

EO Sterilization Systems  
True low temperature sterilization

**GETINGE**  
GETINGE GROUP





## Ethylene Oxide Sterilization Systems

### Innovative sterilization for heat/humid sensitive products

For over 30 years, Getinge has supplied Ethylene Oxide Sterilization Systems worldwide. Technological advances utilized in our EO product range provide faster, more reliable sterilization while protecting the integrity of products and packaging. Whether you prefer traditional methods or the innovative and time saving combination processes within the sterilizer, Getinge will help you find the best system for your production needs.

#### Ideal Technology for your Application

Ethylene Oxide's (EO) unique properties make it the right choice for heat and humidity sensitive applications, including modern plastics and drug coated medical devices, due to its ability to effectively sterilize at very low temperatures. Additionally, EO can penetrate wrapped and packaged goods making it the ideal technology for terminal sterilization.

#### Optimal Systems for your Requirements

We know that each customer has unique business objective and technical requirements from control systems to product features to facility layout. As your partner, Getinge is ready to assist you with optimizing a complete sterilization solution to best meet your needs. Getinge GEE Sterilizers provide state of the art hardware and controls to provide powerful system analytics and diagnostics along with parametric release and goods tracking options.

#### Providing Value

Getinge ensures that our GEE Series Ethylene Oxide Sterilizers provide true value with regard to design, performance and lifecycle economy. Using leading edge construction techniques and the highest grade materials and components ensures a long life for your system, making the most of your capital investment.

#### Providing Safety

The Safety of your staff is of paramount importance. GEE Sterilizers are built for full compliance with ATEX regulations and all designs are subject to risk and failure analysis techniques (HAZOP, FMEA). Our systems include redundant safety features providing peace of mind for your process.

#### Market and Regulatory Compliance

Getinge ensures each GEE Sterilizer is engineered to meet industry standards while complying with local, national and international regulations including: ATEX, EN, ISO 11135, ANSI, AAMI, NFPA. Getinge vessels are built in compliance with ASME, PED and MHLW. Every unit is manufactured in our ISO 9001 controlled facility.



# Diverse Features

## Exceeding your process and regulatory needs

The complete EO Sterilization process is operated, monitored, and recorded by Getinge's industry leading control systems.

### Control and Monitoring Systems

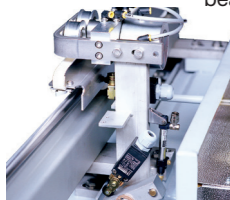
Getinge provides for complete process control through a range of Control System options.

### Load Handling

Getinge's Automatic Pallet Transfer System is a pneumatically operated automated system for moving product through the sterilization process.

### Doors

Powered, heated doors are suspended from a beam on almost frictionless bearings. Driven by safe and reliable pneumatically operated belt systems, they require minimal maintenance and cleaning. When closed, the door is sealed using a unique dual gasket system that will remain leak tight even if all services fail.



### Heating Systems

To ensure rapid heating and consistent load temperature, heated water is circulated through the jacket and doors. If required, a cooling system can also be included to allow rapid transition to lower temperatures.



### Sterilization Chambers

Chambers are fabricated from high quality stainless steel in the world's most advanced pressure vessel factory. Automated welding techniques provide consistency and quality, while laser cutting provides the highest level of fit and finish. The unique, sectional jacket design provides rigidity and allows visual inspection of all welds while reducing weight and providing for controlled and uniform heating.

### EO Gas Dispensing and Container Handling

Ethylene Oxide (EO) is usually supplied as liquid in pressurized containers. Vaporization of EO is achieved through an engineered system that is compatible with the EO container type and ensures liquid EO does not enter the sterilization area. The heating medium can be either steam or hot water giving tight temperature control and flow regulation.

### Sterility Assurance

You need accurate results when it comes to sterilization. Getinge provides a full range of sterility assurance products so you can be sure you're meeting critical parameters. Getinge Assured Tape and Multi-Parameter Indicators are specifically designed for use in EO Sterilizers in conjunction with your monitoring protocols.



### Pre and Post Conditioning Cells

Getinge provides pre-built ventilated enclosures with automatic doors, temperature and humidity controlled air handling system, and necessary utilities to achieve proper conditions of the load before and after the sterilization process.

