
Integrated Medical Waste Autoclave with Shredder



1, Description:

The treatment executed by the Sinicmed integrated medical waste autoclave with shredder is based on the sterilization principles using direct and saturated steam. This sterilization lead to the destruction of all the bacterial spores, virus and bacteriophage, mold spores, microorganisms, and maintains the inactivation of virus etc.

The autoclave adopts the processing technology of shredding first and then steam sterilization. It is designed for small and medium-sized medical waste treatment centers, hospitals, infectious disease prevention institutions, customs, etc.

The autoclave is equipped with an emergency stop button.

All the process is fully automatic and in a fully sealed chamber, thereby making medical waste treatment safer and more efficient. The operator has no contact with the medical waste during the process and the working environment is more friendly. The equipment not only fully meets the requirements of the "Medical Waste Management Regulations", but also meets the process requirements of the "Medical Waste High Temperature Steam Treatment Engineering Technical Specifications" and EU, WHO standards.

2, Features:

Safety design

- 1, Shredding and sterilization in one enclosed compact chamber. No contact with waste during process.
- 2, The program has three levels of passwords. The operator's configurations require a password to restrict access to only administration in order to prevent improper modification of the programs by unauthorized users. Operators can only execute the start up cycle.
- 3, The autoclave adopts interlock safety system which guarantee the door cannot be opened during the process, the cycle cannot start if the door doesn't be closed.
- 4, It has emergency valve to eliminate steam from the chamber manually.



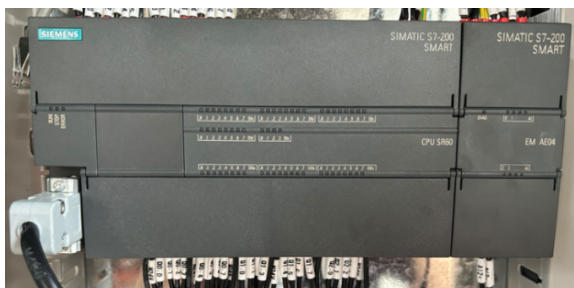
(Emergency valve)

- 5, Self-diagnosis of operation and fault record.

6, The autoclave is provided with audible and visual alarms for open-door conditions, pressure faults, and temperature deviations.

Simple operation

- 1, Easy to use. One day training for operators. The autoclave and accessories are skid-mounted which is easy for installation.
- 2, It has Siemens PLC and touch screen. Real-time data such as sterilization time, pressure, time and temperature can be displayed on the screen for easy viewing by operators.



(Siemens PLC)



(Siemens Touch screen)

- 3, Operator can choose automatic dumper which is convenient for waste feed in.



(MWT-100&MWT-150 with automatic dumper)

Environmental friendly

1, The final product is a sterilized and shredded waste which can be disposed as a house hold waste.

2, It has bio-filter to guarantee the waste air is sterile.



(Bio-filter)

3, Green technology; Environmentally friendly; No hazardous emissions (smoke, chemical release, radiation). Allow on-site treatment.

4, After sterilization, the microbial Inactivation can reach $8\log_{10}$ (99.9999%)

Efficient & Cost-saving

1, Pre-shredding permits effective sterilization; Up to 80% volume waste reduction

2, The autoclave chamber can be equipped with a paddle to assist in feeding (applicable to capacity $\geq 300L$)

3, The chamber and pipes has thermal insulation which can reduce the heat consumption



(Pipe insulation and chamber insulation)

4, Simple installation, fully automatic operation, easy operation, saving labor and costs.

3, Structure of Autoclave

1, Upper chamber

The upper chamber includes an automatic vertical loading door and chamber for loading the waste.

The material is 316L stainless steel which guarantee the service life and anti-corrosion.

It has a hopper which can help the medical waste enter into the shredder easily.

2, Shredder

The shredder is built into the chamber and provided with double rotating shafts. With automatic reverse rotation to prevent jamming. It shreds the waste to small pieces following the needs of customer.

The blades are made of high-quality alloy steel (55SiCr) which is high toughness and impact resistance. The blade material can also be customized according to customer requirements.



