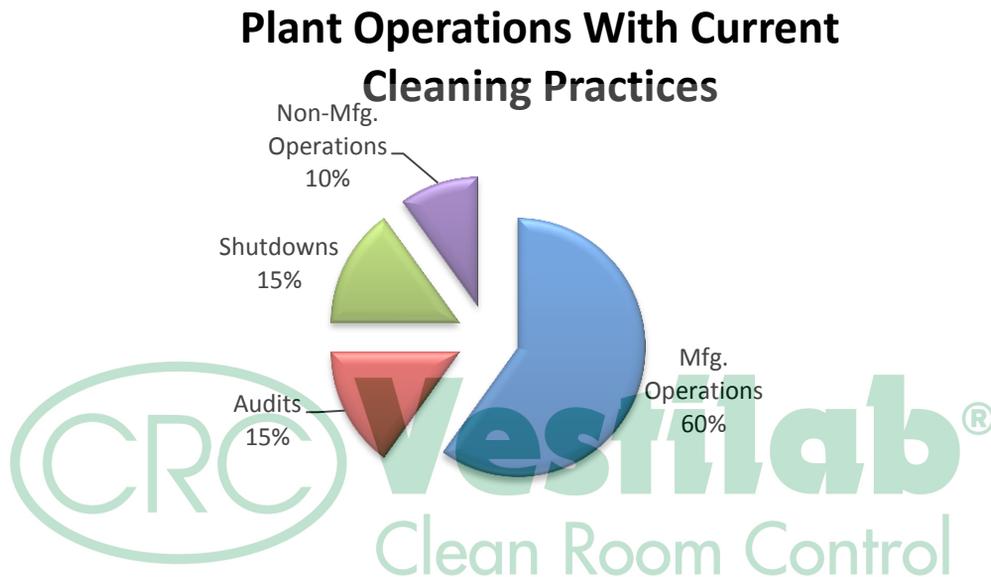


Improving Productivity in Pharmaceutical & Biotech Facilities

Pharma and Biotech manufacturing facilities face ever more demanding regulatory and productivity challenges. These challenges are made more acute as products come off patent protection.

A simplified way of looking at the activities in a plant is highlighted in the pie chart below:



While the ratios vary from plant to plant, the above chart fairly captures the low plant utilization rates that have characterized the manufacturing of Pharmaceutical products.

To improve this, the large integrated companies are pursuing lean manufacturing strategies. In essence lean manufacturing means eliminating non-value added steps by designing operations so that tasks are done properly the first time around.

Current cleaning and disinfection SOP's used throughout the Pharmaceutical and Biotech industries have an inherent flaw that causes shutdowns and audits to be longer and more complicated than need be. In brief current cleaning and disinfection SOP's involve the application of disinfectant cleaners to floors, walls, windows, ceilings and equipment on a daily, weekly or monthly basis depending on the surface. As a result of the active ingredients in disinfectants, residues and corrosion are a direct result and are typical in clean room and non clean room manufacturing areas.

The pictures below characterize the condition of stainless steel in the industry. It must be realized that all surfaces including walls, floors and ceilings are just as contaminated but on stainless steel and windows the residues are easily visible.



