



# High Temperature Steam Sterilizer

## Hospital Application





**TECHNOLOGIES  
FOR INFECTION  
CONTROL**

**SINCE  
1947**

**85**

EMPLOYEES IN ITALY

**70**

EMPLOYEES IN BRAZIL

**30**

SERVICE ENGINEERS

**>8%**

ANNUAL R&D

*CISA was established in 1947 in Italy: it was one of the first companies to develop autoclave sterilizers for the healthcare industry.*

With its headquarters in Lucca, at the heart of Tuscany, and its sister company Cisa Brazil in Joinville, Santa Catarina, CISA is a truly global company, and counts as one of the seven largest players on the world market.

**CISA GROUP TECHNOLOGY AWARDS**



**2018  
8TH PLACE**  
EU R&D IN TUSCANY

In 2018 CISA came in eighth in Tuscany in a European backed Research and Development programme. The Company was awarded 326k Euros.



**2019  
FIRST PLACE**  
R&D IN TUSCANY

In 2019 CISA Group was awarded the First prize by the Region of Tuscany for the Best R&D Project of the Year. The Prize is called Toscana Innovazione



**2020  
INVITALIA**  
National Anti-Covid Effort

CISA Production was among the 15% of Italian Companies admitted to #CuraItalia, the national effort to support investments against Covid-19.

**FAPER GROUP**

In 2013 CISA was incorporated into Faper Group, a cutting edge Italian technology group, world famous for its breakthroughs in the world of paper converting. Founded by Fabio Perini, an inventor with multiple honours and awards, Faper Group is a market innovator with an established record of outstanding achievements.



**INDUSTRY 4.0 AND LEED CERTIFIED**

CISA Group's CSSD equipment is Industry 4.0 certified. Because of its water and energy saving, LEED green construction points are awarded.

## Hospital steam sterilizer

CISA is following new updated and developed technology for steam sterilizers. This technology is based on experience accumulated through the years, investments and an innovative R&D department introducing continuous updates, as well as an efficient and powerful team in the field of healthcare solutions. CISA's technology ensures high quality equipment for hospital applications and patient safety, with optimum results at low running costs.

