VERTISA
MEDICAL WASTE STERILIZATION SYSTEMS

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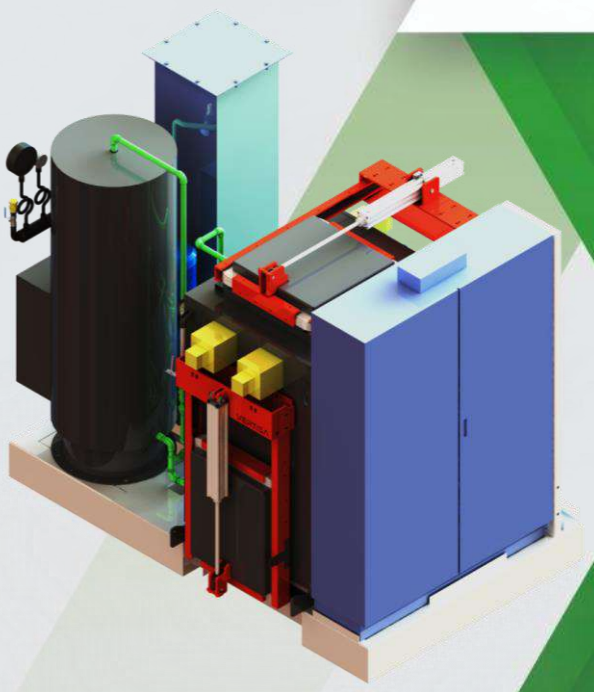
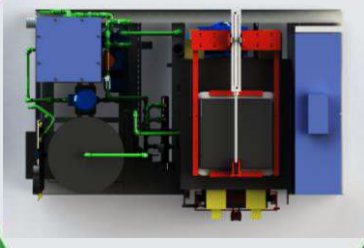
PROMED

P150

MEDICAL WASTE STERILIZATION SYSTEM 60 kg/h





VERTISA
MEDICAL WASTE STERILIZATION SYSTEMS

PROMED P150

PROMED P150 MEDICAL WASTE STERILIZATION SYSTEM

Sharp Waste

Hypodermic, intravenous, other needles, syringes, infusion sets, scalpels, pipettes, knives, blades, and broken glass.

Infectious Waste

Waste contaminated with blood, other body fluids, laboratory cultures, microbiological stocks, waste that has human excreta, and other materials.

Pathological Waste

Human tissues, organs, or body fluids; unused blood products.

Laboratory Waste

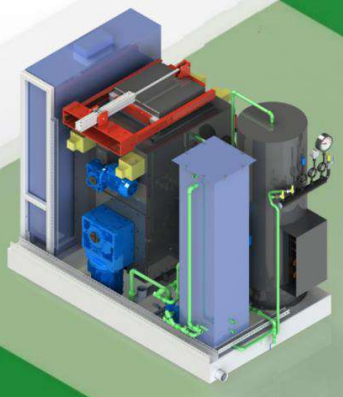
General Infectious Lab waste such as wipes, gloves, tissue, culture media, sampling, etc.

Mixed Medical Waste

Medical waste from activities involving health protection, medical diagnosis, treatment, scientific research, as well as dental and veterinary service.

WHY CHOSE PROMED MEDICAL WASTE SYSTEMS?

- Steam sterilization technology is the perfect modern alternative to incineration.
- All our sterilizers are eco-friendly with zero environmental and ecosystem impact.
- PROMED medical waste sterilizers require only electricity and very little amount of water for operation.
- Condensed steam is the only liquid by-product; zero wastewater is produced
- VERTISA guarantees ten years' supply of spare parts and consumables.
- Our engineers and dealars provide on-site installation and training for the local staff.
- One-year warranty is standard with all our systems (can be elongated optionally).
- Accredited by HYGCEN Austria independent laboratory.
- 15 language options are available. It is accessible remotely via the internet for maintenance requirements.
- Proven to be the most cost-efficient technology for treating infectious waste.
- Easy to operate even for non-skilled operators.
- Long-lasting and sustainable operation procedures.
- All our customers are assisted with technical and environmental support.



