



Taking reliability to the next level

GSS L & R Series Steam Sterilizers
for biomedical laboratory research



GSS L & R Series Steam Sterilizers help you achieve safety and scientific data integrity. We work together with you every step of the way to give you the solution you need and can trust.



Safe

Easy to use and safe to handle, the GSS L & R Series is designed to secure containment, process result and operator safety.



Reliable

The GSS L & R Series is optimized for the consistent process flow required to secure repeatability in research.



Flexible

Every biomedical facility and country has specific regulations and requirements. Together we customize the GSS L & R to meet your needs.

When safety and results come first

Securing integrity in research

Sterilization and biocontainment are vital components in biomedical research. To discover the cures of tomorrow you need reliable results every day. GSS L & R Series Steam Sterilizers help you achieve a high level of safety and scientific data integrity.

Biomedical facilities are specialized environments with high demands on predictability, containment and safety. Vivariums have to be clean and contamination-free, and researchers and staff protected from pathogens. You need equipment you can rely on to protect data integrity, achieve sterility and uphold critical biosafety levels. Only then can you focus on what is really important – your research.

In addition, your equipment must comply with local and global regulations and be consistent with best practices. At the same time as it satisfies growing demands for a more sustainable use of energy and natural resources.

With their built-in flexibility, GSS L & R Series Steam Sterilizers can be customized to meet your specific requirements and comply with worldwide regulations. Designed around a proven concept, they emphasize safe processes and easy handling, while reducing environmental impact.

For more than 100 years, Getinge has developed equipment to help improve and save people's lives. We are confident that the GSS L & R Series raises the bar for reliable contamination prevention and biocontainment for biomedical research.

Getinge standard control system for GSS Steam Sterilizers

– secure data integrity and connectivity

Getinge offers a B&R control system for steam sterilizers to meet demands for future digitalization, ease of qualification and validation. This makes it easier to achieve high performance, productivity and a streamlined process within your pharmaceutical production or facility.

Operator friendly

GSS Steam Sterilizers are designed around a proven menu structure to enhance easy handling. A user-friendly and intuitive HMI, with presets for common sterilization processes, supports the operator to secure process safety and repeatability in research or in pharmaceutical production.

User management

The B&R control system is configured with different sets of access levels with improved user management. The control system can be connected to external systems such as SCADA and BMS through OPC UA standardized protocols. Network printing and network storage can be implemented and adapted for increased flexibility that meets your specific needs and IT infrastructure.

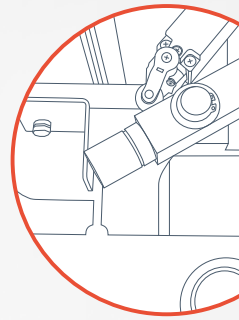


Applications

The sterilizer range is designed for general purpose steam sterilization in laboratory and biomedical research applications.

Application areas	Description	Products
Biopharma production	<p>Component sterilization – Steam sterilizers used for sterilization of parts and components used within pharma production. Typical loads are filling machine parts, tools, containers and solutions. The sterilizer is used as a pass through sluice into the clean production area.</p> <p>Terminal sterilization – Sterilization of finished injectable pharmaceuticals in its final container.</p>	<p>Component sterilization: GSS-P Terminal sterilization: GEV, GEC Closure processing system: CPS</p>
Biomedical research	<p>Sterilization and decontamination in vivarium applications. Typical load is cages and other items related top operation like fodder, bedding, and glassware.</p> <p>Barrier function integrated in equipment for prevention of cross contamination.</p> <p>There is a sub-segment for BSL3/4, where research is being performed on dangerous micro-organisms, with increased containment requirements.</p>	<p>Steam sterilizer: GSS-R, LS-series 700 & 800 Biocontainment applications: GEB</p>
Laboratories	<p>Sterilization in lab applications – Various labs within universities, pharmaceutical production, quality control, food and chemical industry. Typical loads are lab-/ glassware, culture media for sterile testing, liquids in open or closed containers.</p>	<p>Lancer LSS, HS Lab, GSS-L</p>
Heat sensitive goods	<p>Low temp sterilization of heat sensitive goods. Example disposable kits of surgical instruments and other medical devices.</p>	<p>GEE (EtO, Ethylene oxide sterilizer)</p>

Quality without compromise



Vertical or horizontal sliding doors for safety and convenience.

The GSS L & R Series is the latest version of our steam sterilizers. It is optimized to meet the core functionality and safety levels needed in a modern cutting-edge biomedical research environment.

