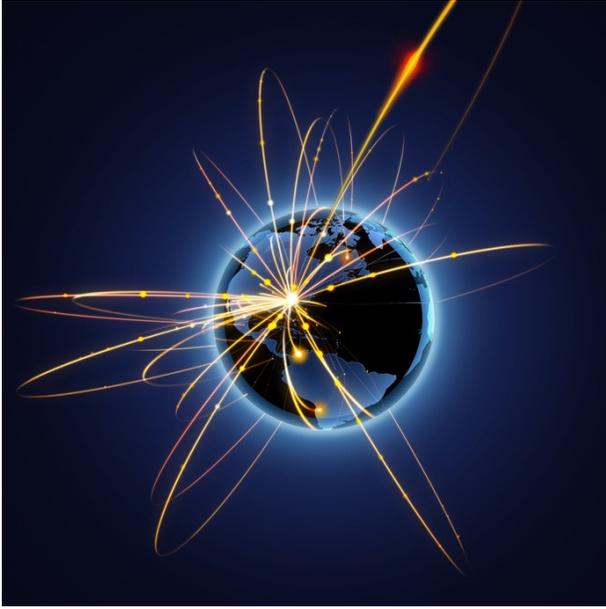




# Sterilab Laboratory Steam Sterilizers



# BMT worldwide

## QUALITY, RELIABILITY, INNOVATION

BMT is a member of the MMM Group, one of the world's leading suppliers of sterilization products with offices in over 20 different countries and manufacturing facilities in the USA, Germany and Czech Republic. Since the beginning in 1954, the group's sterilization products have been placed in Pharmaceutical, Laboratory and Healthcare facilities all over the world. Special attention is given to quality, reliability, innovation and efficiency of every unit. Customer service excellence is our commitment to your organization and the key to our success.

## flexible solutions for your sterilization needs

### BUILT TO YOUR EXACT NEEDS

Every BMT sterilizer is produced to your exact specifications and needs. Flexible options allow selection of the right equipment for each specific sterilization load and packaging. Control systems are designed to be user friendly, and are easily configured to obtain the exact parameters needed for special products. Built-in steam generation systems are available where pure, clean or building steam is not available. Laboratory, cGMP-ready or full cGMP designs are available to meet laboratory-up-to-production needs now and in the future.



# quality built into every unit

BMT has the right sterilizer for your GMP production, laboratory, or research needs, and you can rest assured that whatever model you choose, the engineering, construction and workmanship of each unit meets our exacting standards. Chambers and jackets are constructed of 100% 316L stainless steel to ensure long life. The frames of the sterilizers and insulation covering are made of stainless steel for durability and to prevent rusting over the life span of the unit. Only the highest quality, industrial-grade, non-proprietary components are used throughout.



- Fully jacketed 316L stainless steel chambers
- Lubricant-free door gaskets
- Solid precision machined stainless steel door
- Door is secured to the chamber on all four sides
- Stainless steel frames and insulation covering
- Industrial grade, non-proprietary components

## engineered features

Extensive efforts have been made to offer features that enhance efficiency, reliability and serviceability of the sterilizer. Vertical or horizontal sliding doors that are precision machined operate with exceptional smoothness while providing a safer environment for the operator. Door gaskets operate without the need for lubrication allowing for less maintenance and longer life span. The chamber jacket design utilizes a unique plate and beam construction that provides for a complete envelop around the chamber. PLC-based control systems are intuitive, easily understood and operated, while providing the sophistication for maximum flexibility and ease in validation.



# BMT USA Sterilab Steam Sterilizers

Sterilab Laboratory Steam Sterilizers are designed not only to meet Good Laboratory Practices, but to exceed industry standards. Reliability and serviceability are engineered into every unit. Utilizing the latest 3D parametric and MRP software along with BMT's lean manufacturing principles allows for state-of-the-art solutions, which are unsurpassed in quality and reliability yet without sacrificing value.

- Solid 316L stainless steel chambers
- Complete envelope 316L stainless steel jacket
- Vacuum pump for repeatable cycles
- Water recirculation system to conserve resources
- Insulated chamber and piping reduces utility consumption
- Chamber doors secured on four sides
- Solid 316L stainless steel door—no welding
- Lubricant-free door gaskets
- Non-proprietary components—readily available locally
- GMP Ready design—allows upgrading on site



## features

### CHAMBERS

BMT Sterilab sterilizers are equipped with chambers made entirely of 316L stainless steel for superior durability. The chamber door is made from one solid piece of stainless steel without the need for welding, which ensures the door will not warp over time. Precision machined door brackets for retaining the door on four sides ensures smooth door travel and safe, secure doors. All chamber connections are sanitary clamp type and are sloped to drain. Lubricant-free door gaskets last longer and will eliminate particle shedding into laboratories or clean rooms.

