



CLOSURE STERILIZATION TECHNOLOGIES

Peracetic Acid and Hydrogen Peroxide based sterilization technologies for caps and foil.



Closure sterilization technologies

In the aseptic process, cap sterilization is just as important as container sterilization, as caps also come in contact with the beverage. Caps must be sterilized before capping to reduce the risk of microbiological contamination and to ensure product safety, by preventing alterations to the beverage's desired properties, including taste, smell or appearance. Likewise, sterilization ensures the product maintains its shelf life.

To ensure that customers achieve this goal, GEA has developed Sterilcap, a portfolio of modular units to sterilize plastic caps, both flat and sport, using peracetic acid (PAA) or hydrogen peroxide (H₂O₂) based technology; furthermore, GEA offers the Sterilfoil unit for the sterilization of aluminum foil lids using H₂O₂ technology.

Specifically designed to properly combine a highly effective sterilization treatment with the

low consumption of utilities, both Sterilcap and Sterilfoil can integrate all GEA aseptic or ESL filling systems for both High Acid and Low Acid beverages in PET or HDPE bottles.

GEA closure sterilization units are able to achieve up to 6Log reduction on *B.atrophaeus*, meeting the highest required level of decontamination.

Advantages

Both PAA- or VHP-based sterilization technologies guarantee an effective and gentle closure treatment avoiding any cap deformation or the removal of the slipping agent.

GEA closure sterilization technology allows a quick changeover from flat to sport cap without any mechanical intervention and without losing sterility.

PAA TECHNOLOGIES

Sterilization of caps using a PAA-based solution is effective and reliable. Depending on the type of caps and line speed, it can be performed by immersion or high-pressure spraying.



Sterilcap IM

Sterilcap IM sterilizes caps by immersion within a bath of PAA solution with a spiral routing. The spiral path significantly reduces the footprint of the module, while allowing long treatment times: this means that it is possible to use PAA at lower concentrations and temperatures to guarantee the same microbiological killing rate. This also minimizes the stress on the caps to avoid any deformation of the cap and



the removal of the slipping agent.

After the sterilization phase, caps are then rinsed with a spray of sterile water. Sterilcap IM is usually matched with the GEA PAA-based, high speed, aseptic filling blocs. The Sterilcap IM achieves the same microbiological sterilization target that's specified for the bottles on both internal and external closure surfaces.



Sterilcap L

Sterilcap L sterilizes internal and external surfaces of both flat and sport caps with PAA spray and is suitable for low-speed lines.

The caps are sterilized with a spray of PAA solution whilst they move through a linear tunnel. Before the caps are applied to the bottle, they are rinsed with water in order to guarantee that all residues are totally removed.

VHP TECHNOLOGIES

VHP technology relies on the dry sterilizing effect of H₂O₂ vapor at the correct concentration and temperature. Both sport and flat caps can be treated on the same machine.



Sterilcap VHP R

Sterilcap VHP R is the perfect cap sterilisation system for GEA Dry Aseptic Solutions. It is designed to provide a buffer of caps to ensure the necessary accumulation required by blowfill technology: if there is a jam in the sorting rail, the aseptic system can be emptied without any loss of preforms or bottles.



Sterilcap VHP L

Designed specifically for both aseptic and ESL applications, it can achieve a wide range of decontamination targets. Its design allows the caps to move forward by using only vapour flow and gravity.



Sterilfoil VHP

Specifically for aluminum foil treatment, it is suitable for both aseptic and ESL applications and it can achieve a wide range of decontamination target levels. The Sterilfoil VHP sterilization chute is electrically heated on both sides to prevent H₂O₂ condensation, avoid foil jams and prevent damage that would later result in poor foil application performance.

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