Bleach Based Disinfectant Residue



Quat Based Residues



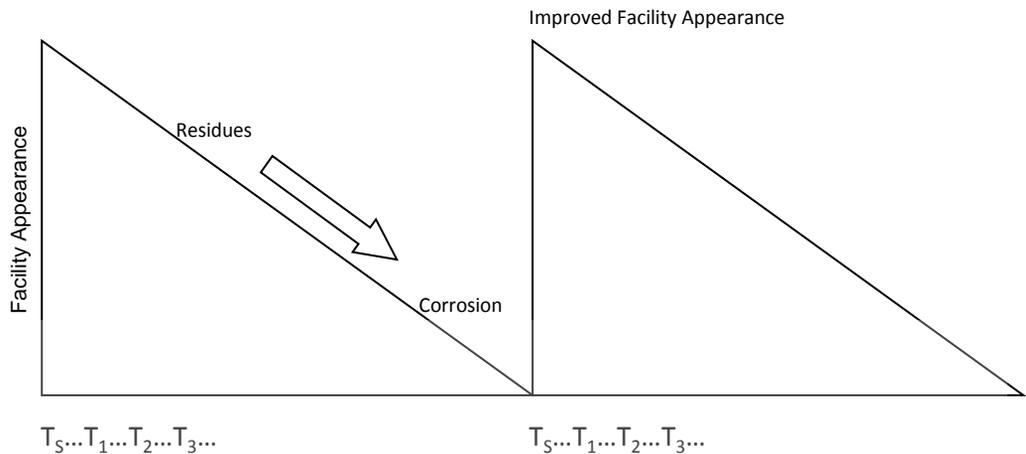
Bleach Based Residue and Corrosion



Sporklenz Residue and Corrosion

In order to prepare the facility for audits, monthly, quarterly, semiannual and annual shutdowns are built into the calendar. Contract manufacturers often will have monthly shutdowns in place as they use their facility as a marketing tool.

The following chart characterizes the Facility Appearance Cycle that is dictated by current cleaning and remediation practices.



T_s is the time right after the shutdown when the facility is in the best condition. T_3 would represent the condition of the facility halfway between shutdowns.

How do these current practices impede the overall productivity of the facility? Plants must be shutdown due to the need to bring hazardous passivation chemicals onsite to recondition or re-passivate the stainless steel. Because surface cleanliness and appearance degrade over time until shutdowns, audits, inspections and routine cleanings can be prolonged and made more complicated than is necessary. Which is to say, in addition to productivity shortfalls facilities face severe risks in using current practices. These risks involve the use of hazardous passivation chemicals which are poisonous to the product and degrading surface cleanliness which can lead to EM excursions.

Foamtec has developed the Sahara Corrosion Cleaning System™ that enables the customer to accomplish the following:

Audit Ready Facility Appearance.....everyday

Surface Condition Typical with Current Cleaning Practices



Sahara Enables Audit Ready Everyday



CRC Vestilab®
Clean Room Control

A Residue-Free Surface Enables Dramatic Improvements In Productivity Along With Reduced Risk And Costs

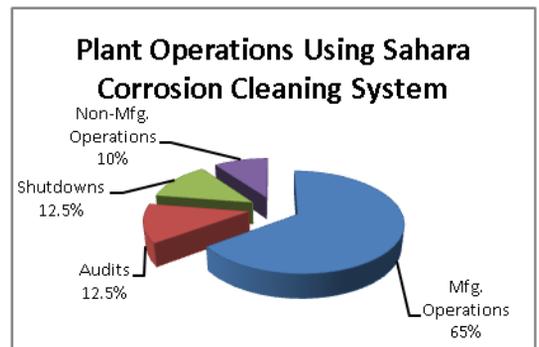
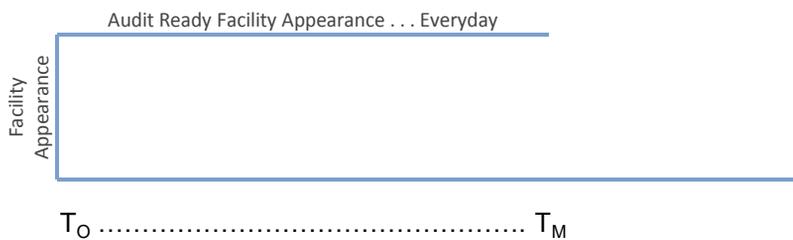


Stainless steel surface after multiple cleanings with Polyester Wipers and 70% IPA.

Sahara + Cleaning eliminates the residues that lead to rouging, rust and poor facility appearance.



Keep Facility Appearance By Using Sahara Corrosion Cleaning System



The elimination of the need to use hazardous passivation chemicals to bring stainless steel back to like-new conditions and the capability to maintain residue-free surfaces enables Pharma and Biotech facilities to increase productivity and reduce contamination risks. The result is less work days out of operation for audits and shutdowns.

Moreover, when stainless steel replacement and remediation costs are factored in, cost savings can be in the millions of \$ per year.