### PIPING SYSTEMS

Depending on the application Sterilab sterilizers can be equipped with bronze and brass or stainless steel piping. Connections can be threaded or sanitary tri-clamp. Industrial grade, nonproprietary components are used for reliability and ease in replacement. All piping is insulated and marked either hot or cold for easy identification by maintenance personnel. Water ring vacuum pumps are utilized to ensure repeatable cycles. The seal water is recovered and re-circulated to reduce the overall water consumption by 75%.

### GMP READY DESIGN

BMT Sterilizers are designed to meet rigorous requirements needed in Good Laboratory Practices while incorporating the ability to upgrade to any cGMP features needed at the time of order or anytime later in the field should needs change. Flexible options allow each unit to be equipped with the required features for individual projects while allowing the unit to be customized at any time. This lowers the initial investment while ensuring the usability of the sterilizer should requirements change.

### BIOSAFETY LEVEL 3 APPLICATIONS

Sterilab sterilizers can be equipped with the necessary hardware and software for safe sterilization of bio-hazardous waste. The sterilizer will be equipped with a special fully welded, stainless steel bioseal that is connected to the facility wall for an air tight seal. A special clamped gasket design between the facility wall connection and the bioseal allows for vibration and expansion and contraction of the unit without breaking the seal. Special cycles and piping arrangements ensure all contents of the chamber including any condensate is sterilized.



### STANDARD OPTIONS

- 316L stainless steel piping
- BSL 3 rated bioseals
- Effluent sterilization cycles
- Solution cycle with air-overpressure cooling
- Electric or steam-to-steam generators
- Chart recorders
- Ink jet or laser printers
- Floor or pit mounted
- Loading accessories
- Single or double door design

### UPGRADABLE CGMP FEATURES

- Sanitary piping , fittings and components
- 0.2 micron filter in stainless steel housing
- Secondary temperature verification
- Chamber condensate monitoring
- Temperature control within 0.5 C
- Automatic filter sterilization



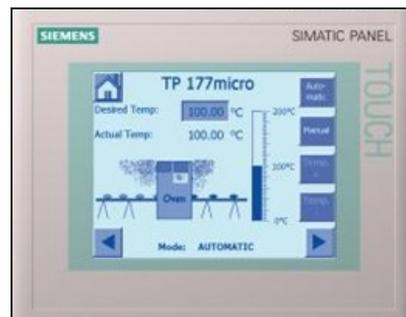
# control systems

## INDUSTRIAL GRADE PLC'S

BMT Sterilab sterilizers are equipped with industrial- grade, Allen Bradley or Siemens PLC based control systems for superior reliability, repeatability of cycles, and serviceability. The programming was developed utilizing the latest GAMP (Good Automated Manufacturing Practices) guidelines for ease in validation and to ensure reliability while allowing maximum flexibility for the owner. The system allows for 20 sterilizing cycles to be configured and stored. The operator interface terminal is a large touch screen that is user-friendly and intuitive. Double door units have an operator interface touch screen on both the load and unload sides of the sterilizer. All sterilizer functions are accessed through these touch screens. Displayed messages are in clear text. Multi-level passwords protect from unauthorized access. Each system is supported with a very comprehensive documentation package. The control system can be equipped with different types of printers and\or recorders for data storage on paper. If electronic data storage is desired the control system can be provided with 21 CFR, Part 11 compliancy when connected to a PC or central computer system.



Allen Bradley Compact Logix with a Panelview Plus 1000 Operator Interface



Siemens S700 PLC with a TP177A Operator Interface

# sterilization cycles

Regardless of the sterilizer model you choose, BMT has the right sterilization cycle for all your different research needs. Each sterilizer can be equipped with any combination of the cycles described below. Maximum flexibility for each cycle phase is easily programmed into the control system with each individually settable parameter. The programmed recipe is stored in the control system memory and is recalled and started with the touch of a button on the operator interface. Recipes are protected from unauthorized changes via the multi-level password system.