### EO Abatement Systems

Catalytic Abatement systems are provided to process all EO used in the sterilization and degassing process including from the chamber, piping, and vacuum pump water system.

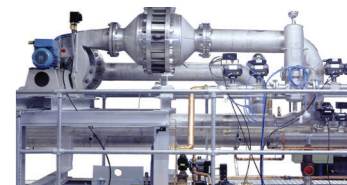
### Vacuum Systems

Getinge has vast process knowledge and offers several vacuum system options. Ranging from standard water ring pumps to complex multi-booster dry pump systems for extreme vacuums.



### High Performance Homogenization

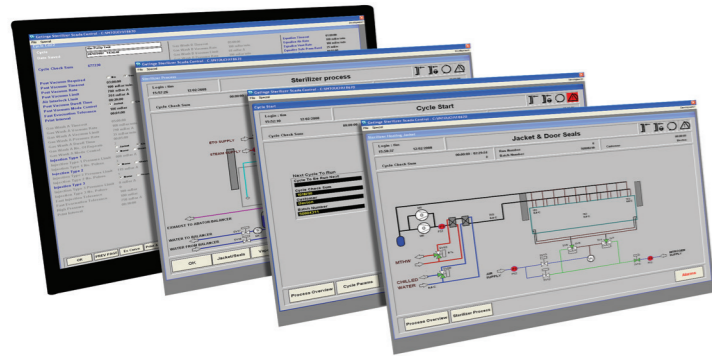
Using fluid modeling techniques, Getinge has developed a sophisticated chamber recirculation system that ensures fast and efficient mixing of the chamber environment. The system is designed to be flameproof with redundant hardware and monitoring features.



## Versatile Programming Automation and Traceability optimizes your process

### PLC Automation System

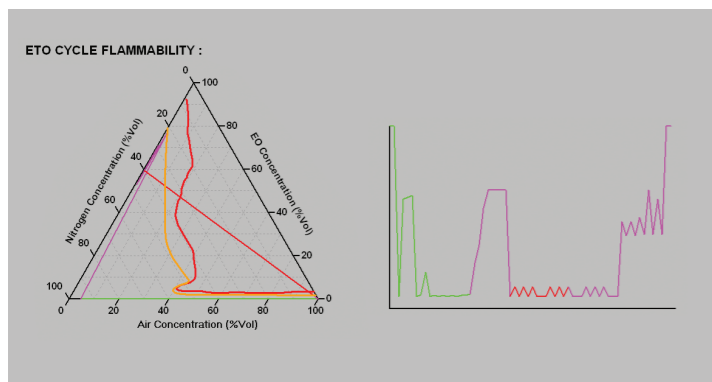
Each Getinge EO Sterilizer is equipped with a PLC automation system, and is usually connected to a central SCADA system allowing for a wide variety of parameters to be controlled. Each product may be configured with its own recipe, allowing optimization of process and turnaround time, while protecting the product packaging by controlled pressure ramping. Data storage, format and monitoring are fully flexible to meet your specific needs and process requirements.



Depending on process needs the system can be adapted to integrate process monitoring, recording and alarms with other systems at the customer site.

### Unique Features

Getinge GEE sterilizers are fully rated to operate with flammable gas mixtures. The SCADA software can automatically calculate and highlight any areas of a programmed cycle that may be flammable, providing estimated cycle times and gas concentrations before the cycle is started.



### Getinge ETOTRACE

Getinge's ETOTRACE system is used to control and trace your sterilization cycles. It allows you to store and manage information about your cycles for view and analysis. With this powerful tool you review how the process was handled, by whom and at what time. Both process details and associated reports are created. ETOTRACE will manage Pre-conditioning cells, sterilizing chambers, Post-conditioning cells and area stock.

The ETOTRACE System can track:

- Units\* (loading, processing, release, etc)
- Batches\*\* (creation, processing, release, etc)
- Cycles (start, stop, errors, reports, etc)
- Chamber events (errors, mode, recipe, start/stop)

\*Units: a pallet or a package ready for the sterilization process.