The GSS L & R is engineered with high-quality components chosen to enhance contamination control, encourage a sanitary process, promote best practices and deliver dependable outcomes critical to research, personnel and environmental protection in a biomedical research facility.

Construction and design details, from highly polished stainless steel surfaces to enhanced ergonomic machine interfaces, are carefully integrated into a highly functional system critical to quality assurance.

The GSS L & R can swiftly be put into operation thanks to the refined Quality Process Management

System that secures ease of validation and compliance to the intent of the Good Automation System and ensures compliance to global and regional regulations.

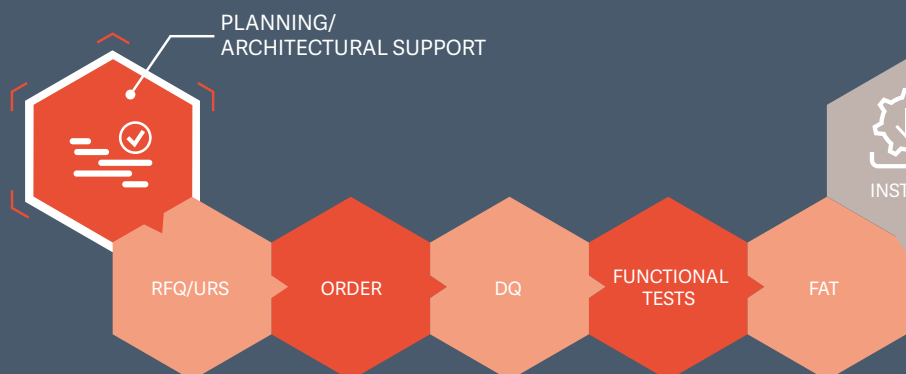
The result is an improved process and solution, designed for easy use and integrated in a controlled biomedical research environment. It is also engineered to reduce your eco-footprint, with several factors that optimize energy and water use, including efficient insulation and minimal mass of pressure vessel.

Stainless steel components are the foundation of reliable piping systems.

With you every step of the way

Securing the right level of biosafety for your biomedical facility demands thoroughness and expertise. To optimize space and resources, we help you with architectural layout and planning. We ensure that putting your new GSS L & R Steam Sterilizer into operation is seamless and consistent with best practices every step of the way.

Our support also includes functional tests in our factory, and service to maintain machine uptime through regular and proactive service.



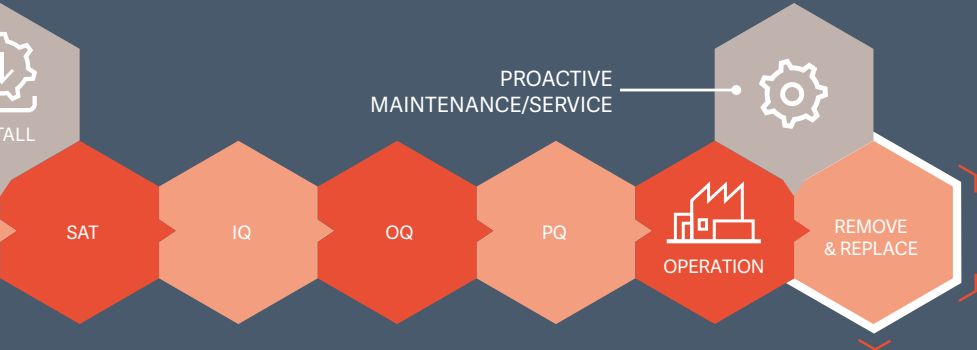


User-friendly display and intuitive HMI for quick, easy use.

High performance liquid ring vacuum pumps for optimal air removal and short process time.

Examples of core features:

- Program combination adapted for lab and research applications
- Intuitive and user-friendly HMI
- Uniform temperature distribution and accurate process control
- Air removal by highly efficient liquid ring vacuum pump
- Fully automatic leak rate test
- ECO-system, recirculation of vacuum pump sealing water
- Stainless steel process and non-process piping
- Stainless steel chamber construction
- Robot welded and highly polished chamber
- Ergonomic and safe automatic sliding doors



Processes

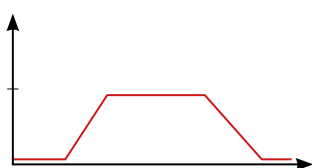
Cycle selection is based on the type of load to be sterilized and how air removal is most efficiently managed for proper sterilization.

