

**Aseptic packaging**  
Sources Alma is moving  
towards zero chemistry with:

**BluStream<sup>®</sup>**  
Sterilization has never been safer





# 2 times less chemicals on the line, just by changing the cap treatment

In 1982, Sources Alma adopted aseptic packaging for several of its still drinks. It was then the first company in France to go that far in terms of safety. The company asked Serac, which was already specializing in aseptic packaging, to design its new lines.

40 years later, Sources Alma still relies on Serac to innovate. It has equipped one of its lines with a **BluStream®** cap sterilization module.

**BluStream®** is a dry, physical sterilization treatment, performed at room temperature without chemicals. It uses electron beams to destroy micro-organisms.

**BluStream®** is a breakthrough innovation in the food packaging market which has required over ten years of research. This treatment has already won several awards from the industry, amongst which is an « “Oscar de l’emballage” » in 2019.

Safer for the consumer, the operator, and the environment, **BluStream®** meets the new requirements of beverage manufacturers. It has been used in industrial production at Sources Alma since the beginning of 2021, on a line of flavored still drinks, where it processes 30 million caps per year.

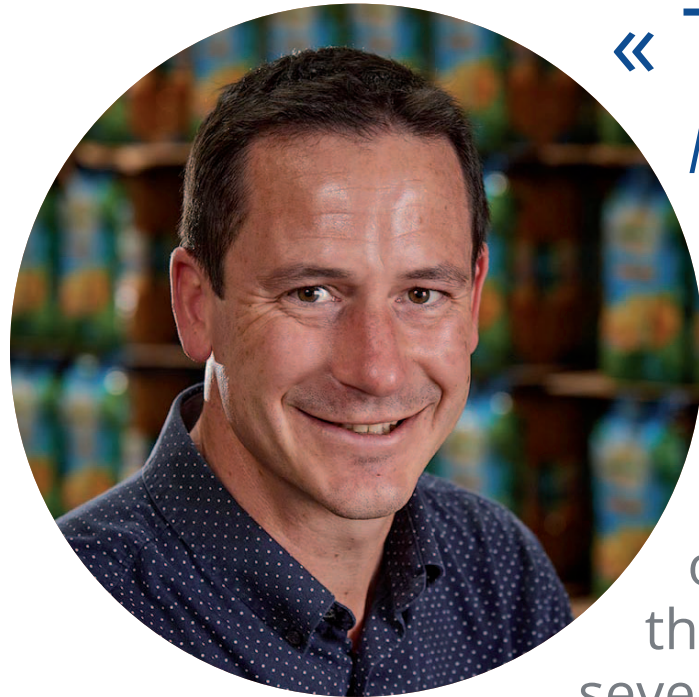


# SUMMARY

- I. Chemical-free aseptic packaging
- II. The cap, a critical point in the sterilization process
- III. Experience feedback on BluStream® technology in production



# I. Chemical-free aseptic packaging



« The elimination of chemicals has many advantages »  
*Romain Leclercq - Sources Alma*

« The Sources Alma group is the French leader in the bottled water market. It also offers soft drinks under the CRISTALINE brand and several distribution brands.

Our **BluStream®** cap sterilization module is installed on an aseptic packaging line for flavored waters, iced teas and fruit-based drinks. Due to the ingredients of these beverages, great care must be taken with their preservation. That's why we switched to aseptic packaging 40 years ago. Working in aseptic conditions also enabled us to offer drinks without preservatives, now highly appreciated by consumers.

We operate numerous exceptional mineral water sources. Our mission is to make high-quality natural water available to as many people as possible.

We are therefore particularly sensitive to the preservation of this essential resource; it is one of the pillars of our CSR strategy.

Sources Alma discovered **BluStream®** technology in 2020 during a visit to Serac. We had decided to optimize our lines, especially in terms of water consumption therefore very interested in dry sterilization.

A chemical-free treatment was also offering additional benefits: no chemical handling risk for operators, fewer environmental and economic constraints.

We decided to initiate an experience curve on this innovative technology with a first cap sterilization module.»







## Our BluStream® chemical-free treatment combines high performance with high pace - *Delphine Gueguen - Serac*

As a specialist in aseptic packaging, Serac started working to reduce the impact of packaging sterilization on the environment almost twenty years ago.

In 2005, we launched dry sterilization solutions using gaseous hydrogen peroxide, and at the same time we started research on chemical-free solutions.