## DRY GOODS CYCLE — VACUUM DRYING

The dry goods cycle provides effective sterilization of hard goods, filters, linens, and other porous materials, wrapped goods, and products that are unaffected by vacuum. The load is preconditioned utilizing vacuum and steam pulses. The cycle then advances to heat-up and continues until it reaches the settable exposure temperature of 110°C up to 135°C. Once the exposure temperature set point is reached, the controller counts down the exposure time. After the exposure time is completed, drying begins and can be accomplished by fast exhaust and pulling a deep vacuum to remove moisture.

## DRY GOODS CYCLE — PULSED AIR / VACUUM DRYING

This cycle provides effective sterilization of rubber stoppers, hoses, and other materials that are difficult to remove trapped moisture from. The load is preconditioned utilizing vacuum and steam pulses. The cycle then advances to heat-up and continues until it reaches the settable exposure temperature of 110°C up to 135°C. Once the exposure temperature set point is reached, the controller counts down the exposure time. After the exposure time is completed, drying begins and is accomplished by fast exhaust and vacuum and air pulses which are highly effective at removing moisture from the load. To aid drying further the air can be heated.

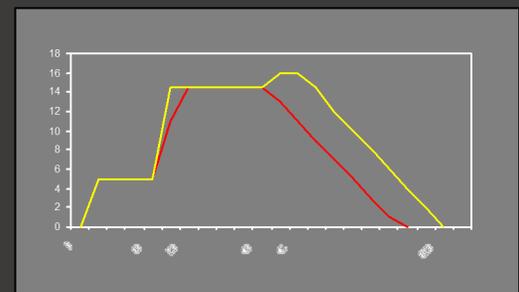
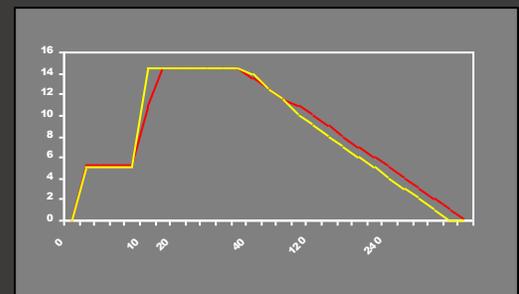
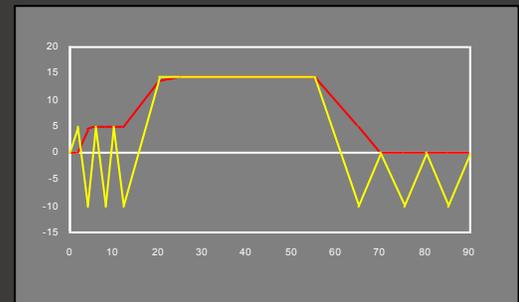
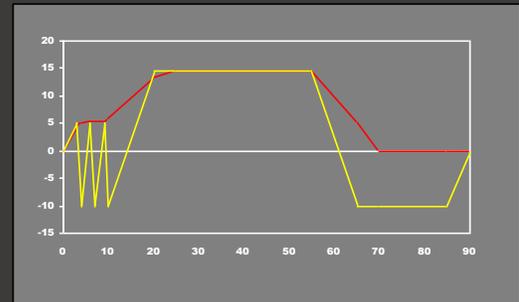
## SOLUTION CYCLE — GRAVITY AIR REMOVAL / RAMPED EXHAUST

The solution cycle with gravity effectively sterilizes liquid products or items in vented or sealed glass containers. The load is preconditioned utilizing steam pulses. The cycle then advances to heat-up and continues until it reaches the settable exposure temperature of 110°C up to 135°C. Once the exposure temperature set point is reached, the controller counts down the exposure time. After the exposure time is completed, exhaust ramping gradually returns liquids to a temperature below boiling.

## SOLUTION CYCLE — AIR OVER-PRESSURE / JACKET WATER COOLING

This cycle effectively sterilizes liquid products or items in vented or sealed glass containers. The load is preconditioned utilizing steam pulses. The cycle then advances to heat-up and continues until it reaches the settable exposure temperature of 110°C up to 135°C. After the exposure timer is timed out, cooling of the product is started by injecting air at a pressure similar to that of the product to avoid breakage of the container. Cold water is introduced to the jacket of the chamber to help cool the product at a faster rate.

## CYCLE DIAGRAMS



# examples of Sterilab sizes

Sterilab steam sterilizers are available in a wide range of chamber sizes. The examples below are only a sample of the models that are available. Please contact BMT for further details on standard or custom chamber sizes and standard or custom exterior dimensions.