Pre-vacuum processes

A saturated steam process with optional pressure pulses to enhance steam penetration covers most sterilization applications where hard or porous goods is to be sterilized. Configurable cycle through adjustable parameters and pressure ramps.

For liquids in open/vented or closed containers

Natural cooling



Jacket cooling



- Cycles for liquids in open or vented containers are provided as standard. Closed liquids cycles are optional.
- Includes load temperature probe.
- Open liquid process utilizes natural cooling,
- Closed liquid process utilizes support pressure during cooling and indirect jacket cooling.
- Provided with stainless steel filter housing with 0.2 μm sterile filter for support air pressure for sterilization of liquids in closed containers.

For multi-use bioreactors

The bioreactor parts and sterilization process itself has challenges like:

- Vented bioreactor vessel
- Liquid bottle
- Tubing

The bioreactor sterilization concept includes a combination of a single pre-vacuum followed by pressure pulses.

- Pre-vacuum removes the majority of ambient air.
- Multiple steam pressure pulses follow the pre-vacuum to remove any remaining air and provide maximum steam penetration into the vessel and flexible tubing.
- To avoid the boil-over effect in liquid media, pressure pulses must be at a pressure level above the saturation pressure for the given liquid load temperature.
- Integrated process yields a complete bioreactor assembly, with liquid media, sterile and ready for service.

For more information see: application brief "Best practices for sterilization of bioreactors"



Loading equipment

– for safe and ergonomic handling

It is vital to protect both product integrity and staff in the biomedical research laboratories.

The loading and unloading trolleys, shelves and racks are designed to optimize a safe work environment and ensure product quality within the biomedical research laboratory,

For ergonomic and safe loading/unloading Getinge provide with the following loading equipment for the GSS R&L-series

- Shelf racks, with additional shelves and rails to be added if needed.
- Fixed or height adjustable trolley for transportation of shelf racks within the facility.
- Shelf trolleys for pit mounted units
- Trolleys in stainless steel with electropolished shelves
- Multiple shelf placement locations on rack for high flexibility



Designed for flexibility

GSS L & R Steam Sterilizers come in a range of 17 different chamber sizes with a flexible set of options and customization possibilities.

Although there is a basic GSS L & R range for core functionality – with standard chamber capacities ranging from 10 to 400 ft³/0.4 to 9 m³ – the built-in flexibility of the GSS L & R allows for customization. Working closely together with you, we design a contamination prevention solution that suits your needs.

Examples of configuration options:

- Single-door or double-door, pass-through models
- Floor or pit-mounted
- Right or left side service access
- Cross contamination barrier (CCB) or bioseal for integration in building
- Door interlock to prevent cross contamination for barrier pass through models
- Integral steam generator options
- In-situ steam sterilization (SIP) of air filter
- In-situ filter integrity test (WIT)
- Effluent retention options for biocontainment applications
- Process for liquids in open or closed containers
- Jacket cooling with water recirculation
- Network connectivity/SCADA
- Data integrity/21CFR Part 11
- Loading equipment: trolleys, shelves and racks



A legacy of engineering

All our steam sterilizers are developed and manufactured in Getinge, Sweden, where it all started in 1904. Since then we have grown to a global company, but still keep the core of our manufacturing close by to ensure quality and control. We take pride in our engineering and give full attention to detail.

Our processes are constantly updated with new technology in full compliance with changing regulations. When visiting our state-of-the-art factory, with a production area of 16,200 m², you find the latest welding robots working side by side with engineers and technical experts with welding qualifications applicable to a global market. All production facilities are certified to ISO 9000 and ISO 14000 standards. We work consciously with our manufacturing and supply chain to reduce environmental impact.



Service without borders

– you can count on our commitment

A service agreement with Getinge gives you peace of mind. Our global service network provides expert preventive, predictive and reactive maintenance to give you control, ensure reliability and allow you to focus on your research.

A good relationship is built on trust and we are committed to serving your needs wherever you are in the world.

With our Service Team by your side, you are ready to meet the requirements of accrediting organizations and government regulatory agencies.

Our services include:

**Spare parts packages • Calibration services • Upgrade packages
• Operator and technician training • Process verification • Validation services**



**Learn more about our solutions:
www.getinge.com/biomed**



Getinge is a global provider of innovative solutions for operating rooms, intensive care units, sterilization departments and for life science companies and institutions. Based on our firsthand experience and close partnerships with clinical experts, healthcare professionals and medtech specialists, we are improving everyday life for people – today and tomorrow.

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