We focused our attention on electron beams very early because this technology destroys all micro-organisms very effectively by breaking their DNA chains and generating water dissociation. And the FDA has recognized e-beam sterilization as a proven method.

Nevertheless, it took ten years of effort to transpose it to in-line, high-speed packaging sterilization. That's where the breakthrough innovation of **BluStream®** lies.

Our cap sterilization module uses low energy electron beams, compatible with all plastic materials on the market. Our miniaturized emitters make it very compact and thus easy to integrate on existing lines.

With **BluStream®**, we guarantee as standard a 5 log reduction on typical micro-organisms, at a pace of 600 units per minute.

The exposure time are validated for each application with dosimetry studies and challenge tests.





## II. The cap, a critical point in the sterilization process



With our cap module, we can halve the consumption of chemicals on an aseptic line *Delphine Gueguen - Serac*

All our customers know that the cap is a critical point in the sterilization process. This is true for conventional methods (peracetic acid, hydrogen peroxide) as well as for **BluStream®**.

In both cases, a minimum 5 log reduction must be guaranteed, on complex shapes and in a very short time.

With our chemical-free **BluStream®** treatment, we eliminate the risk of chemical residues in the cap, which is a real concern for manufacturers. And we offer more reliable results than with conventional methods. Because there is a direct correlation between the dose rate absorbed by the packaging and the rate of destruction of micro-organisms.

A 5 log reduction target will determine the dose to be received by the different parts of the cap, a dose that will again,

by mean of a simple equation, define the current to be applied and the necessary exposure time. The dose delivered at each point of the cap is validated by a dosimetry test.

Our machine manufacturer's expertise lies in defining the number of emitters in the sterilization module. The caps enter the module, are aligned on a first star wheel, and pass in front of a first emitter for outside treatment.

Then caps are transferred on a second star where they change orientation before passing in front of several emitters for inside treatment.

Installing a **BluStream®** cap sterilization module means solving the most delicate point in the transition to chemical-free treatments and significantly reducing the line's impact on the environment.







## « Reliability is there » *Romain Leclercq - Sources Alma*

« We have very high safety requirements for our customers, so one of the first conditions we set before agreeing to test **BluStream®** technology was to have log reduction results at least equivalent to those we obtained with peracetic acid.

Cap sterilization is always delicate because of uneven surfaces and crannies that must be reached with the treatment, without impairing the output of the line.

After just over a year of using the **BluStream®** module, we are very satisfied with its efficiency. We get the same or even better results on cap sterilization.

We are currently working without any problem at a rate of 12,000 bottles/hour.

Our next challenge is to be able to process up to 30,000 caps per hour in order to use **BluStream®** on other lines. Serac's technical departments are confident that they will be able to achieve this result by adding transmitters.

We are also looking at bottle sterilization with **BluStream®** to have a complete chemical-free line »





# III. Experience feedback on BluStream® technology in production



« The BluStream® module simplifies our production »  
*Romain Leclercq - Sources Alma*

« With the **BluStream®** technology, the work of our operators is made easier and safer.

They no longer need to handle chemicals or prepare decontamination solutions.

They only have to manage the cap cartons and bags. They don't need to check the concentration and temperature of the solution either; all the technology is embedded; they just switch on the module. Sterilization is continuously monitored with an alarm system.

We have also saved space. The **BluStream®** module is installed on top of our machine, and it has replaced our wet hoppers with a single standard dry feed hopper.

The Serac teams were very efficient from the earliest steps of the project to respecting the installation schedules.

We wanted to keep production downtime to a minimum and were satisfied: we started up on time, and very quickly achieved interesting results.

Serac also helped us with the training of operators and the administrative aspect of the project »







« Everything is automatic, it's much less stressful for me »  
*Dominique Aubry - Sources Alma*

