



## **“AQUAZERO”**

Optional for all Steam Sterilizer Systems



Infection Control System



Infection Control System

# “THE CISA GROUP COMPANY”

## COMPANY PROFILE

CISA has been manufacturing and selling sterilization systems for over 60 years for both hospitals and industrial applications for all sterilization needs.

CISA is an Industrial Group which manufactures hospital and industrial machinery having integrated technological production systems with factories in different continents and its headquarters in Lucca, Italy.

Distributor coordination and technical service centres are managed through CISA branches, located in Joinville (Brazil) for Brazil and Latin America, in Amman (Jordan) for Middle East area, and Singapore for Asia,

as well as distributors and sales offices worldwide to ensure a constant presence and complete service in all countries in which CISA operates.

CISA takes part in a very important field, **sterilization**, that is in continuous development. For this reason it has focused its activity on a line of products that includes: infection control solutions, machinery for washing and disinfecting, machinery for high and low temperature sterilization, software systems for management control and medical waste treatments. All the products in the different lines are “made in CISA” from design to manufacture.



**Gabriele Pacini**  
CEO

Cisa - Infection Control System



# “WITHIN THE CSSD”




## WHERE YOU CAN FIND ME

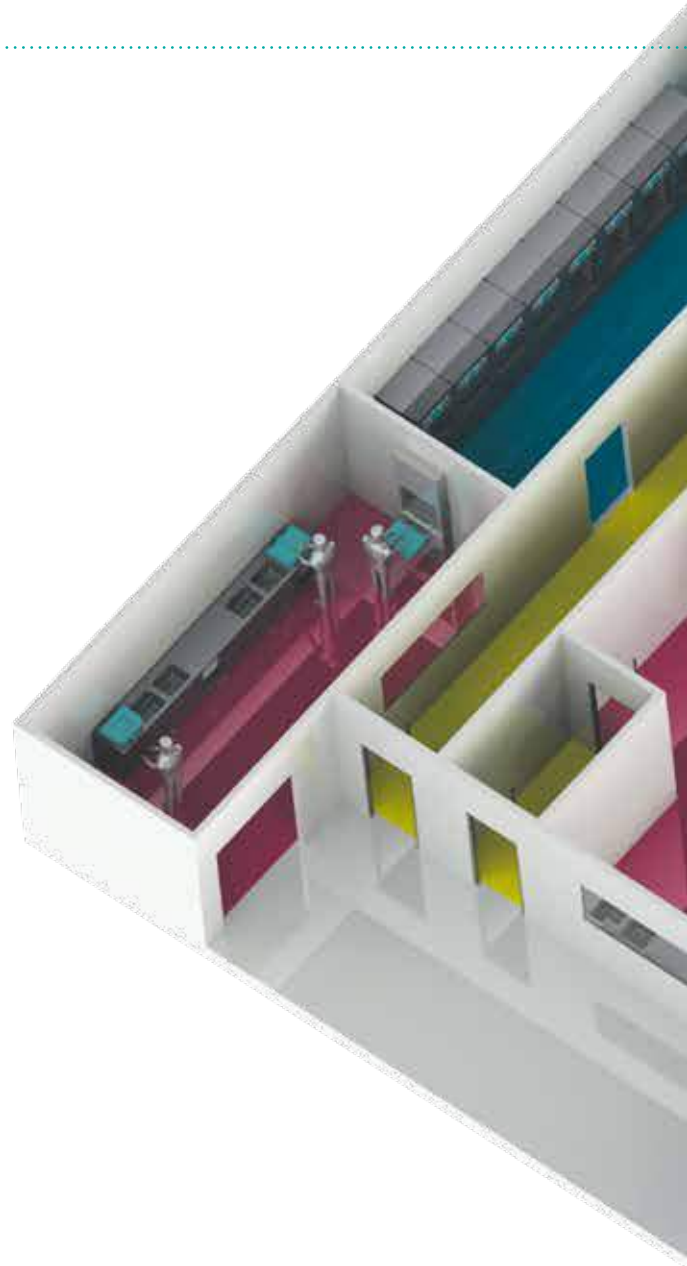
The Sterile Processing Department (Central Supply, or Sterile Supply as it is also known), comprises that service within the hospital in which medical/surgical supplies and equipment, both sterile and non-sterile, are cleaned, prepared, processed, stored, and issued for patient care. The AQUAZERO optional system can be installed on all Steam Sterilizers CISA (as shown on the legend) according to the regulations of the CSSD, the steam sterilizers are installed in the clean area with pass through access of the sterile area.