(Shredder)

3, Lower chamber

Lower chamber is comprise of side door or bottom door(depends on autoclave capacity) and waste cart or waste collection plate. The material is 316L stainless steel which guarantee the service life and anti-corrosion.

For MWT-100 and MWT-150, The sterilization chamber has drawer type unloading system. It can also help unload medical waste which can save labor.



4, Control cabinet

The control cabinet consists of necessary interface elements to control all the valves, motors and hydraulic station.



(Control cabinet)

The Siemens 7" touch screen can display in the real-time sterilization time, temperature, pressure, time, alarm, working curve and all parameters.

Printer can print sterilization time, pressure, temperature and real-time data for traceability.



(Printing record)

5, Sealing door

The sealing door adopts a silicone rubber gasket and pneumatic seal structure. The door open and close is driven by hydraulic pressure. It also has safety interlock device.

*If the doors are not closed, the program cannot start

*If the chamber has pressure, the doors cannot open

*It has a multiple alarm system for the sealing door to prevent misoperations, water cuts and power cuts from affecting the system.



6, Pipeline system

The piping system consists of control valves, safety valves and stainless steel pipes.

*The control valve adopts Germany GEMU pneumatic valves and solenoid valves.



(Germany GEMU pneumatic valve)

* Chamber pressure is continuously monitored by an electronic pressure transducer. It has safety valves to protect the products and operators. When it is overpressure, the safety valve will open to release the pressure. When the pressure is under the setting limit, it will close.

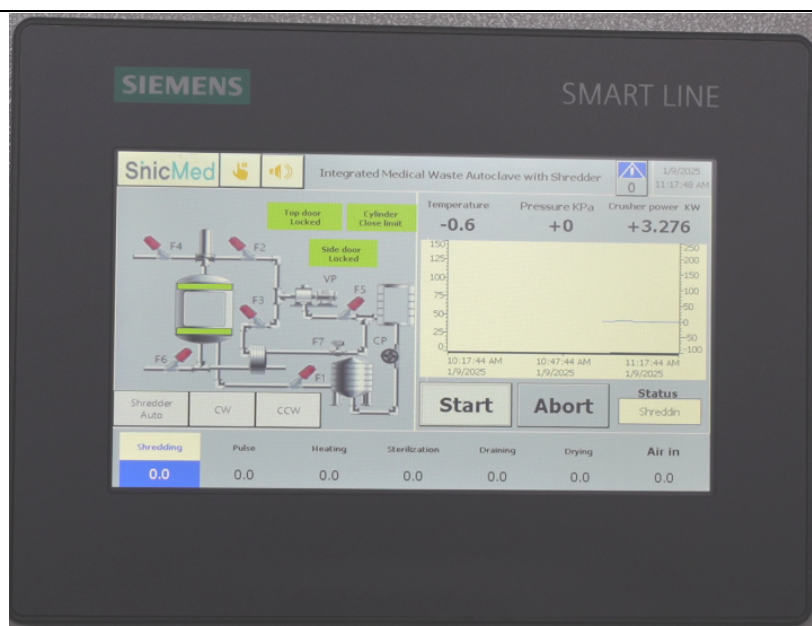
*Stainless steel pipes: The pipes adopts 304 stainless steel and covered with thermal insulation material whose temperature is above 45°C

4, Working Flow

All operating processes are controlled and monitored by an integrated microprocessor.

Loading-Shredding-Pulse-Heating-Sterilization-Draining-Drying-Unloading

The equipment includes three preset sterilization programs and allows the user to configure the operating parameters and select the required sterilization cycle. The equipment is provided with an automatic sterilization chamber cleaning cycle. At the beginning of each cycle, the system automatically performs a self-check and a chamber leak test.



Loading

Press “T-door O(open top door)” button, the door will be opened automatically. The operator will put the medical waste bag into the shredder chamber (if the product has dumper, the dumper will pour medical waste into shredder automatically.) When the shredder chamber is full, please close door.