## Within The CSSD

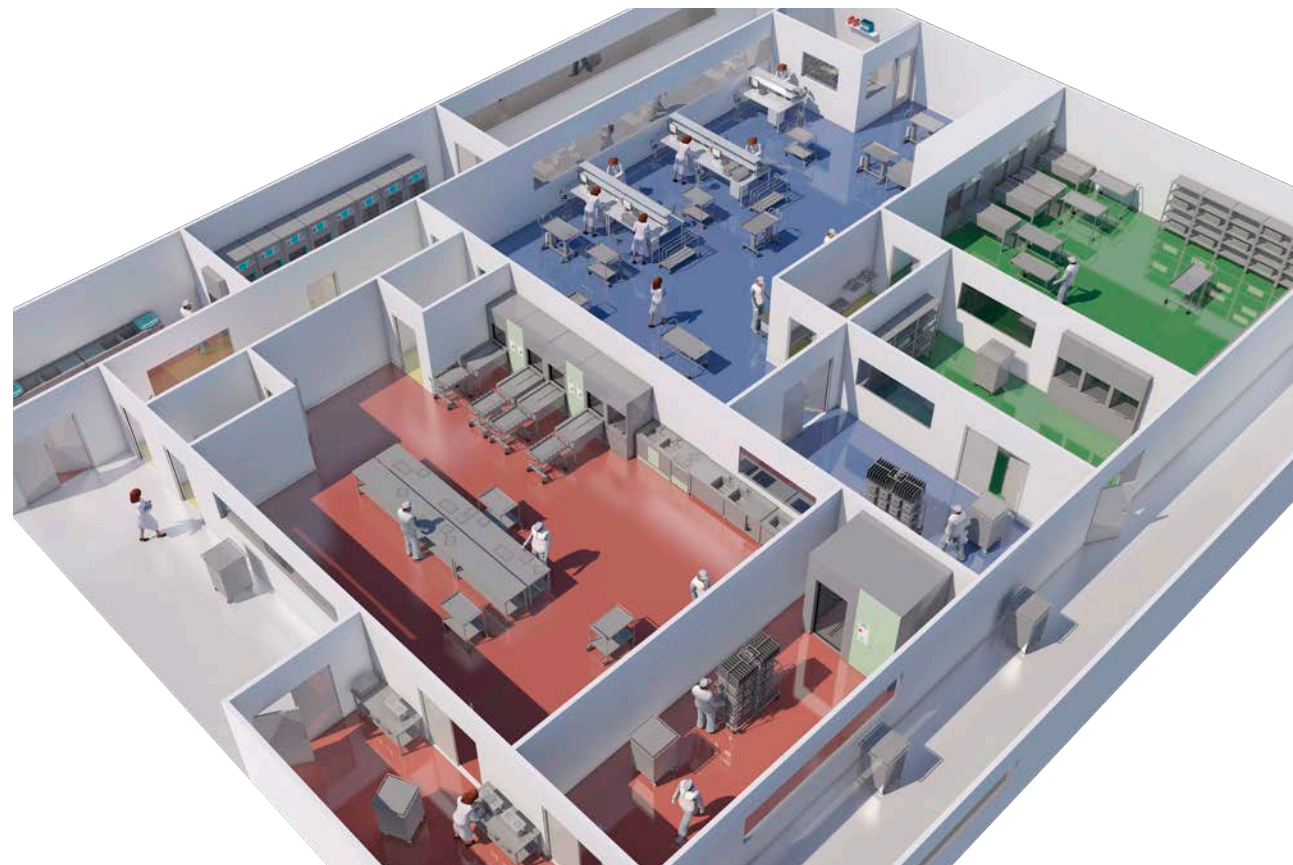
### Where You Can Find Me

Central Sterilizing Service Department 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. CISA's High Temperature Steam Sterilizer is installed, following CSSD regulations, inside the clean area (as shown in the caption), with pass-through access to the sterile area.

## High Temperature Steam Sterilizer

### Hospital Application

- Dirty Area
- Clean Area
- Sterile Area



## Why use a CISA hospital steam sterilizer

The machine is designed with PLC industrial grade microprocessor control for higher safety and guaranteed reliability; CISA's R&D engineers have used advanced design to optimize the machine for hospital use by working, on quality, safety and ergonomy.

The machine is built with the highest quality components for perfect hygiene, perfect operation, high durability and maximum safety.

Stainless steel of the highest quality is used for assembling the machine. The machine frame and front panels are manufactured using stainless steel 304L. The hydraulic plant and pipes are manufactured using stainless steel 316L.

The pressure vessel and steam generator as well as all steam pipes are insulated using high efficiency insulation material that reduces heat loss and stabilizes the temperature inside the pressure vessel to improve the quality of the sterilization cycles.

They are designed with a simple user system for operators and in full compliance with environmental requirements and low noise emissions. Machine installation and maintenance are easy and on most of the models, maintenance can be performed directly from the frontal side of the machine itself. Compact architecture and high reliability are the core features of all our models.

## Sterilization Chamber

The chamber is made of AISI 316L with the possibility of upgrade to AISI 316Ti covered with non-toxic, fire resistant insulation foam, with extremely low thermal conductivity and no release of particles. The chamber is electrically polished up to Ra of less than 0.2 micron (mirror finish electrolytic polishing treatment). All welding of the pressure vessel is robotically controlled and checked, thus ensuring homogeneity by using advanced control methods. The chamber is designed to withstand pressure, from absolute vacuum up to +3.5 bar relative pressure factory tested at 5.80 bar, relative pressure.

## Jacket

A full stainless steel jacket made of AISI 316L surrounds the chamber. The jacket is tested at 6.8 bar relative pressure to withstand pressure.