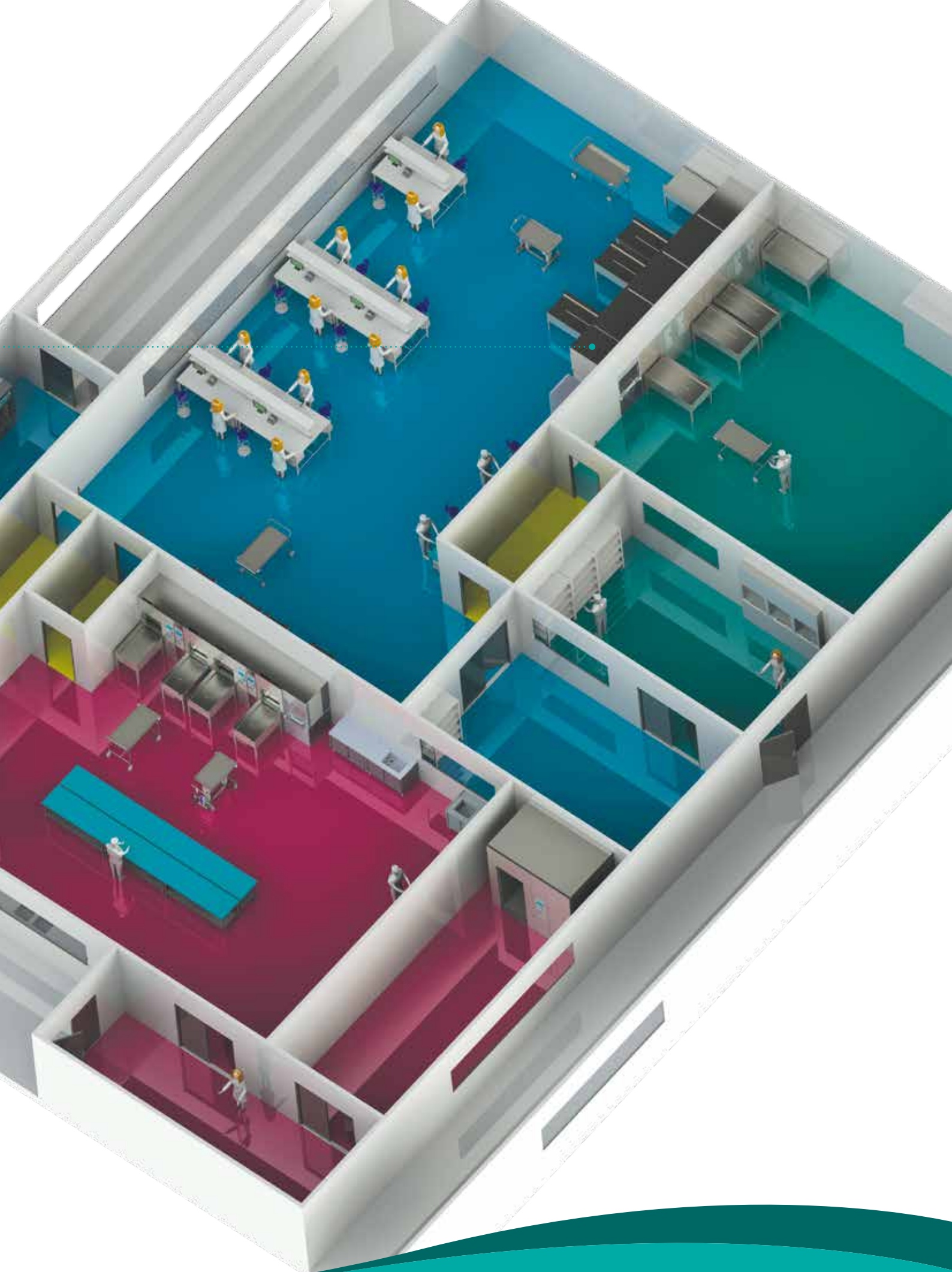
## “Aquazero”

