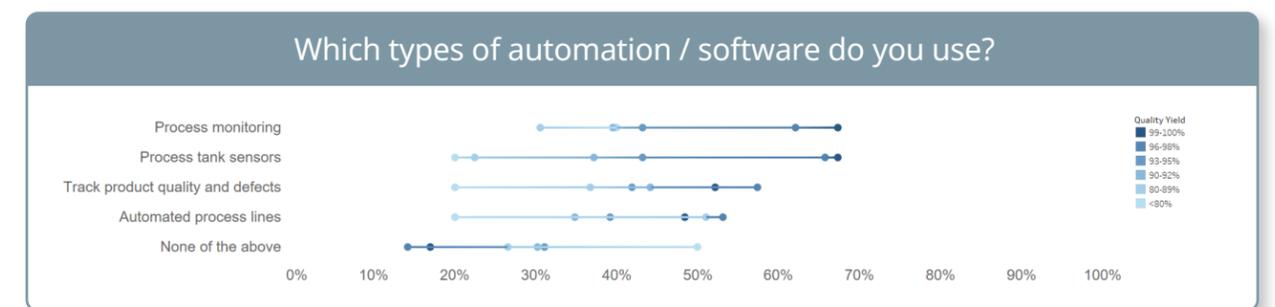


As noted above, the research found that the vast majority of finishers, regardless of quality yield, claim to have at least a defined cleaning process that is applied most of the time while roughly 67% claim to have a strict, standardized, regular cleaning practice. Yet, there is a dramatic difference based on quality yield in the percent of finishers that have written, current procedures for washer quality and performance. Close to 95% of finishers with a quality yield greater than 99% have such written procedures while slightly more than 85% of finishers with a quality yield of 96-98% have such written procedures. The percent of finishers with written washer quality and performance practices drops precipitously below 96% quality yield.



This evidence reinforces the position that simply claiming to have a defined process is not the same as having one that is written down and kept up-to-date. The process guidelines should be communicated to employees regularly and employees should have access to process documentation and be able to refer to it.

Automation and software can help implement an improvement methodology and track compliance with written plans through process monitoring and control and data for analysis and insight. To improve quality yield, finishers should use software to track product quality defects. That may seem obvious, but there is a significant difference in use of such software based on the quality yield of a shop. Shops with a quality yield greater than 96% are far more likely to use process monitoring and process tank sensors. And, shops with a quality yield greater than 99% are even more likely to use such technology. The significant differences in usage by shops with high quality yield indicate that these types of automation and software are important aspects of a better cleaning process and drivers of higher quality yield and profit margin.



Finally, that brings us to another important aspect of parts cleaning – testing. In order to have a strict, standardized, regular cleaning practice a finisher needs to test its pretreatment baths. The median shop with a quality yield greater than 99% spends 30 hours per week on analytical testing (admittedly, not all of this is spent on cleaning processes). That is 20% more hours than shops with a quality yield between 96-98% and more than three times as many hours as all other finishers. It is difficult to control a variable process without testing.

In Conclusion

The ultimate goal for finishers, of course, is to have cleaning and pretreatment add to the bottom line. Finding the sweet spot in what you spend on chemicals and detailing your process in writing and keeping it up-to-date are key ways to contribute to that goal. Based on the findings of this study, here are some recommendations to keep in mind

- ▶ **Spend 1% of revenue on pretreatment chemicals**
 - This will vary depending on process and contaminants to be removed
 - Shops with quality yields in the mid-90% may be spending too much due to poor process monitoring and control
- ▶ **Practice an improvement methodology**
- ▶ **Write down, keep current, and inform employees of your cleaning performance processes and standards**
- ▶ **Use software and automation to track and adjust your process**
- ▶ **Maintain a regular testing regiment for your pretreatment baths.**



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