## Steam Generator

The standard equipment features a steam generator is manufactured in stainless steel AISI 316L with powerful heating elements, stainless steel water pump and optional break tanks. The steam generator is equipped with auto cleaning and flushing for high reliability and better functionality.

The machine can be configured for steam generation using one of the following solutions:

- (E):** Built-in steam generator with electric heating
- (V):** External steam supply from hospital steam network (domestic steam).
- (EV):** Combination between **(E)** & **(V)** which enables the user to select the type of heating from the touch screen as internal **(E)**: or external **(V)** without hardware interface.
- (SV):** Steam to steam converter to generate medical quality steam from service steam using the built-in heat exchanging facility.
- (ESV):** Combination between **(E)** & **(SV)** with the same selection method as explained above.

## Automatic sliding door(s)

Automatic sliding doors enable safe & smooth door opening/closure using a pneumatic or electrical system depending on the model. The sliding movement of the door can be vertical or horizontal, depending on the model.

## Gasket and seal

The sealing of the door is guaranteed by the dynamic movement of the gasket obtained through introduction of steam in the gasket seat. The perfectly rounded corners prevent wear and tear on the gasket itself. Vacuum is performed at the end of the cycle to obtain the separation of the gasket from the door, for an easy opening of the latter avoiding damage to the gasket itself; this system does not need maintenance and lubrication.



## Door(s) safety closure & interlock safety

The machine can be manufactured with a single door (1P) or pass-through double doors (2P).

The machine is provided with high safety features for the door(s), including the following:

- Both doors (in case of double doors execution) cannot open at the same time, as the interlock safety device prevents cross contamination
- The safety lock does not enable door opening if a cycle is running or if the chamber is pressurized
- There is no cycle start or steam inlet until the door(s) have been checked and are tightly closed
- For operator safety: door closure is stopped if an obstacle is found on the way of the closure.

## Control panel

The human interface is based on a modern industrial grade component designed with a smooth surface for hygiene and easy cleaning. The control panel is provided with standard 7" HMI touch screen upgradable to 10", built-in 2" dot matrix printer, optional chart recorder, emergency button, door control buttons, pressure gauges for chamber, jacket or the steam generator, and is mounted at an ergonomic level position to enable good view and easy control.



## Printer

On the panel there is a built-in printer for cycle documentation which includes: printout of date and time with hospital name, lot number, operator name, selected cycle, parameter values for different cycle phases that can be programmed as per customer requirements, phase by phase display, total cycle time and cycle results (valid or invalid) as well as printing alarms during cycle execution.

## User interface

The touch screen allows to control the following functions:

- Selecting cycle and packing type
- Self-check display before starting the cycle and confirmation of the selected page
- Display of status cycle and parameters (temperature, pressure and time)
- Pages for set-point cycle follow up and real time diagram display
- Audio/visual alarms display with alarm history
- FO Calculation
- Visualization of the last 80 cycles- graphical or value parameters
- Possibility of downloading the cycles on an external USB drive for storage and PC visualization
- Maintenance program for preventive maintenance
- Operator access level control (password protected)
- Calibration & technical pages (password protected)
- Programming of new cycles or modifying standard cycles (password protected)
- Type of steam heating selection
- Programmable automatic start up and shut off time
- Alarm messages in clear text
- Door opening/closing management
- Troubleshooting pages

## Operator access level control

CISA systems allow every operator to have its own identity code by using the predefined password and access level to which it belongs. The levels can be customized for each operator with access to multiple functions. The operator name will be printed and kept in the system for external storage, or transferred to the external supervision/traceability system software.

## Alarms

Audio and visual alarms are defined for operator warning; the alarms list includes multilevel alarms with clear message notifications; alarm levels are configured, according to the level of importance, to stop the machine or the cycle, or to issue a warning notification without affecting the running cycle. The alarm lists are complete for safe and perfect operation for the operators and the machines. The alarms history can display all the alarms that occurred in the last 90 days. Alarms are also displayed on the unloading side in case of double doors execution. The end of cycle alert is included for alerting the user of the finished cycle and unloading process.