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### Legend:

-  DIRTY AREA
-  CLEAN AREA
-  STERILE AREA





# “AQUAZERO OF STERILIZATION SYSTEMS”

## STEAM STERILIZERS



The new technology for the steam sterilization: Low water consumption, energy savings, cost savings and high quality process in a reduced time.

A technical solution that revolutionizes one of the cardinal points of the traditional sterilization process.

A patented process (Patent n°. EP1696969B1 ) turning out in a high performance steam sterilizer with a negligible water consumption, a feature resulting in more than significant savings on operating and maintenance costs, without compromise on the quality of the process.

Everything merged in a concept oriented on energy saving, nowadays a pressing need for the global community and a duty for modern industry.

SIMPLY, INSPIRING.

# AQUAZERO



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# “A NECESSARY TURNING POINT”

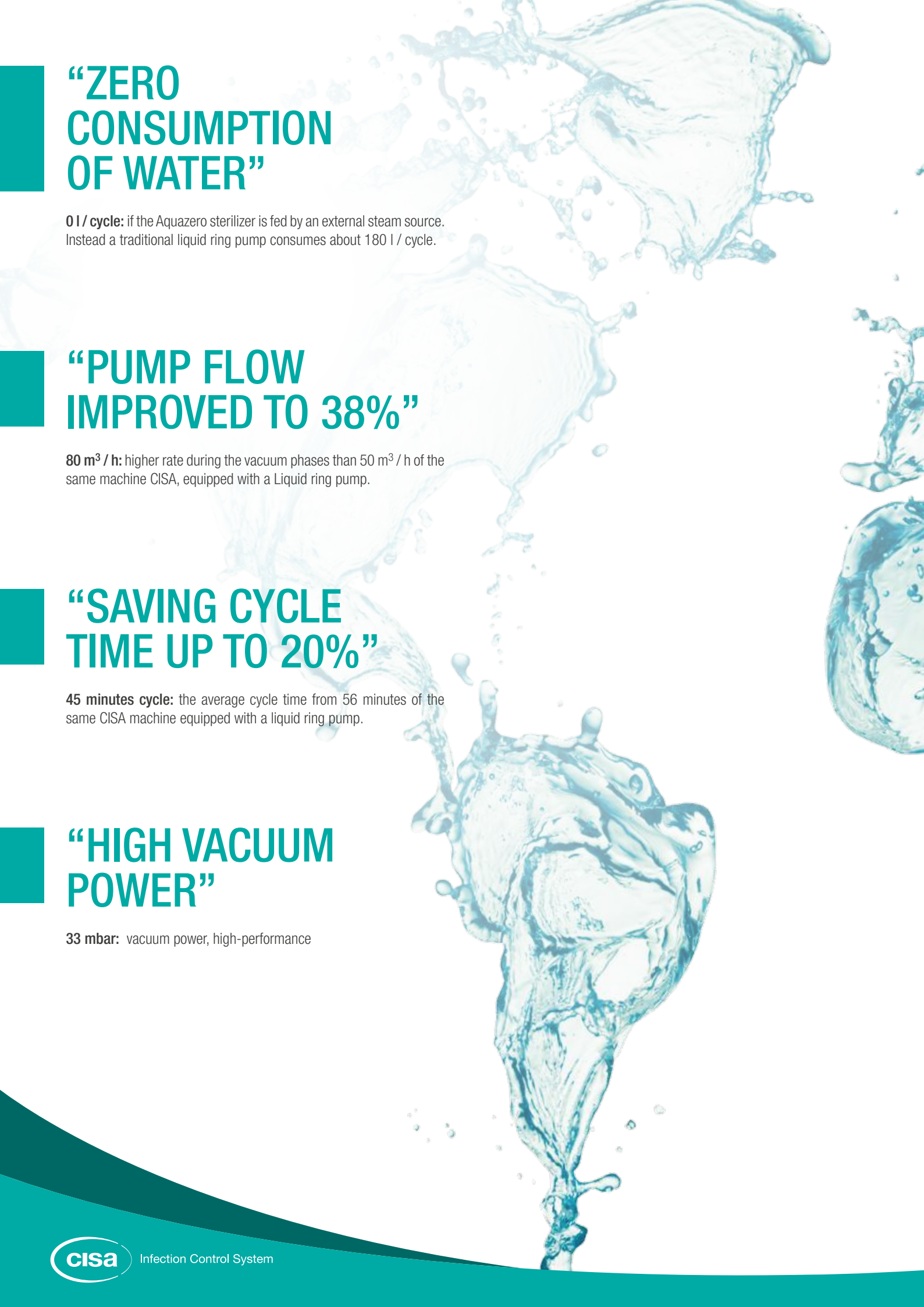
Steam sterilization is a complex process, during which one crucial step is the operation of the device that allows the achievement of vacuum in the sterilization chamber.