PROMED P150
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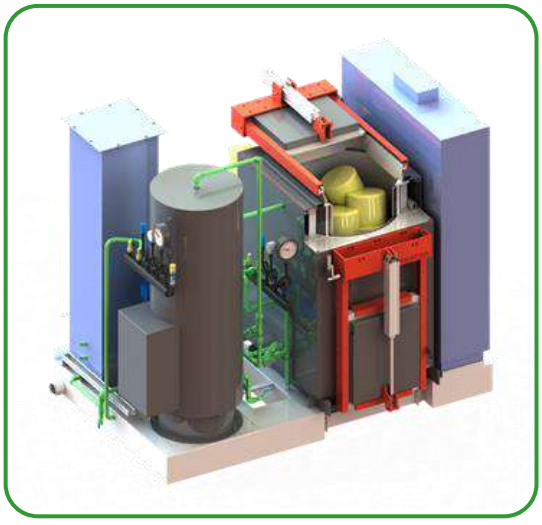
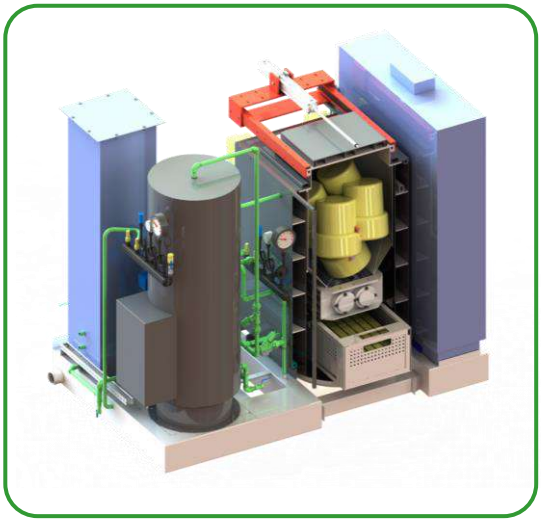
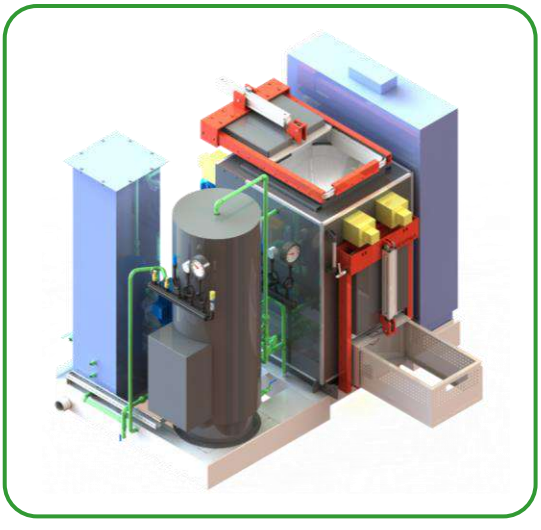
PROMED P150