## Service & maintenance

The touch screen is equipped with software pages for periodic preventive maintenance, enabling a safe operation of the machine, and a self maintenance program for steam generator discharge with user acceptance. There are technical pages for calibration and parameter control. Easy and friendly troubleshooting pages are added for easy maintenance and service.

## Remote maintenance

The machine, through the Touch Screen, is equipped with a remote access system that allows to be connected to the CISA customer service by means of a simple Ethernet connection with internet access. This represents the fastest way for a CISA technician verify a problem and reduce downtime.

## Start up time & stand by

The machine can be programmed an early start up and warming as well as an auto vacuum leak test cycle before early morning staff arrival. It is also possible to program an early morning B&D test cycle if automatic loading is available.

## Sterilization cycles

All pre-programmed cycles are validated as per EN285 standards. The customer can also run validation using the included validation ports for customer cycles according UNI EN ISO 17665-1.

The autoclave has different programmed cycles, depending on its application.

The default programmed cycles are:

- Sterilization cycle at 134°C for general porous load
- Sterilization cycle at 134°C for general solid load
- Sterilization cycle at 121°C for general porous load
- Sterilization cycle at 134°C (Prions, Creutzfeldt-Jacob)
- Flash cycle at 134°C
- Steam penetration test cycle (Bowie & Dick)
- Vacuum leak test
- Open programmable cycles (from 01 to 60 programmable cycles must be validated; password protected)

## Energy saving system

The CISA sterilizers are designed to reach a high level of energy saving, using optimized power and energy conservation at the same time, without affecting the performance of the cycle, and with full respect for

the environment; they also use different solutions for thermal, noise, drainage and air outlets protection as well as low electromagnetic emissions.

## Cost saving machines

CISA machines are leading products in terms of cost saving. They are manufactured to have very low running and maintenance costs.

## Excellent insulation

The pressure vessel is covered with high-thickness material for insulation, which prevents heat loss. The perfect insulation increases the quality of the sterilization cycle, reducing potential temperature drops. The quality of the insulation material also meets the safety requirements for the operators, never exceeding 45 degrees during the sterilization phase.

## Sterile air

At the end of the cycle, sterile air is injected inside the chamber to obtain uniform pressure, using an HEPA H14 air filter.

## Safety features

According to international and European standards, the machine features a high safety program with a self-test for auto check.

## Quality & safety Our certificates

CISA Sterilizers are built in accordance with the following standards:

- EN 13445 current edition
- UNI EN ISO 9606-1:2017
- UNI EN ISO 15614-1:2019
- UNI EN 285:2016
- Directive LVD 2014/35/EU
- Directive EMC 2014/30/EU
- Machinery Directive 2006/42/EC
- Directive PED 2014/68/EU
- UNI EN ISO 9001:2015
- UNI CEI EN ISO 13485:2016

## Optionals

### Vacuum pump system with aquazero®

The new technology for the steam sterilization, with low water consumption, energy savings, cost savings and a high-quality process in reduced time. A technical solution that revolutionizes one of the key aspects of the traditional sterilization process: a concept oriented towards energy saving, a pressing need today for the global community and an obligation for modern industry.

AQUAZERO by CISA is a system for the production of vacuum that does not require water in order to work and allows the equipment to perform the inactivation cycle under vacuum conditions, guaranteeing extremely fast performances. Compared to traditional methods with liquid ring pumps it presents considerable advantages, including: NO WATER CONSUMPTION FOR THE PRODUCTION OF VACUUM AND NO EQUIPMENT DOWNTIME for

### Maintenance

Most of the Sterilizers are designed to enable front-side maintenance access. The components inside are installed in a way to guarantee easy access for maintenance and are represented with a good engineering layout for better performance.

