Chemical reclaim compatibility

It takes more than equipment to make a reclaim system work.

BY TONY VERTIN I CONTRIBUTING WRITER

In today's economic and regulatory environment, building and running a carwash is becoming increasingly difficult. Factors such as water conservation, effluent and sewage control, and environmentally-friendly detergents and waxes are becoming integral to the profitability of any carwash. To contend with these issues, the carwash industry is increasingly turning to water reclamation systems. Reclaim systems are designed to purify and recycle water; and separate out, for solid waste disposal, the washed off oil, dirt and other miscellaneous components of road film. The cleaned and recycled water is reused in the carwash, saving the carwash owner water and sewage costs. The water reclaim system is good for the environment and good for the bottom line.

Proper maintenance

Like all equipment and systems in a carwash, water reclaim systems require proper operation and maintenance. One of the most difficult issues with reclaim systems in the carwash industry is that the water being recycled contains a myriad of detergent products (presoaks, foamers, wheel and tire cleaners, bug removers) along with a group of water displacing protectants (sealers, all surface protectants, triple foams and drying agents). If these detergent and wax products are not chemically reclaim compatible, the water reclamation system may not function effectively.

Operations in a carwash have always been separated into two distinct functions: the "wash end" and the "wax end" or the "front end" and "back end." All the cleaning operations and products (bug treatment, prep guns, presoak/prep arches, wheel and tire cleaners, foam detergents, and triple foam conditioners or cleaners) are considered to be part of the wash or soap end products. Triple foam polishes, sealer waxes, clear coat protectants, all-surface protectants and drying agents are considered wax end products. This separation of products isn't limited to just friction or touchless tunnels. Touchless IBA's apply their low and high pH presoaks first (sometimes with triple foam conditioners), high pressure rinse them off as part of the cleaning process, then follow with whatever selection of wax end products are called for in their wash menu selections. Friction IBA's function similarly with soaps first, then rinse, then wax end products. Regardless of wash type, these groups of products are always (or should be) separated by a good water rinse, creating a barrier to separate the two product groups. This process of separation is carried into the self serve washes where selection dials and instructions take the user sequentially through the presoak, tire/engine/wheel cleaner, high pressure soap, and single or triple foam brushes, followed by a rinse, then a selection of wax end choices.

Chemical chemistry

The need for separate processes is a function of chemistry. In carwashing, the first process is removal or loosening of all undesirable soil or dirt called "road film" with the various detergents. After rinsing off the residual soap, the second process is essentially re-soiling the car with "desirable dirt" or film in the form of protectants or water displacing drying agents.

The chemical components that provide soil removal in soap end detergents or in a number of sulfuric acid based low pH touchless presoaks are quite different from those components that redeposit "desirable films" in the wax end products. So different in fact that the chemical components can be totally incompatible and react together creating insoluble (unable to be dissolved in water) deposits. Should this intermingling occur on friction fabrics, the result can be the development of dirty and sometimes brittle fabric. The insoluble deposits can harbor bacteria which eventually leave their signature of green or black mold and musty odors. This same chemical incompatibility can occur on a grand scale in a reclaim system where all the soap products and

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wax products intermingle. If any of the soap products contain reactive ingredients dissimilar to those in the wax products, insoluble precipitates will begin to form and grow as they gather and absorb the dispersed road film, oils, and dirt. Large clumps are formed which can harbor bacteria that digest the soils and in turn excrete self-protective gases of which the most infamous is the "rotten egg" smelling hydrogen sulfide. The sulfur source to make hydrogen sulfide may be the same sulfur used commercially in a number of popular detergents. Hydrogen sulfide gas not only stinks, but is quite corrosive and poisonous. The hydrogen sulfide gas from an improperly balanced reclaim system can be can bad enough to convert copper into black copper sulfide on the piping inside the carwash.

The smell factor

The smell is obnoxious, but it is likely to be a harbinger of other less obvious symptoms of a reclaim system that has become out of balance. Among these symptoms are:

- Increased frequency in sludge pump outs;
- Oily or greasy spots on cleaned vehicles, apparently coming from recycled rinse water;
- Costly usage of chlorine, peroxide, ozone, enzymes, etc. to improve the function of the reclaim system;
- Carwash customer odor complaints, as well as complaints in adjacent convenience stores;
- Lost customers (remember — unhappy carwash customers don't always complain, they just don't come back!);
- A decrease in carwash revenues ; and
- Disgruntled employees.

But, don't blame all of these problems on the reclaim system or its builder/designer.

When issues develop, operators need to work with their chemical suppliers to ensure their entire reclaim system is in balance. There is new technology in detergent chemistry that allows carwash detergent manufacturers to make reclaim compatible soap end and wax end products that maintain balance throughout the entire fluid process. Reclaim compatible products allow the reclaim system to function effectively in accordance with its design parameters, protecting the environment, increasing carwash profitability, and, most importantly, providing the customer with a clean and shiny car and a pleasant wash experience. ❑

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The benefits of reclaim

Managing Editor Phillip Lawless talks with Thomas Gibney, vice president and general manager of Verwater Environmental Water Restoration Systems.

Q: Saving money is obviously a huge factor in installing a water reclaim system, but what are some of the other positive aspects of adding water reclaim?

A: Naturally, being a business that is environmentally friendly is something everyone wants to do, but let's face it, everyone is in business to make money so if there isn't a return on investment sometimes the investment takes a second place to other things.

The reality is with tax revenues down in most cities and states they are looking for ways to replace those lost revenues. One quick way is to look at the city's sewer and water departments and raise rates on both. To some degree rate increases are understandable when as with lower tax revenues they have less money to spend on maintaining or upgrading their sewer and water plants. By raising the usage rate they can offset lower operating budgets with increased rates. I would be surprised if anyone reading this article has not read in their local papers about rate increase for water and sewer and in some cases double digit increases over multiple years.

In some cases rather than increasing the rates they go to the companies and businesses that are using and sending the dirtiest water to the sewer plants and make it mandatory that those companies clean their waste water to a defined level before sending their waste water to the sewer plant. Now it's easier to clean the waste water and the operating costs to do so go down. In turn if companies don't comply they are faced with surcharges or penalties. These charges once again make up for lower city operating budgets.

In that a vehicle washes heartbeat is water, washes have to address treating and cleaning their waste water so that the water can be reused throughout the wash to include re-mixing chemicals. Without truly achieving a restoration of water and re-using 90 to 95 percent of the water, a reclaim system should not be purchased. To achieve maximum return on investment today and into the future a system needs to truly restore the waste water for use throughout the wash.

Q: How have water reclaim systems successfully been used in carwash marketing programs?

A: In years past vehicle washes weren't too interested in telling the public that they reused the water because the consumers felt they were getting their vehicles washed with dirty water, and they were. In some systems sold yet today the water comes out a brown or grey color because the chemicals haven't been removed in the treatment process. Today with the advancements in using natural bacteria to consume chemicals from the waste water like sewer treatment plants operate a vehicle wash can feel comfortable in advertising that they are washing the consumers' vehicles with clean restored water.

Q: How have water reclaim systems been a boon for carwashes that operate in areas that experience frequent droughts?

A: With water being the lifeblood of the vehicle wash industry, a waste water treatment system that truly restores the water

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