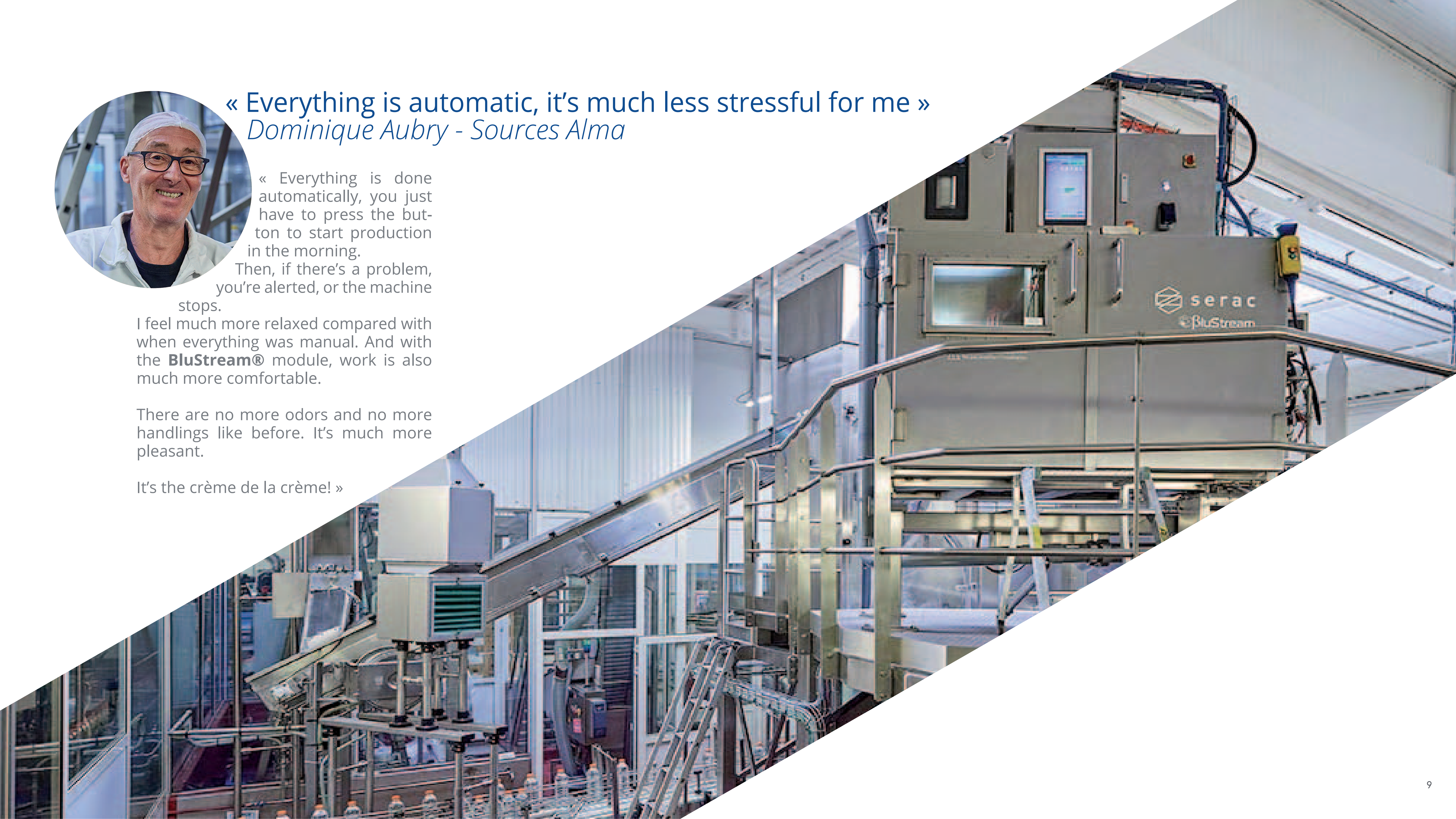
« Everything is done automatically, you just have to press the button to start production in the morning.

Then, if there's a problem, you're alerted, or the machine stops.

I feel much more relaxed compared with when everything was manual. And with the **BluStream®** module, work is also much more comfortable.

There are no more odors and no more handlings like before. It's much more pleasant.

It's the crème de la crème! »





# It's time to initiate change

**BluStream®** opens the way to chemical-free treatments in aseptic packaging.

Our cap sterilization module can be installed on many existing lines. It is a good way to appropriate a major change in technology which can only become an imperative for aseptic packaging in the medium term.

Chemical-free sterilization allows a drastic reduction in water consumption and the total elimination of effluent discharge. It can help preserve our first vital resource.

We are proud to contribute to this revolution and hope that the example of Sources Alma will inspire all companies concerned about their impact on the environment, the well-being of their employees and the safety of their customers.

Our teams stand ready to support you. Do not hesitate to contact Serac.







# BluStredim<sup>®</sup>

Sterilization has never been safer



[serac-group.com](http://serac-group.com)