### Advantages Pre-vacuum phase

This phase is characterised by use of alternating Vacuum/Steam pulsations, which guarantees a good steam penetration inside the load. The type and the quantity of pulsations depend on the chosen cycle.

### Sterilization phase (plateau)

This is the main phase of the process in which steam is maintained inside the chamber at a constant temperature and pressure, depending on the selected cycle.

### Post-vacuum phase

CISA technology uses a powerful vacuum pump that has high vacuum values with less time needed for drying which is one of the most important issues in terms of sterilization.

### Powerful vacuum system

Using a powerful water ring vacuum pump, the sterilizer features a deep and stable vacuum which guarantees excellent air removal in pre-vacuum and excellent drying in post-vacuum phase. The vacuum pump is mounted on a vibration-damping frame to reduce noise. A water recovery system can be added as an option to reduce water consumption.

the maintenance, repair or replacement of the liquid ring vacuum pump, which is subject to hard water aggression.

### Additional touch-screen

An additional touch-screen can be installed upon request on the unloading side (sterilizer with two doors-2P). The dual touch-screen can customize the settings for controlling the machine; one of the two sides of commands can act as a main one.

### TOUCH SCREEN 10”

CISA sterilizers can be equipped on the loading side - or, as an optional, on the unloading side - with a larger, 10” touch screen interface, for a better view of the display commands and consequently for greater usability.

### Drain cooling device

All discharges (vacuum pump, cooling device, chamber and jacket condensation) are conveyed into a stainless steel container with thermostat for temperature control before the exhaust in the pipeline. The device measures the discharge temperature and if necessary adds service water to cool it down. The

drain will be maintained at less than 60°C and it is adjustable for better management of service water consumption.

### Liquid cycle (Natural Cooling)

The sterilizer can be equipped with an additional flexible product probe inside the sterilization chamber to be used as a sampling point of reference for liquids in bottles.. The equipment will be provided with an additional cycle in the main menu to carry out liquid cycles.

### Water recovery device

The water used by the liquid-ring vacuum pump is collected in a break tank, where it is cooled by adding fresh water coming from the supply line and fed back into the circulation line of the pump itself. This system saves up to 75% (depending on the temperature of the water adducted) of the service water used by the liquid-ring vacuum pump, thus optimizing management costs.

### Water storage tank with air gap system

The system is designed to disconnect the demi water in order to protect the functionality of the surge pressure from the water supply. This system carries the water to an open break tank and brings it back to an atmospheric pressure, to avoid back-flow into the supply line.

### Degasing system

The degasser is a technology that allows the removal of non-condensable gas from the feed water: the water supply of the electrical steam generator is accumulated in a tank and is heated up to allow the release of the gas dissolved in the water. This ensures a higher quality of saturation of the steam that comes into contact with the material that needs to be sterilized.

### Air detector

The machine can be equipped with a physical air detector to check the presence of non-condensable gases dissolved in the feed water. The system can be easily regulated using a device for a calibrated leakage.

### Steam generator upgrade

CISA provides the customer with the possibility of choosing steam generated electric power in order to shorten cycle times, especially in the preheating phase. This system makes it possible to save about 15% of

the total cycle time at the expense of greater power consumption. The power of the generator varies depending on the model of the sterilizer.

### UPS backup control system

The UPS backup system is connected to the PLC and the touch-screen and allows to bring the cycle to completion in case of sudden surges or power failure. The cycle remains valid as long as the conditions that ensure the cycle performances have not been compromised.

### Mirror reverse machine

The equipment can be configured in a standard or inverted module. In the first case, the chamber is placed on the left (looking from the loading side) and the technical module to the right, and in the second case the chamber is placed on the right side and the technical module is placed on the left.

### Loading accessories

Accessories for assisted loading and unloading are available for each model, and include: internal trolley (shelving unit), external trolley (loading/unloading transfer carriages) with fixed or electric height-adjustment features.

Loading devices are manufactured in stainless steel with sizes and hooking mechanisms that enable full use of the chamber and smooth operation.