Models	Internal Chamber Dimensions w x h x d	Overall Dimensions w x h x d	Chamber Volume	Door Slide Direction	Mountings	Weight lbs. \ kg
	inch	inch	ft <sup>3</sup>			lbs
measurement	mm	mm	M <sup>3</sup>			kg
P202038	20 x 20 x 38	60 x 74 x 50	8.8	Vertical	Floor	1485
	508 x 508 x 965	1270 x 1880 x 1270	0.24			674
P262639	26 x 26 x 39	66 x 80 x 51	15.8	Vertical	Floor	2600
	660 x 660 x 990	1423 x 2032 x 1296	0.44			1179
P262649	26 x 26 x 49	66 x 80 x 61	19	Vertical	Floor	2985
	660 x 660 x 1245	1320 x 2032 x 1541	0.54			1354
P263639	26 x 36 x 39	100 x 80 x 60	21	Vertical or Horizontal	Floor	3400
	660 x 915 x 990	2540 x 2032 x 1524	0.59			1542
P263648	26 x 36 x 48	100 x 80 x 60	25.9	Vertical or Horizontal	Floor	4500
	660 x 915 x 1220	2540 x 2032 x 1524	0.73			2041
P263660	26 x 36 x 60	100 x 96 x 72	32.5	Vertical or Horizontal	Floor	5200
	100 x 80 x 1524	2540 x 2438 x 1829	0.92			2360
P363648	36 x 36 x 48	128 x 96 x 60	36	Horizontal	Floor	6500
	914 x 914 x 1220	3251 x 2438 x 1524	1.02			2950
P363660	36 x 36 x 60	128 x 96 x 72	45	Horizontal	Floor	6900
	914 x 914 x 1524	3251 x 2438 x 1829	1.27			3130
P375760	37 x 57 x 60	129 x 114 x 72	73.2	Horizontal	Floor or Pit	7200
	940 x 1448 x 1524	3277 x 2896 x 1829	2.07			3260
P375786	37 x 57 x 86	129 x 114 x 98	102.4	Horizontal	Floor or Pit	8700
	940 x 1448 x 2184	3276 x 2896 x 2489	2.9			3950
P484860	48 x 48 x 60	148 x 96 x 72	80	Horizontal	Floor or Pit	10,500
	1219 x 1219 x 1524	3759 x 2438 x 1829	2.26			4760
P484872	48 x 48 x 72	148 x 96 x 84	96	Horizontal	Floor or Pit	11,500
	1219 x 1219 x 1829	3759 x 2438 x 2133	2.72			5220
P484886	48 x 48 x 86	148 x 96 x 98	114.5	Horizontal	Floor or Pit	12,500
	1219 x 1219 x 2184	3759 x 96 x 2489	3.24			5670
P495748	49 x 57 x 48	148 x 114 x 60	77.5	Horizontal	Floor or Pit	9500
	1219 x 1448 x 1219	3759 x 2896 x 1524	2.19			4300
P495760	49 x 57 x 60	148 x 114 x 72	96.9	Horizontal	Floor or Pit	10,500
	1219 x 1448 x 1524	3759 x 2896 x 1829	2.74			4760
P495772	49 x 57 x 72	148 x 114 x 84	116.3	Horizontal	Floor or Pit	12,000
	1219 x 1448 x 1829	3759 x 2896 x 2133	3.29			5443
P495786	49 x 57 x 86	148 x 114 x 98	138.8	Horizontal	Floor or Pit	13,000
	1219 x 1448 x 2184	3759 x 2896 x 2489	3.84			5897
P495796	49 x 57 x 96	148 x 114 x 110	155	Horizontal	Floor or Pit	14,000
	1219 x 1448 x 2438	3759 x 2896 x 2794	4.39			6350
P488660	48 x 86 x 60	148 x 133 x 72	143	Horizontal	Floor or Pit	15,000
	1219 x 2184 x 1524	3759 x 3378 x 1829	4.05			6804
P488686	48 x 86 x 86	148 x 133 x 98	205	Horizontal	Floor or Pit	16,000
	1219 x 2184 x 1524	3759 x 3378 x 2489	5.8			7258
P608686	60 x 60 x 86	166 x 133 x 98	256.3	Horizontal	Floor or Pit	17,000
	1524 x 1524 x 2184	4217 x 3378 x 2489	7.25			7711

Note: Dimensions and weights are approximate and are subject to change without notice

# loading equipment

## STANDARD OR CUSTOM DESIGNS

BMT manufactures stainless steel loading equipment in standard or custom designs to meet the needs of any type of load. Smaller chamber sizes can be equipped with wire or perforated chamber shelves or loading racks. Larger chambers can be equipped with loading carts and transfer trolleys. Large pit-mounted chambers can come equipped with tracks and/or rub rails for almost any type of wheel configuration on existing equipment. Carts with drop down wheels are available for rooms with limited space.



