

The MWS Series™

Medical Waste Sterilization Systems



McGill AirPressure
Corporation

Features & Benefits

The MWS Series

McGill AirPressure Corporation's Medical Waste Sterilization Systems (The MWS Series) are complete, turnkey configurations designed to meet the entire spectrum of medical waste stream processing requirements.

The MWS Series models are structured according to processing capacity to match the needs of large and regional hospitals, as well as smaller clinics and commercial red bag waste disposal services. Each MWS Series system is engineered for each application.

The MWS Series model numbers indicate maximum quantity of loaded carts that each configuration can process in one sterilization cycle. Model numbers also correspond to daily thousand-pound increment processing capacity. Thus, the model numbers shown in the chart below guide system selection.

A Model MWS-2 Medical Waste Sterilizer



McGill AirPressure provides a systems solution for your medical waste sterilization process. A typical system may be comprised of the following equipment and process steps.

Collection Container Dumper



The sterilization process begins as medical waste collection containers are dumped into the sterilization cart.

Addressing a Critical Industry Need – Medical Waste Sterilization

In recent decades medical waste management has become a mature industry. The demand to prevent spread of disease from medical waste has spurred innovation in methods of treating infectious waste.

Building sterilizers for over a decade, McGill AirPressure has contributed to technology advance by developing models of medical waste sterilizers for hospitals and commercial medical waste disposal services, providing safe, easy-to-use and economical solutions that meet critical requirements.

Each MWS Series model incorporates the most advanced, cost-effective design features that ensure long operating life while minimizing maintenance. Performance and safety engineering conform to ASME Code. One and three year Maintenance Service contracts ensure prompt assistance in case of need. McGill AirPressure offers Validation Service — in conjunction with healthcare facilities' laboratories — to verify processing performance at commissioning and periodically on request thereafter.

Modular Systems Ease Installation and Maintenance

MWS Series models are modular so subsystems and components can be installed efficiently. Models are configured to meet each customer's requirements. These complete, turnkey systems — depending on ordered configuration — may include:

- Collection carts (rubber)
- Lift-table with powered loading-assists
- Automatic loading systems
- Sterilizer carts (aluminum and stainless steel) with liners
- Sterilizing autoclave

McGill AirPressure's Medical Waste Sterilizer Series

Model Number	Dimensions (Diameter x Length)	Carts per Batch	Capacity per 8 hr. Day*
MWS-2	4-ft. x 8-ft.	2 carts/cycle	2,000 lbs.
MWS-4	5-ft. x 16-ft.	4 carts/cycle	4,000 lbs.
MWS-6	6-ft. x 20-ft.	6 carts/cycle	6,000 lbs.
MWS-X	Custom	Per specification	Per specification

*Approximation based on typical medical waste stream composition, cart size, and cycle time.

Sterilizing Autoclave



Carts containing bags of medical waste are loaded into the autoclave, a vacuum is drawn, and saturated steam permeates and sterilizes the waste.

Sterilized Waste



When sterilization is complete the bags of waste receive a post-sterilization vacuum to help dry the material, reducing its weight and subsequent disposal costs.

Cart Dumper



A cart dumper empties the treated waste into the shredder.

Shredder



The shredder renders the waste unrecognizable and reduces its volume prior to compaction, optimizing storage capacity of the compactor.

Compactor



The process is complete when the sterilized shredded waste is compressed by compactors and eventually hauled to a sanitary landfill.

- Cart dumpers
- Shredder
- Compactor
- Conveyors
- Local controls with remote options
- Data acquisition and reporting
- Chart recorder with RS-232 interface capability

The automated loading subsystems (dumpers, conveyors, and integrated shredders and lift-tables) are specified to meet each facility's need. The system control and data acquisition, recording and reporting options are configured to installation requirements.

Key MWS Series Features and Benefits

- Easy-to-operate, quick-opening autoclave doors in a variety of configurations, with high-temperature gaskets extend useful life.
- Easily set system parameters ensure optimal cycle processing.
- Key-locks secure processing cycle parameters.
- Low-profile tracks in autoclave allow easy batch loading and unloading.
- Multi-stage safeties (electro-pneumatic lock-pins, zero-pressure and limit switches, and audible alarms) help prevent accidents.
- External insulation assures comfortable working conditions.
- Sensors monitoring temperature ensure proper sterilization.
- Data logging enables cycle and compliance reporting.

The MWS Sterilization Process

The MWS Series models are engineered from standard components to consistently meet the requirements of each customer's facilities. The model sizes are designed to process batch loads, minimizing labor cost in managing the waste stream.