Until now, the devices used for this purpose by the manufacturers of sterilization equipment have always required the expenditure of large quantities of water.

As a result, this high consumption became an issue of enormous importance for the entire sector: a problem that nowadays has an increased impression because of the lack or poor quality of this primary resource in many places of the world, not necessarily as remote as one may be led into believe.

Manufacturers of sterilization systems, during the course of their experience, have experienced a variety of technologies over time, trying to contain this large water consumption.

Thanks to the development of specific technical solutions, CISA has finally designed a device that truly tackles the problem: the AQUAZERO technology.

A large, artistic splash of water in shades of teal and blue serves as the background for the entire page. The water droplets and splashes are captured in mid-air, creating a sense of movement and freshness. The background is white, making the teal water stand out.

## “ZERO CONSUMPTION OF WATER”

**0 l / cycle:** if the Aquazero sterilizer is fed by an external steam source. Instead a traditional liquid ring pump consumes about 180 l / cycle.

## “PUMP FLOW IMPROVED TO 38%”

**80 m<sup>3</sup> / h:** higher rate during the vacuum phases than 50 m<sup>3</sup> / h of the same machine CISA, equipped with a Liquid ring pump.

## “SAVING CYCLE TIME UP TO 20%”

**45 minutes cycle:** the average cycle time from 56 minutes of the same CISA machine equipped with a liquid ring pump.

## “HIGH VACUUM POWER”

**33 mbar:** vacuum power, high-performance







AQUAZERO