Shredding

After the top door is closed, the shredding motor starts to shred medical waste. When it detects the electric current back to empty loads status, the shredding motor will stop.

Pulse

The vacuum pump will work to drain off the cold air inside of chamber, to make the steam penetrate the medical waste efficiently. It will evacuate chamber pressure to -70~-80Kpa.

Heating

The steam inlet valve will be opened and steam enters into the chamber. When the temperature reaches to the setting value. It will turn into sterilization phase.

Sterilization

The steam valve will be controlled by chamber pressure and temperature. It will keep the chamber pressure between $138^{\circ}\text{C}\pm 2^{\circ}\text{C}$, 15min or $134^{\circ}\text{C}\pm 2^{\circ}\text{C}$, 30 min. The parameters can be modified by customers.

Draining

After sterilization, discharging valve will open to exhaust air in the chamber.

Drying

When the chamber pressure reaches to setting value, vacuum pump will start to dry medical waste.

Unloading

Open the side door, unloading medical waste.

5, Technical Parameter of MWT-150/100

	MWT-100	MWT-150
Design pressure	0.3Mpa	0.3Mpa
Design temperature	145°C	145°C
Working temperature	138°C or 134°C	138°C or 134°C
Working pressure	250kpa or 220kpa	250kpa or 220kpa
Water source pressure	≥0.15Mpa	≥0.15Mpa
Compressed air pressure	0.5~0.7MPa	0.5~0.7MPa
Steam pressure	0.3~0.5MPa	0.3~0.5MPa
Loading capacity	100L	150L
Disposal weight	20kg/h	30kg/h
Overall size(L*W*H)mm	1800*1800*1750	2600*2000*2100
Power supply	380V, 50 Hz	380V, 50 Hz

6, Accessories

	MWT-100	MWT-150
Oil-free air compressor	Power: 0.55kw Rated exhaust pressure: 0.7Mpa Rated exhaust flow: 2.0m3/h Weight: 24kg Rated voltage : 220V,50/ 60Hz	Power: 0.55kw Rated exhaust pressure: 0.7Mpa Rated exhaust flow: 2.0m3/h Weight: 24kg Rated voltage : 220V,50/ 60Hz
Steam generator	Power : 36KW Production Capacity: 48 kg/h Steam pressure : 0.7 MPA	Power : 48KW Production Capacity: 66 kg/h Steam pressure : 0.7 MPA

	Steam temperature: 150°C Water consumption: 48 L/H	Steam temperature: 150°C Water consumption: 66 L/H
Water softener	Production capacity : 1000 L/h Power: 0 kw	Production capacity : 1000 L/h Power: 0 kw

7, Technical configuration

No.	Name	Model	Manufacturer	Specification
1	Chamber	Sinicmed-A.01	Sinicmed	Inner chamber adopted 316L stainless steel
2	Sealing door	Sinicmed-A.03	Sinicmed	Hydraulic driven and pneumatic sealing, equipped with safety interlocking and manually device
3	Door control switch	MLCA12-TH	Jiyang	Stable operation with heat resistant and long service life
4	Pressure transmitter	ECO-1-ABS	Feiyan	High precision and reliability with stable output.
5	Pneumatic valve	554 series	German GEMU	Remote compressed air control without failure. Stainless steel valve body.
6	Vacuum Pump	2BV series	ZiPUMP	It operate stably with high reliability, low noisy and no leakage.
7	Steam generator	Sinicmed-A.04.01	Sinicmed	High steam-produce efficiency, safe and reliable. With pressure gauge, water shortage alarm, water filling pump
8	PLC and modules	200Smart	SIEMENS	Advanced function with strong power and high reliability.
9	Touch Screen	TP177Micro	SIEMENS	It can display data in operation, easy control and convenient operation.
10	Program Software	STEP 7-Micro/WIN	Sinicmed	It is module control, supplied with several program.

11	Mini-printer	WH4008A-RS23 2	Wei Huang	Clearly record all parameters in cycle, such as time, temperature and pressure. It has a long service life.
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