

Containers and utensils seek the Optimum wash

SEEKING THE OPTIMUM WASHING PROCESS FOR CONTAINERS AND UTENSILS OFTEN MEANS INCREASING HYGIENE LEVELS BUT CAN EQUALLY INVOLVE AUTOMATION AND AN EXTENSION OF HYGIENE CONTROLS.

Getting the best from washing, rinsing and cleaning processes – ‘optimisation’ of the procedure – is most likely to mean increasing the hygiene levels achieved and ensuring they are consistent. Particularly with utensils, this could include spotting and eliminating any potential traps for dirt or germs.

But in some situations, ‘optimisation’ can mean, for instance, using effective air cleaning rather than a wet process, automation for health and safety reasons or the extension of hygiene controls to include all items entering a high-risk area.

Indeed, for contract fillers the optimum washing or rinsing cycle on one container may be very different to another.

For example, Italian manufacturer Ave Industries says that while most of its rotary bottle rinsers – around 80 per cent – are still sold with manual changeover of the treatment time, the remainder offer motorised adjustment, increasing or decreasing the angle of the tube bracket to vary the rinse time from under 2 seconds to 6 seconds. This can be followed by a specified ‘dripping’ time.

According to sales manager at Ave in Italy, Gherardo Giachetti, the motorised alternative is common where a number of different containers are filled, where the filler forecasts sufficient time, and therefore cost savings, and especially where the rinsing operation is part of a high-speed line with, say, 80 or 90 heads.

A longer rinsing time variant might be necessary to meet the hygiene standards of particular customers. “It may be that the plant has been audited, and requires the option of a higher hygiene level,” Mr Giachetti explains. “Someone like Coca-Cola may have stipulated a higher specification.”

Apart from the rinsing times themselves, machinery manufacturers such as Ave offer different cleaning technologies to suit particular product and supply chain needs. Air clean-

ing is commonly used where products, such as spirits or those containing oil, are incompatible with water residue.

There are also numerous wet-rinsing options, including standard water – hot or cold – filtered water, sterile water or a solution of water and a sterilising agent. Where an aggressive sterilising agent is used, Mr Giachetti points out, a double rinsing will be required, just as on an aseptic line. Rinsing in an aggressive solution is followed by a second stage of rinsing in sterile water.

Recycling of the rinsing medium is always an option, and this is more likely to be the case where the product itself is used, such as whisky.

In fact, the effectiveness of washing systems is currently being tested by the increase in demand for returnable bottles, especially on mainland Europe.

When Dutch brewer Bavaria NV decided to replace its 30-year-old bottle washer on a returnables line, the new machine developed in conjunction with Krones, and shown at last year’s Drinktec, demonstrated just how far technology had moved in the interim.

Level of cleanliness

Clearly, the paramount concern was the level of cleanliness that could consistently be achieved on the returnable glass bottles. But at the same time, Bavaria managed to cut operating costs by reducing energy, water and chemicals consumption, as well as operator involvement.

The Lavatec KD 2005 consists of three sec-

tions: the pre-cleaning area for removing coarse dirt; the caustic-cleaning section for removing labels and killing off any germs; and the rinsing and discharge area, where all traces of caustic are removed.

Discharge most important

Henk van Kamp, project manager at Bavaria’s Lieshout plant, says: “When it comes down to it, the discharge section is the most important part of a bottle washer. If the bottles are recontaminated there, this nullifies all the success achieved in the pre-cleaning and main cleaning areas.”



No sizeparts: Niko air cleaner has adjustable rubber belts to carry containers

According to Krones, the ‘clean design’ features at the discharge stage include microbiological safeguards such as a dirt lock in the post-caustic bath. This is a first for Krones, and means that any particles are filtered out, minimising the risk of germ growth and recontamination. Dead corners are eliminated, and anti-microbial plastic is used for the bottle slide.

In another design first, Krones says it incorporated HEPA/ULPA filters in a bypass outside the discharge section. This uses rotary discs to remove fine dirt and paper fibres from



Reduced costs: Dutch brewer Bavaria has installed the first Krones Lavatec KD 2005 double ended washer

the post-caustic stage, again helping to maximise microbiological safety.

The self-cleaning features also dramatically cut operator intervention and increase machine availability, Krones explains. The fine filters in the bypass use automatic back-washing, and the main discharge section features an automatic interior cleaning system.

Bavaria's head of quality assurance Jan Donkers says: "Automatic interior cleaning works just fine. The bottles' microbiological quality has been significantly improved. We've thus taken one step towards our medium-term goal of eliminating tunnel pasteurisation for our beers."

The effectiveness of the pre-soaking stage means that caustic baths can be replaced every four months rather than the previous three weeks. This again has an effect on machine availability, but also means that 50 per cent less water, caustic and additives are used, according to Mr Donkers.

Hygiene requirements for primary packs can vary enormously, even in the food industry.

While some food and drink products will require ultraclean or sterile filling, some pickles and sauces need nothing like this level of care. And as Ave points out, for some oil-based products, water in the pre-fill rinsing process can actually be a problem.

Planet Flowline says it sells an average of at least two Niko combined air blast cleaners a year in the UK and Ireland. Using a combination of air blast and vacuum, they are said to be well-suited to wide-mouth jars. Machines have recently been purchased by Baxters of Colchester and Boyne Valley Foods in Ireland.

Rubber side belts

The gripping system, using rubber side belts, makes the system suitable for a wide range of different size jars, which are inverted before passing over the blowing nozzles at speeds up to 300 a minute. Plastics as well as glass could run on the machine, says sales manager Ian Carter, although currently he is not aware of any users using the machine this way.