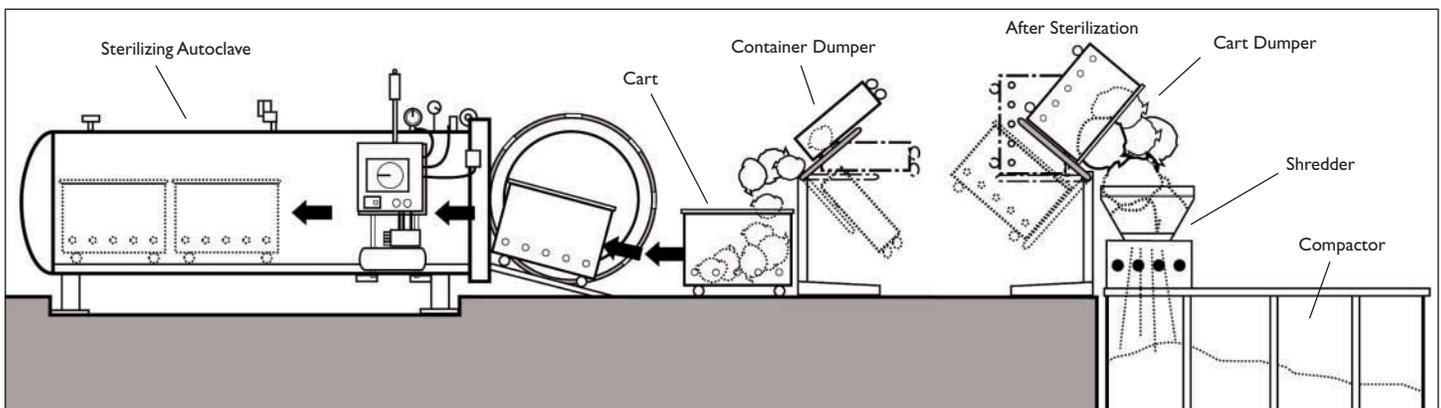
After the sterilizer carts are loaded into the autoclave, the operator simply pushes a Start button, and the automated sterilization cycle begins. At once a pre-sterilization phase establishes a vacuum that opens any closed containers in the waste batch, then saturated steam is injected into the autoclave chamber to permeate the material thoroughly. Chamber temperature is quickly raised and held until sterilization is assured.

A typical cycle sequence program includes ramp-up, dwell, and vent phases at specific pressures and temperatures to ensure that waste treatment meets local and state regulations. Temperature and pressure 'soak' the waste material for a specified duration. Controls are mounted on the unit or in a remote location to monitor the specified cycle process. For regulatory reporting the control system logs cycle data and records processing parameters for each batch.

Once waste is sterilized at high temperature, the steam is cooled, condensed, and drained through a secure discharge outlet. A post-sterilization vacuum removes residual steam and helps to dry the material. This step contributes to operating savings, where disposal is charged by weight.

Each MWS Series model is designed to be as cost-efficient as possible. Engineered vacuum and steam subsystems generate optimal sterilization capacity. The MWS Series will sterilize from two

This simplified drawing illustrates an overall view of a typical McGill MWS system.



to six thousand, or more, pounds of medical waste per eight hour day in one-hour processing cycles.

Advantages of The MWS Series

Cycle control – Preset automated cycle sequence minimizes operator interface.

Regulatory compliance – Cycle temperature and duration data are captured for permanent recordkeeping.

Contemporary manufacturing – Systems are constructed using modern manufacturing methods for long life and to enable multi-fold reduction in bulk waste volume from untreated state to sterilized, compacted form.

Technology Background

Medical waste management is a worldwide need. Awareness of the danger of communicable diseases led to regulation of treatment of medical waste. The healthcare industry now has strict environmental and occupational safety controls requiring waste be rendered safe prior to disposal in sanitary landfills.

Incineration was the dominant method of medical waste disposal two decades ago. The Clean Air Act and the Environmental Protection Agency brought most medical waste incinerators to a close. Today most medical waste treatment facilities use sterilizing autoclaves. Autoclaving is now the preferred way to sterilize infectious waste. Efficacy tests have established that autoclaves achieve complete sterilization. Autoclaving exceeds effectiveness levels set by federal and state environmental protection agencies.

Experts in Autoclave Solutions

Since 1960 McGill AirPressure Corporation has supplied some 600 autoclave systems — from R&D laboratory to high-capacity manufacturing models. These systems are designed for application processes as varied as composite bonding of aerospace plastics, automotive glass lamination, rubber tire vulcanizing, electronic motor windings, wood products treatment, and medical waste sterilization.

McGill AirPressure engineers and configures safe, dependable, and economical autoclave systems. Decades of expertise and established technical capabilities enable its engineered systems to perform customers' required processes reliably, quickly, and inexpensively. Notable customers include Boeing, Caterpillar, DuPont, General Electric, Lockheed-Martin, NASA, and Riverside (Columbus, OH) and Baptist (Nashville, TN) Hospitals.

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Facilities like Riverside Methodist Hospital in Columbus, Ohio are realizing the convenience and economy of sterilizing their medical waste with a McGill AirPressure MWS autoclave.

Advantages of McGill Service

Turnkey project management – experts handle the project.

Fabrication expertise — systems are durable and reliable, build to last.

Standard designs – modular systems cost less and are well supported.

Field installation – assembled and commissioned by experienced staff.

Validation services – ensure compliance at startup and are available thereafter.

Maintenance agreements – scheduled preventive checks minimize unwanted downtime.