### System for automatic autoclave loading/unloading

The system automatizes equipment loading/unloading operations allowing the washer disinfectant to be loaded or unloaded without a presence of an operator.

Each individual system consists of a device placed in front of each machine, detecting sensors and coupling devices for transfer carriages, manual bypass actuation and safety devices.

The pneumatic mechanism and the electronic control by PLC guarantee a high reliability of the system while preventing injuries to personnel working in close proximity.

## Our product range

All of the sizes and measurements below can be modified according to the different configurations and applications of the machines.

\*U.S. 600x300x300

\*\*U.S. 600x400x200

All measures are expressed in mm. (W x H x D)

	SERIES	CHAMBER DIM	DIMENSIONS 1P-2P	LT - U.S.
<b>P-3000</b>	P-3270 H	322x322x720	700x1850x998-1028	71 - 1
	P-3290 H	322x322x1000	700x1850x1278-1308	101 - 1,5
<b>P-3600</b>	P-3670 H	333x666x720	903x1850x998-1028	157 - 2
	P-3690 H	333x666x1000	903x1850x1278-1308	218 - 3
<b>P-420</b>	P-4270 H	452x452x720	903x1850x998-1028	144 - 2**
	P-4210 H	452x452x1000	903x1850x1278-1308	199
	P-4212 H	452x452x1280	903x1850x1558-1588	255 - 4**
<b>P-450</b>	P-4570 H	452x660x720	1100x1850x998-1028	207 - 3**
	P-4510 H	452x660x1000	1100x1850x1278-1308	296 - 3**
	P-4512 H	452x660x1280	1100x1850x1558-1588	379 - 6**
<b>P-640</b>	P-6464 H	660x660x720	1424x1850x998-1028	313 - 4
	P-640 SLIM H	660x660x720	906X1850X1278-1308	313 - 4
	P-6410 H	660x660x1000	1424x1850x1278-1308	434 - 6
	P-6412 H	660x660x1280	1424x1850x1558-1588	556 - 8
	P-6415 H	660x660x1600	1424x1850x1878-1908	695 - 10
	P-6420 H	660x660x2000	1424x1850x2278-2308	868 - 12

	SERIES	CHAMBER DIM	DIMENSIONS 1P-2P	LT - U.S.
<b>P-1000</b>	P-1110 H	660x1120x1000	2000x2100x1440-1470	739 - 9
	P-1113 H	660x1120x1300	2000x2100x1740-1770	956 - 12
	P-1115 H	660x1120x1600	2000x2100x2040-2070	1178 - 15
	P-1120 H	660x1120x2000	2000x2100x2440-2470	1473 - 18
	P-1125 H	660x1120x2500	2000x2100x2940-2970	1843 - 21
<b>P-1400</b>	P-1410 H	660x1490x1000	2000x2350x1440-1470	982 - 12
	P-1413 H	660x1490x1300	2000x2350x1740-1770	1277 - 16
	P-1415 H	660x1490x1600	2000x2350x2040-2070	1572 - 20
	P-1420 H	660x1490x2000	2000x2350x2440-2470	1964 - 24
	P-1425 H	660x1490x2500	2000x2350x2940-2970	2455 - 28
<b>P-1350</b>	P-1315 H	1050x1350x1600	2800x2100x2040-2070	2268 - 28
	P-1320 H	1050x1350x2000	2800x2100x2440-2470	2835 - 36
	P-1325 H	1050x1350x2500	2800x2100x2940-2970	3544 - 48
<b>P-2000</b>	P-2015 H	1050x2000x1600	2800x2750x2040-2070	3358 - 42
	P-2020 H	1050x2000x2000	2800x2750x2440-2470	4198 - 54
	P-2025 H	1050x2000x2500	2800x2750x2940-2970	5247 - 72

# HIGH TEMPERATURE STEAM STERILIZER

**P-3270 Mini**



**P-3600**



**P-420**





**P-640**



**P-1000**







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Revision 01-2020