# service for our clients

## COMMITMENT TO EXCELLENCE

We recognize the important role our equipment plays in your research. Therefore we are committed to provide the highest quality equipment that is backed up with excellent customer service and support. Our team of highly experienced field-service technicians provide the following expert services:

- Installation Services**—reduces time and effort
- Start-up**—for optimization of equipment on-site
- Training**—for ease in operation
- Calibration**—accurate reliable instrumentation
- Validation**—expert knowledge for ease in validating
- Preventative Maintenance**—reduced downtime
- Emergency Service**—24 hours, 7-days a week



# other sterilizers available from BMT

## STERIVAP LABORATORY STEAM STERILIZERS

Sterivap steam sterilizers are designed specifically for the high demands of today's research facilities. The sterilizers are available with small to medium size 316L stainless steel chambers and incorporate industry leading features:

- Engineered for energy efficiency
- Stainless steel piping
- Dual microprocessor controls
- Large, color touch-screen operator interface
- Highly insulated chamber and piping
- Two-stage vacuum pump
- Water recirculation for less waste
- Integrated stainless steel steam generator



## STERIPRO PRODUCTION STEAM STERILIZERS

Steripro cGMP Steam Sterilizers are designed not only to meet the US FDA cGMP guidelines, but to exceed industry standards. Reliability and serviceability are engineered into every unit. Validation is one of the biggest concerns in purchasing a cGMP sterilizer so special attention has been given to the documentation and repeatability of each system. Utilizing the latest 3D parametric and MRP software along with BMT's lean manufacturing principles allows state-of-the-art solutions, which are unsurpassed in quality and reliability with-

- Highly polished mirror finish chambers
- Meets and exceeds US FDA cGMP's
- 316L stainless steel sanitary piping
- Piping sloped to drain with no dead legs
- Sanitary valves and components
- Extensive validation documentation
- Chamber doors secured on four sides



# Steam Generators

## PURE AND CLEAN STEAM GENERATORS

BMT Steam Generators are designed to provide Pure or Clean Steam for all your sterilization needs. These units can be purchased as stand-alone units to be used as a central source for multiple units or built into a BMT sterilizer for a fully integrated solution. BMT steam generators can be electrically heated or heated by plant steam.



- 316L stainless steel pressure vessels
- 316L stainless steel piping
- Sanitary piping, connections and components
- cGMP design and constructed
- High-grade, non-proprietary components
- All stainless steel frames and control boxes
- Single or double tube-sheet construction
- Industrial-grade PLC controls

## ELECTRIC HEATED STEAM GENERATORS

BMT Electric Clean Steam Generators are equipped with an ASME pressure vessel constructed from 316L stainless steel. The heating elements require three-phase voltage that can be specified at time of order. The units are equipped with an automatic timed blow-down system that carries impurities to drain. Feed water booster pumps are available when feed water pressure is not available at required pressures. Available in many different configurations and capacities.

## STEAM HEATED STEAM GENERATORS

BMT Steam-to-Steam Clean Steam Generators utilize plant steam as the heating source to produce clean steam. The tube and shell heat exchanger is made from 316L stainless steel and can be built in single-tube or double-tube construction. The evaporator utilizes a wetted design that minimizes the temperature difference between the feed water and the heating steam which results in less stress on the evaporator tube sheet. Available in almost any capacity and need.

## ELECTRIC STEAM GENERATOR



# BMT USA Products

- Water Stills
- Pure Steam Generators
- Clean Steam Generators
- cGMP Steam Sterilizers
- Laboratory Sterilizers
- Glass & Parts Washers
- Animal Cage Washers
- Depyrogenation Ovens
- Dry Heat Sterilizers
- Laboratory Ovens & Incubators



**BMT USA, LLC**  
14532 169th Drive SE, Suite 142  
Monroe, WA 98272  
P: 360-863-2252  
F: 360-863-2366  
E: [sales@bmtus.com](mailto:sales@bmtus.com)  
[www.bmtus.com](http://www.bmtus.com)