Changeover need take no longer than five

minutes, says Planet Flowline, without the use of changeparts or special tools.

As Ian Carter explains, for products such as pickles and some sauces, air cleaning is a perfectly adequate way of checking for container cleanliness between depalletising and the filling stages. On the other hand, air cleaning is not suitable for narrow-neck containers and bottles, he points out, where air cannot circulate effectively.

In a very different kind of cleaning process, Industrial Washing Machines (IWM) has made a shift from tailored to standard systems with its sealed pit rack washer.

Large racks or trolleys, used in processes such as baking and smoking, pose certain challenges at the washing stage. The standard rack washer design, developed over many years, places a large cabinet over a water tank sunk below floor level, so allowing recirculated wash and rinsing water to return via gravity, as well as safe and convenient floor-level loading.

Contaminated with food debris

But IWM noted a tendency for the sunken pits to become contaminated with food debris, often in warm, moist conditions with poor access for cleaning. The company's answer was its sealed pit system, which eliminates the usual gap between the base of the machine and the edge of the pit. The latest version also uses a travelling jet system which, says IWM, ensures good internal washing performance as well as external hygiene.

IWM has a range of washing systems for trays, crates, Eurobins, pallet-bins, pallets and racks. This includes its Crusader T800 High Care traywasher, which can handle up to 800 containers an hour. Treatments can include sustained jetting with hot and ambient re-circulated water and detergent and, from a separate tank, jetting with rinsing water heated to 85deg C for sanitisation. A blow-off and drying section is also available.

Newsmith Stainless designs and builds basket washing, handling and product loading system for bakeries, consisting of an automatic destacking system, trash dump and high speed soaking wash systems designed to deliver clean, dry baskets.

On completion of the drying process the baskets are automatically conveyed to the Newsmith product loaders which automatically load bread and rolls, in multiple pattern formations and at a speed up to 90 pieces a minute.



Improving rack washer cleanliness: Left: Sinking a rackwasher in an open pit can lead to contamination from the gap between machine and pit. Right: Sealed system from Industrial Washing Machines maintains hygiene

The Food Machinery Company supplies cabinet washers from Dutch company Unikon – which also manufactures continuous systems for trays and other containers – and Danish manufacturer Jeros. Managing director Mike Wilkinson says he has seen particular growth in demand for cabinet washers among customers such as Tate & Lyle, McDonalds Restaurants and food industry supplier Hilt-fields, bringing the total number of Jeros and Unikon washers in the UK to around 700.

In many cases, the use of a cabinet washer has replaced hand washing of utensils or machine parts, using the manual three-sink wash system, with pre-wash, wash and rinse stages, plus air or hand drying.

“Not only are such systems very energy-inefficient, with large amounts of water and chemicals being used, but it is almost impossible to ensure that hygiene is maintained,” says Mr Wilkinson. The fact that issues such as water change are also subjective means that either hygiene may be compromised or else water wasted.

Other installations show the effect of self-contained washers on key packaging machinery parts where CIP is not available.

“Tate & Lyle used to have many problems with damage occurring to the feed tubes to its form-fill-seal machines,” says Mr Wilkinson. This happened en route to and from the wash areas, but also during the washing process itself. “In addition, it was not possible to ensure that they were thoroughly dry – a major issue when working with sugar.”

Installing a washer adjacent to the form-

fill-seal machine resolved the transportation issues. But a washing cycle of just three minutes, with rinsing temperatures up to 82deg C, also provides specific benefits.

“Each set of feed tubes could be washed individually, thus preventing further wash damage, and also would dry rapidly due to the temperature of the final rinse,” Mike Wilkinson explains.

A similar solution was chosen by a “major sandwich manufacturer”, says the Food Machinery Co. Here, there was a problem with key parts of multihead weighers and volumetric depositors being lost or transposed during the hand-washing process. Since then, washers have been positioned next to the various machines used in the factory. A system of lockable baskets is used to ensure the same parts return to each machine.

Food hygiene

Of course, no level of cleanliness in packs and packaging equipment is effective if the safety of the food or drink product itself is not properly managed. In recent years, changes in the types of product demanded by consumers have had an effect on hygiene requirements in areas such as fresh produce.

Saturn Spraying has applied its ‘spinning disc’ system of fine, directed spraying to a number of different processing and auxiliary operations.

According to sales manager Jeff Fletcher, these have included an increasing number of systems for applying sterilant to cut, fresh fruit and other produce. This has largely been

driven by consumer expectations, and the convenience of peeled and prepared product.

“Once strawberries have been dehulled, for instance, they start to degrade. Passing them through a spray machine with a sterilant such as Citrox retards mould growth, and can add an extra two to three days shelf life,” he explains. Open-cup mushrooms, peeled carrots and prepared salads are among other items which can benefit.

Saturn’s Discmaster system has traditionally been used for the application of ingredients such as flavourings to the outside of snack biscuits and other products. Other growth areas in processing have included fat spraying, where fat content can be substantially reduced compared with deep-frying.

But the effectiveness of the ‘spray curtain’ has also been felt especially at the crossover point between ‘low risk’ and ‘high risk’ processing areas, says Mr Fletcher. This distinction is nothing new, he adds: “But more and more, the requirement is for absolute sterility.”

As a result, the application of sterilant in the Saturn Sanitising Tunnel has become a popular process. Everything from utensils to full ingredient pouches and other containers can be fed into the preparation area this way, he says. ■

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For full details of all PPMA members able to supply washing and rinsing equipment, consult the PPMA machinery finder service, tel: 020 8773 8111, or visit www.ppma.co.uk