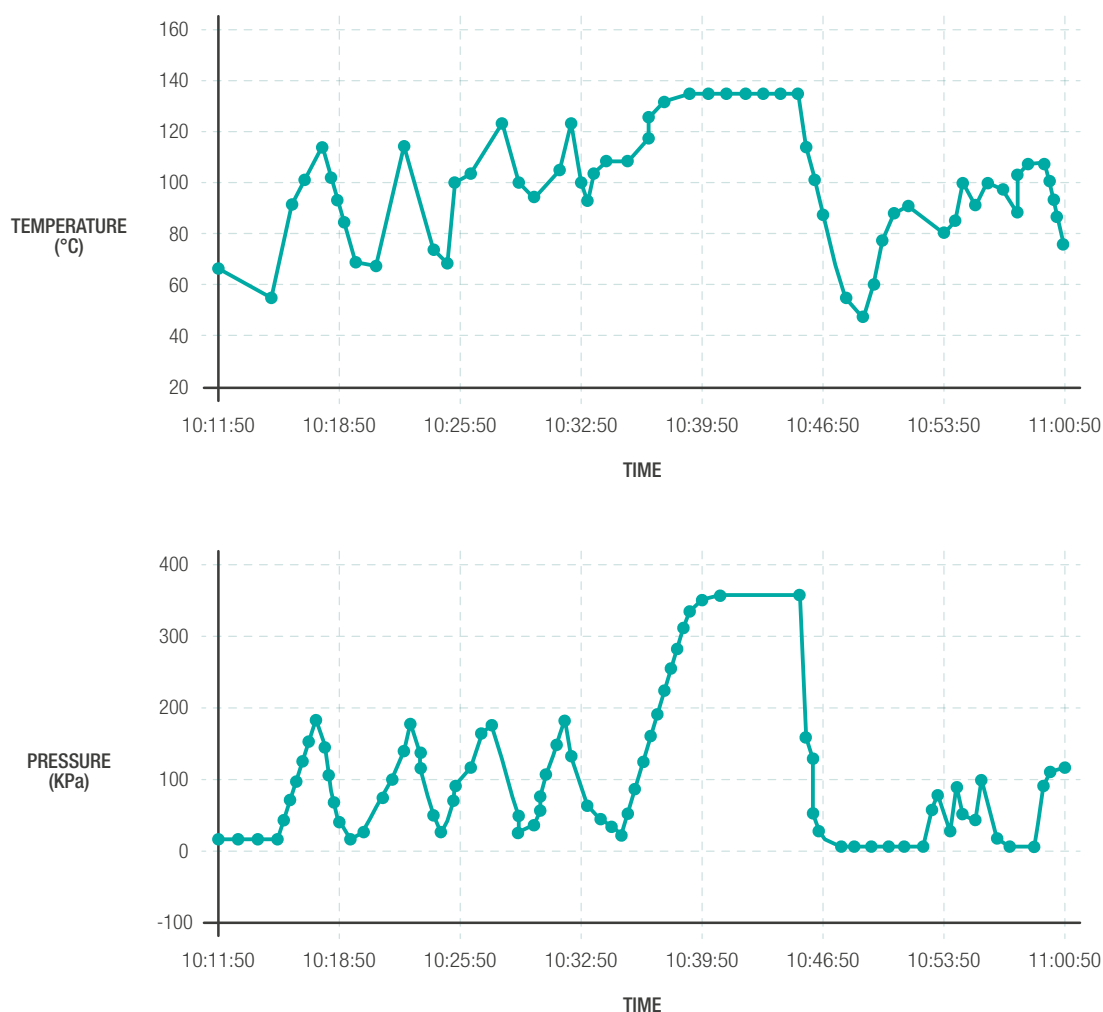
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# “PERFORMANCE OF A CYCLE”

## STANDARD STEAM CYCLE



## “PRE VACUUM”

### AT THE BEGINNING

Each steam sterilization cycle requires pre- removal of the air from the chamber, to ensure optimum steam diffusion in the chamber and to eliminate any possible resistance caused by the presence of residual air; the air removal is carried out by entering steam (positive pressure) and vacuum (negative pressure) with sequential impulses, in different forms and quantity as a function of the loading material and the selected cycle. This initial process of vacuum creation removes from the chamber and from the load bigger amount of air as possible. It is also used when pre-heating for the same load.

The quality of the subsequent phases of the sterilization cycle depends totally from the vacuum quality created at this stage of the process (Pre vacuum).

The quality of the pre-vacuum is then not calculated by the number of steam drives but from the vacuum quality, better quality vacuum means greater air removal and a lower air resistance and consequent good results in sterilization.

## “POST VACUUM”

### AT THE END

The post vacuum and combined steam in the steam chamber are used with a drying function. The quality of drying depends on three factors: temperature in the steam chamber, time, and quality of the vacuum. While the temperature, that within the steam chamber is limited for safety reasons, the time required to be as less as possible, the real difference in the quality and in time drying is given by the subsequent vacuum.







