GEA ECOSPIN 2

Aseptic filling bloc for high speed lines.

PAA STERILIZATION: LONG TERM PROTECTION.

A robust, proven and reliable aseptic technology.

The 6th generation of PAA sterilization technology
With ECOSpin2, GEA reaches the 6th generation of PAA sterilization technology. It focuses on the saving of space, water and energy which, makes GEA technology the best choice from operational and investment point of view.

The system consists of bottles and caps sterilizer and rinser, filler and capper enclosed within a class 100 microbiological isolator which provides a physical barrier between the external environment and the microbiological controlled area.

The overpressure inside the microbiological isolator is created by independent energy-saving active filtration stations equipped with redundant final HEPA filters.

All relevant internal components can be easily reached through intervention gloves which avoids the operators having any contact with the sterile zone. This keeps the operators safe and avoids any risk to the aseptic environment. Format changeover can be performed, with no loss of sterility, using manipulation gloves.

GEA ECOSpin2 technology uses only one sterilizing solution, based on Peracetic acid, to sterilize the environment and the packaging materials. The PAA solution is recovered and, once concentration and temperature are restored, reused in a closed loop.

ECOSpin2 is equipped with all the necessary process units to produce sterile water, Peracetic acid solution, the cleaning agent and the sterile filtration of all the fluids.

1st generation: 1993
Rotary aseptic high speed line with clean room

2nd generation: 1996
Unibloc

3rd generation: 2001
Unibloc 2

4th generation: 2005
Unibloc Spin

ECOSpin2 Zero
ECOSpin2 Zero means zero peroxides emissions: liquid PAA solution exceeded is neutralized inside an external tank before drainage phases (end/during production).
Furthermore, PAA and all chemicals fumes are neutralized before releasing into the environment.
This results in the lowest PAA and water consumption.

Production capacity
ECOSpin2 has a speed of up to 72,000 bottles per hour on 500 ml bottle.

