



## Medical Waste Autoclaves

# Safe, Cost-Effective, Medical Waste Sterilization

Keep your environment safe from Medical Waste with high performance Tuttnauer Medical Waste autoclave systems designed for small, medium and large hospitals.

Tuttnauer steam autoclave sterilizers are a cost-effective alternative for servicing your medical waste needs. You can be confident that the waste treatment process is completely safe with no harmful emissions, making it easy to dispose your sterilized medical waste in a municipal landfill.

Steam autoclave waste treatment is a complete environmentally friendly solution, empowering you to treat waste close to the waste source (including on-site treatment) at a considerably lower price than expensive incinerator waste treatment technologies.



## Medical Waste Autoclaves

### Cost-Effective

- Easy on-site installation removes need to transport waste to external treatment facility
- Cost reduction in treatment and management of potentially infectious waste
- Reduced liability for waste producer due to no off-site treatment processing
- Relatively modest price and operating cost allows for quicker cost recovery

### Environmentally Safe

- Chemical-free process
- No radiation
- Clean and environmentally safe technology

### Safe Landfill Disposal

- Sterilized medical waste which has been processed to remove sharps is simple to dispose in a municipal landfill



### Strong Vacuum Pump

The built-in vacuum pump produces a strong vacuum that ensures proper air removal for excellent sterilization results.

### Inactivation of Micro-organisms

After sterilization the number of micro-organisms are reduced to less than  $10^{-6}$ .

### Fast Cooling for Fast Cycles

Fast cycles are an important factor that influences the waste processing time. A built-in cooling coil is an important feature that reduces cycle cooling times enabling higher cycle rates and empowering you to sterilize medical waste without delays.

### Specialized Loading Cart for Waste Transfer

A specialized loading cart for safely transferring medical waste is available with the following important features:

- The bottom shelf has no holes to prevent liquid from leaking out of the cart
- The bottom shelf has a drain to enable collection of any liquid waste into a container
- All the shelves have a barrier around their perimeter to prevent waste from falling off the cart

### Flexible PT100 for Liquid Loads

When treating blood, urine and other liquid medical waste a flexible PT100 placed in liquid waste load ensures sterilization at an effective sterilization temperature.

### Pre-Vacuum Exhaust Air Treatment

Effluent drawn from the chamber during the pre-vacuum stage is sterilized by a thermal effluent system (steam ejector sterilization) or will be made sterile by a filtration system.

### Thermal Effluent System

Effluent drawn from the chamber enters a low-pressure stage of the steam ejector fed with live steam drawn from the steam supply. This draws the exhausted chamber effluent into direct contact with the high temperature steam for total destruction of the bio burden.

### Filtration System (Optional)

The vacuum system draws the pre-vacuum chamber effluent out through the biological filter. This removes any airborne contaminants so that sterile air leaves the autoclave. The contaminants remaining in the filter are sterilized every cycle.

# Medical Waste Treatment Process

1



## Waste Segregation & Identification

Effective and safe management of medical waste begins with segregation and identification of waste. Segregation usually takes place nearby or at the source where the waste is generated. Waste is commonly identified by sorting the waste into sealed colour-coded plastics bags or containers.

2



## Temporary Waste Storage

Sometimes it is necessary to temporarily store waste when it is not subject to immediate processing or when there are delays in the waste treatment processing.

The described process is an example of a regulated medical waste process. Policy regulations may require a modified process. Tuttnauer works with our clients to ensure that Tuttnauer autoclave systems fit current or planned waste systems.



3



### Waste Treatment Sterilization

The waste is sterilized by autoclaving using steam at high pressure and temperature (134°C). This ensures that the biologically harmful elements of the waste are destroyed.

4



### Shredding

Shredding ensures that any sharp elements of the waste are broken down, making them safe for handling and disposal. Another advantage of shredding is that it reduces the treated waste's volume.

6



### Disposal

After sterilization and shredding the waste is fragmented and non-toxic. It is safe for disposal in a municipal landfill.

5



### Compacting

Compacting is an optional stage that significantly reduces the volume of the sterilized waste into a solid block. The waste is easier to handle and requires much less storage space during transportation. Furthermore, compacting prevents any free particles becoming airborne.

## Advanced Control - Choose the One You Like

### Classic Control System

The autoclave is equipped with an advanced control system and CAT2007 panel, and provides the following features:

- High precision control system for perfect and repeatable sterilization results
- Continuously displays the pressure in chamber, jacket, steam generator, and door gasket
- Ability to customize cycle parameters to maximize flexibility
- Password protection provides secure access
- Convenient data backup for cycle information recovery in case of power failure or cycle interruption
- Fail Alert – Indicates cycle failure or interruption
- Door Alert – Indicates unlocked door



### Advanced Touch Screen Control System

An optional touch screen panel with a sophisticated user-friendly PLC control system based on the advanced Allen-Bradley (AB) platform provides the following additional features:

- A 5.6" touch screen for easy access to controls and information via the panel
- Multilingual - 23 languages
- Built-in view and back-up of historical cycle data and alarm/events stored on external flash memory
- Technician menus: sensor calibration, change parameters, In/Out test and PID tuning
- Graphical display of Temperature and Pressure trend graphs
- Up to 16 different Barcodes - optional



## Medical Waste Sterilization Programs

Cycle Program	Temperature (°C)	Exposure Time (min.)
Solid Waste - 121	121	45
Solid Waste - 134	134	30
Liquid Waste - 121	121	60
Solid & Liquid Waste - 134	134	45

\*Additional customized programs are available upon request.



## Economic Medium Size Autoclave

### Chamber volume of 160 liters

The Biohazard Economic Line is ideal for most medical centers that need hospital grade medical waste treatment without large costly autoclaves. Designed to be economical high performance hard working autoclaves that offer substantial loading capacity and mobility in one easy to connect device.