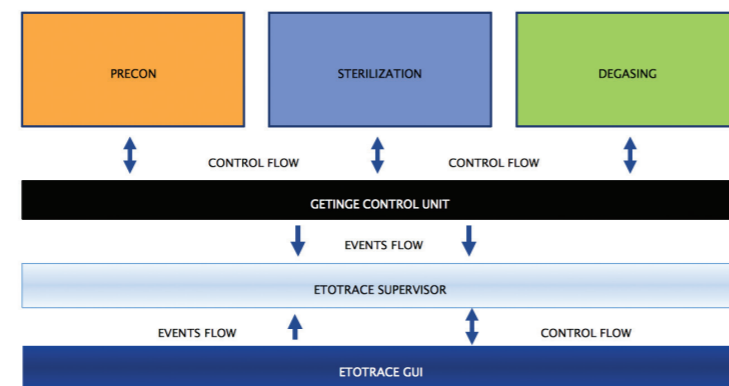
\*\*Batches: a unique number associated with the unit

### Complete Traceability

In ETOTRACE, all processes, machines and pallets are registered, from the Pre-conditioning cell to the Post-conditioning cell, documenting the history of each pallet. This enables you to quickly recall suspicious goods. Traceability is assured by the use of barcodes and/or other tracking technologies.

### Machine Process Documentation

ETOTRACE can be directly interfaced with a SCADA system. All equipment data is stored electronically within the ETOTRACE system using the PDF format. The ETOTRACE interface allows you to see all actions performed on each pallet (PRE-STERIL-POST). ETOTRACE is a Windows® based application.



## Chamber Sizing Many options to suit any application

Getinge offers the widest range of chamber sizes available from any manufacturer, accommodating standard pallets or purpose designed loading racks. Below is a sample of the standard range. Custom sizes to suit almost any load are also available.

Model	Internal Chamber Dimensions* W x H x D		Pallets	Chamber Volume*			
	mm	Inch		m <sup>3</sup>	ft <sup>3</sup>		
91415	900 x 1450 x 1540	35 x 57 x 60	EU: 1200 x 800 mm US: 1200 x 1000 mm	2.0	71		
91425	900 x 1450 x 1540	35 x 57 x 98		3.3	115		
101425	1000 x 1450 x 2500	39 x 57 x 98		3.6	128		
101433	1000 x 1450 x 3350	39 x 57 x 131		4.9	172		
142210	1450 x 2200 x 1000	57 x 86 x 47	1	Single line	3.2	135	
142219	1450 x 2200 x 1900	57 x 86 x 90	2		6.1	259	
142228	1450 x 2200 x 2800	57 x 86 x 133	3		8.9	383	
142237	1450 x 2200 x 3700	57 x 86 x 177	4		11.8	507	
142255	1450 x 2200 x 5500	57 x 86 x 263	6		17.5	755	
142273	1450 x 2200 x 7300	57 x 86 x 350	8		23.3	1003	
1422109	1450 x 2200 x 10900	57 x 86 x 523	12		34.8	1498	
1422145	1450 x 2200 x 14500	57 x 86 x 696	16		46.3	1994	
282228	2800 x 2200 x 2800	110 x 86 x 133	6		Double line	17.2	740
282237	2800 x 2200 x 3700	110 x 86 x 177	8			22.8	979
282255	2800 x 2200 x 5500	110 x 86 x 263	12	33.9		1458	
282273	2800 x 2200 x 7300	110 x 86 x 350	16	45.0		1936	
2822109	2800 x 2200 x 10900	110 x 86 x 523	24	67.1		2893	
2822145	2800 x 2200 x 14500	110 x 86 x 696	32	89.3		3850	

\*Dimensions and volume are nominal (approximate within design tolerances)

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**GETINGE GROUP**

Getinge Group is a leading global provider of products and systems that contribute to quality enhancement and cost efficiency within healthcare and life sciences. We operate under the three brands of ArjoHuntleigh, Getinge and Maquet. ArjoHuntleigh focuses on patient mobility and wound management solutions. Getinge provides solutions for infection control within healthcare and contamination prevention within life sciences. Maquet specializes in solutions, therapies and products for surgical interventions, interventional cardiology and intensive care.

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