5th generation: 2009
ECOSpin

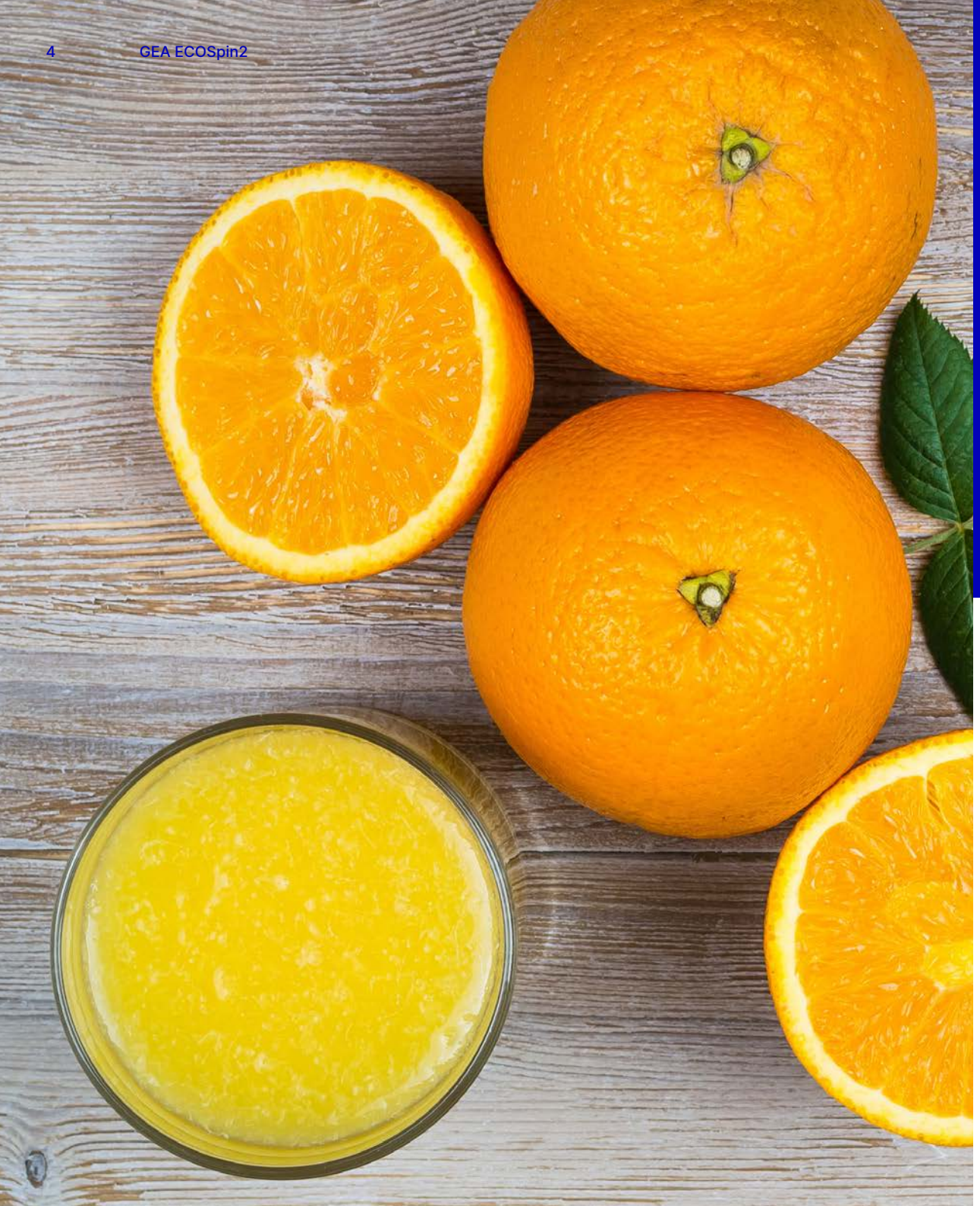
6th generation: 2012
ECOSpin2

2015
ECOSpin2 Zero

Up to 210 hours
for HA operations

Up to 210 hours
for LA operations

No intermediate SOP
during production



GEA ECOSpin2 important features

- Format change over in 30 minutes with no loss of sterility
- Sterilization of bottles performed at temperatures under PET shrinkage limits (65°C)
- Residuals below 0.25 ppm as per FDA regulation
- FDA approved technology

A special attention to quality
GEA aseptic techology is designed to respect the natural features of each product.

STERILE TO THE CORE.

GEA's advanced internal and external decontamination process ensures the aseptic integrity of every bottle, regardless of its shape. There's no compromise for sensitive products.

Bottle sterilization
External bottle sterilization treatment is a GEA distinctive feature. It is designed to be effective on every bottle shape to avoid microbiological carry-over into the filling area. This ensures GEA's lines continuously operate under aseptic conditions, with no intermediate environmental sterilization cycles, maximizing the production time.

A full cone or blade penetrating nozzle is used for internal bottle sterilization treatment. This nozzle generates a high pressure PAA solution spray that is able to decontaminate the "Cold Spot" in inoculated bottles.

- The high-efficiency spraying system keeps treatment time very short.
- The efficiency of each nozzle is automatically checked by a Smart Sensor that ensures proper sterilization of each bottle.

The internal bottle sterilization treatment guarantees over 6 log reduction.

Moreover ECOSpin2 has a new no valve sterilizer design that makes the machine simpler. No valve design means even no electrical parts allowing easier machine maintenance and less wear and tear.

GEA external sterilization is applied to the bottle surface, with dedicated manifolds, to treat:

- Bottle external neck
- Bottle external body
- Bottle external bottom

GEA external bottle sterilization can reach over 5 log reductions.

Heading towards zero water waste with GEA's Add Better" solutions

Efficient nozzle design for maximum water savings
A key feature of the water rinsing unit in GEA's PAA-based aseptic filling systems is the advanced design of the nozzle, which was developed to optimize performance and sustainability. Thanks to its improved shape, the nozzle enables shorter rinsing times and optimized water flow, all while maintaining high sterilization standards and keeping residual peroxide levels inside the bottle below 0.5 ppm.

This significantly reduces water consumption by up to 91% compared to previous models. The new nozzle can be offered as a service upgrade and retrofitted to existing lines, achieving savings of up to 83%. These results make the system a highly effective solution for manufacturers looking to reduce their environmental footprint and lower operational costs.

Second rinsing water recovery system
The GEA Ecospin2 takes a significant leap forward in sustainable aseptic filling, integrating the new second rinsing water recovery system. Designed to help customers meet their environmental, water waste and operating cost reduction targets, this innovation allows for the reuse of a significant amount of the rinse water used in the wet sterilization process.

The water from the first rinse, which has a higher concentration of peroxide residue, is partially reused to prepare the sterilizing solution. The system also recovers and reuses the water from the second rinsing phase.

This intelligent management of water streams enables the recovery and reuse of up to 86% of the rinsing water during operation, which significantly reduces the discharge of fresh water. As a result, the overall water consumption for rinsing drops by up to 50%, representing a major step forward in both environmental responsibility and operational efficiency.

The system is protected by a patent granted in 2025.

Caps sterilization and rinsing
Sterilcap IM is able to sterilize one-piece caps by immersion into a PAA solution. The rinsing is performed by sterile water spray.
The mechanical design has been focused on a jam-free spiral channel where the caps are driven by a PAA solution flow.

Detail of the Sterilcap IM

Engineering for a better world.

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