#### Features

- Chamber volume of 160 liters with minimal foot-print
- High volume water-ring vacuum-pump for fast and efficient air removal
- Stand-by heating mode keeps the autoclave warm and ready for use
- 316L grade stainless steel chamber and door with electro-polish finish
- Built-in alpha-numeric printer
- Mounted on wheels for easy mobility and sterilization on demand
- Pre-vacuum air stream sterilization

#### Safety Features

- Double locking safety device prevents door from opening at high pressure and high temperature
- Control lock-out switch prevents starting a cycle if door is not properly locked

#### Steam Supply

Saturated steam can be supplied to the autoclave from building steam or an integrated generator.



Model	Chamber Dim. (cm) (ØxL)	Volume (Liter)
5075HSG-BH	50 x 75	160



## Large Autoclave Series

Chamber volume between 250 and 1300 liters

The Medical Waste Autoclave Line is designed to service hospitals and large medical centers that need to process high volumes of medical waste safely and on site.

### Features

- Automatic or manual loading system
- Manual or automatic door system
- Pre-vacuum air stream sterilization
- Optional advanced control system with touch screen control
- HEPA air filter







## Autoclave Safety

### Door Safety

- Chamber door cannot be opened when chamber is pressurized
- Steam cannot enter the chamber when the door is open
- A cycle cannot start if the door is open or not properly locked
- Sliding door movement is stopped if an object is detected in front of the door

### Safety Valves

Both chamber and jacket are equipped with pressure relief valves to prevent excess chamber pressure.

### Steam Supply

Saturated steam can be supplied to the autoclave from building steam, a stand-alone generator, or a steam-to-steam generator.

### Emergency Shut-Off

Easily accessible emergency switches for immediate cycle shut-off.

### Double Independent Monitoring

Digital and mechanical monitoring systems provide accurate pressure results which are displayed on the analog and digital displays.

Model	Chamber Dimensions (cm) (W x H x D)	Volume (Liter)
5596 -BH	508 x 508 x 970	250
55120 - BH	510 x 510 x 1210	310
6690 - BH	610 x 610 x 915	340
66120 - BH	610 x 610 x 1215	450
6671130 - BH	660 x 710 x 1295	610
6990 - BH	610 x 910 x 920	510
69120 - BH	610 x 910 x 1215	680
69150 - BH	610 x 910 x 1515	840
69180 - BH	610 x 910 x 1815	1010
T-MAX 15	660 x 1220 x 1620	1300



## Bulk Autoclave Series

### Chamber volume between 1500 and 4000 liters

The medical waste bulk autoclave line is designed for high volume waste treatment. The autoclaves have pre and post vacuum capabilities. A wide range of sizes and upgrades are available to meet the ever-growing demands of medical waste facilities.

#### Features

- Optional advanced control system with touch screen control
- Automatic or manual loading systems
- Manual or automatic door systems
- Pre-vacuum air stream sterilization
- Printer for a clear and concise documentation of the sterilization process
- HEPA air filter

Model	Chamber Dimensions (cm) (W x H x D)	Volume (Liter)
364853	92 x 122 x 136	1500
364860	92 x 122 x 151	1700
364872	92 x 122 x 182	2000
3648144	92 x 122 x 363	4000

#### Door Safety

- No door will open if there is still pressure in the chamber
- No door will open if the chamber or load temperature is too high
- In a double door system it is impossible to open two doors simultaneously
- Door will open if an object is detected in front of the door during close

## Standards

Our high quality medical waste autoclaves are designed to comply with the strictest international directives and standards in all aspects of waste treatment and waste disposal.

- EN 285 for Large Autoclaves
- DIN 58951 Steam Sterilizers for Laboratory Use

### Directives & Guidelines:

- Pressure Equipment Directive – PED 97/23 EEC
- EMC Directive 89/336
- RoHS Directives – 2002/96
- Low Voltage Directive 73/27
- Machinery Directive 2006/42

### Safety and EMC Standards:

- IEC/UL/EN 61010-1, IEC 61010-2-040, EN 61326

### Pressure Vessel and Steam Generator Construction Standards:

- ASME Code, Section VIII, Division 1, unfired pressure vessels and ASME Code, Section I, for boilers
- EN 13445 for Pressure vessels
- EN 1422 and EN 12953 for steam boilers

### Good Practice Standards:

- ISO 17665-1 and ST79

### Quality System Compliance:

- ISO 9001:2008 (Quality Systems) and ISO 13485:2003 (Quality Systems for Medical Devices)
- 21 CFR 820



# Your Sterilization & Infection Control Partners

## Company Profile

For over 85 years, Tuttbauer's sterilization and infection control products have been trusted by hospitals, universities, research institutes, clinics and laboratories throughout the world. Supplying a range of top-quality products to over 100 countries, Tuttbauer has earned global recognition as a leader in sterilization and infection control.

## Global partnerships

At Tuttbauer we feel that business means people dealing with people. We pride ourselves on our reputation for having long-lasting relationships with our customers, spanning over decades and distances and for building solid, long-term relationships based on commitment and trust.

## Our Flexibility is Your Advantage

Beyond our unmatched range of products, we also manage complete turnkey solutions, including planning, design and installation of equipment, as well as consultation and feasibility studies, for projects of all sizes.

## More from Tuttbauer:

Featuring Tuttbauer's range of cleaning, disinfection and sterilization solutions



T-Max Line of Large Sterilizers



Washer disinfectors for hospitals and laboratories



Laboratory autoclaves ranging in size and application



Pre & post vacuum tabletop sterilizers designed to perform class B cycles

## Medical Waste Autoclaves

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