# “COST AND QUALITY PRODUCTION”

## REPROCESSING AS A SUPPLY CHAIN

As in all world standards the quality of pre and post vacuum must be ensured within predetermined limits. If we look at the functions of sterilization and CSSD we must think of sterilization as the realization of sterile products starting as a process of contaminated materials that must be perfectly controlled to ensure the safety of the patients who come into contact with the final products (medical equipment), thus obtaining at the same time safe conditions of the worker and the environment and also a guarantee of a product safe in case of re-use of those materials.

# “CALL THIS PROCESS A PRODUCTIVE PROCESS”

## AN INDUSTRIAL APPROACH

The production quality is measured by having the maximum of the products with the minimum cost; and the cost is a function of the times of production; so with less time we will have lower production costs and by this you will get a better process.

# “VACUUM TECHNIQUES”

## A CLASSIC APPROACH

There are different techniques in the creation of the vacuum; so far the most efficient from cost point of view, has been the technique of the water ring pump; this technique requires the use of water for cooling the vacuum pump: the lower the temperature of the entered water is, the better the pump performance of the vacuum will be. The other system used is the Venturi system that consumes more water and requires low water temperatures to generate the vacuum. This is the reason why steam sterilizers require feeding the vacuum with large volumes of cold water.

# “WATER RECOVERY SYSTEM”

## THE COMMON WORK AROUND

Some customers and producers exploit re-use solution of the water with a water recovery system in a closed circuit so as to reduce the consumption; the system is used after already mixed into the circulation water with fresh water in order to reduce the temperature and use the cooling system discharges.

But even this system cannot completely reduce consumption of water, also it increases the duration of the cycle and requires the provision of cold water; then in those areas in which the temperature water is particularly high, the functionality of the system of water recovery is too limited and the wrong use of the recovery system can have a negative influence on the quality of the pre and post vacuum with results that are not guaranteed for the entire sterilization process.

# “PRODUCTION COSTS”

In addition to the pre-washing costs, decontamination, and packaging, now we take into consideration what are the related costs of the most important stage of the process, namely the real sterilization. The cost for the sterilization is the result of individual cost factors: the value of the equipment to the operator's cost; from consumption of materials (water, energy, ...) to the next of materials verification. All this in function of the total production volume, which can increase if you reduce the time of each cycle!

Ultimately the main factor affecting the cost is therefore one linked to the consumption of water and its treatment!

# “WATER FOR STEAM STERILIZERS”

The water is an important factor in the generation of the vacuum; and the water consumption is high, up to 600 liters per cycle, which means that in 10 cycles of sterilizations per day the water consumption of each machine can reach 6,000 liters: a hospital in practice with

500 bed and 5 sterilizing machines can consume up to 30,000 liters of water per day!

In addition, water has to be treated (not hard) to ensure functionality of the components and should be cold to ensure good results!

# “THE PROBLEM OF THE WATER”

In many areas of the world, the water temperature can exceed 30 degrees, and also can be very hard; The costs of water are high, which causes big problem of management for the whole central sterilizations as they increase the production costs of the process time, and it becomes necessary more maintenance, since the quality of the sterilization and drying are not guaranteed!

# “AQUAZERO”

Aquazero is the name given to the innovative patented product of this year after a long and intense research, and a process of development that has led to the creation of a vacuum pump with high performance without the use of cooling water; the pump can achieve better results in the formation of pre and post vacuum, with a reduction to 75% of the cycle time than the standard duration.

It reaches and exceeds the required parameters for the vacuum with a process totally independent that has no environmental consequence surrounding and minimum maintenance costs. The vacuum pump has a cost / benefit drastically convenient than the costs of using a water system, and in any case lower than those of any other system for the creation of the vacuum.

Aquazero is the new technology that will reduce water consumption in steam sterilization.









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