PROMED P150 SLIDING DOOR
MEDICAL WASTE STERILIZATION SYSTEM

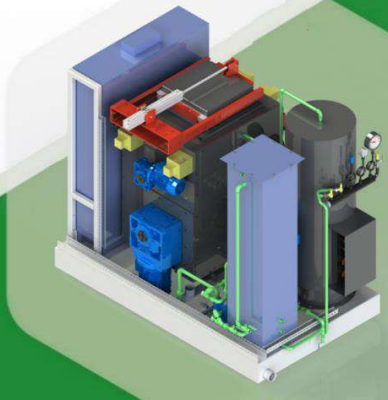




WASTE LOADING-SLIDING LID



WASTE DISCHARGE-SLIDING LID



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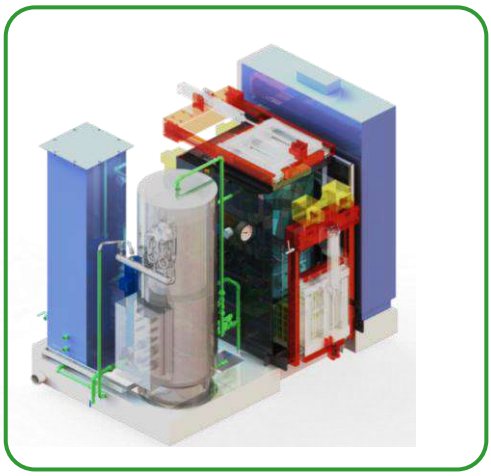
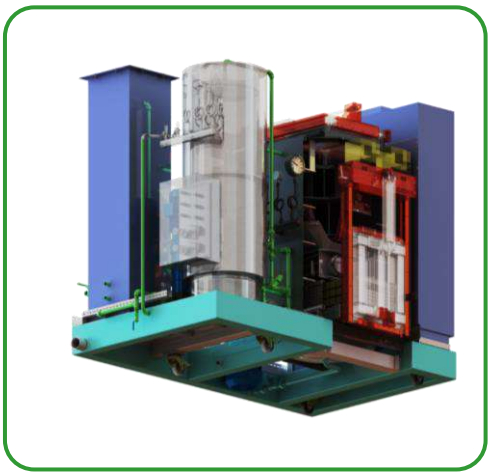
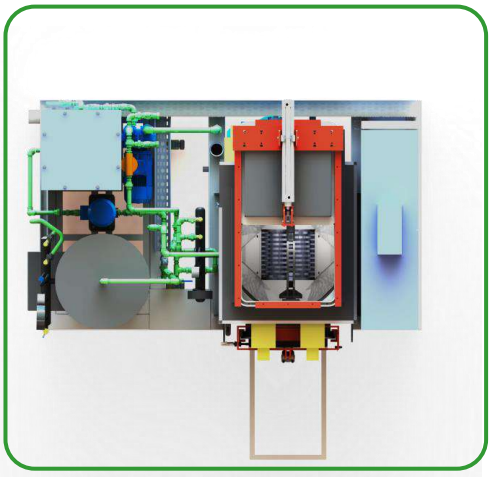
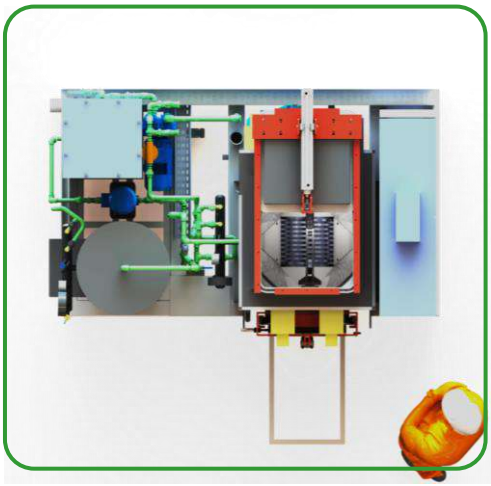
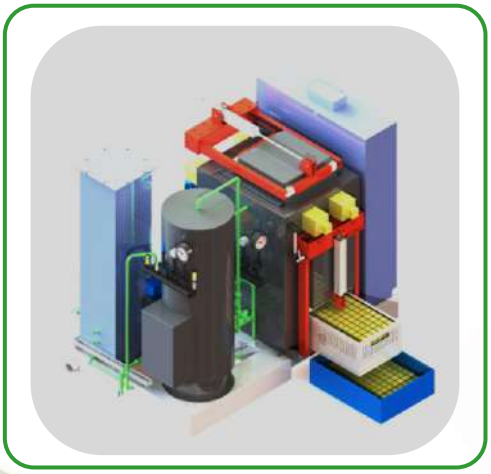
PROMED P150 SLIDING DOOR
MEDICAL WASTE STERILIZATION SYSTEM

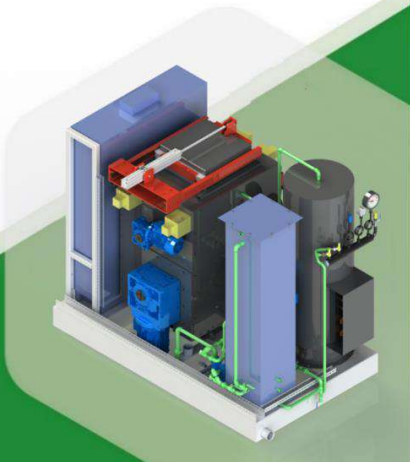




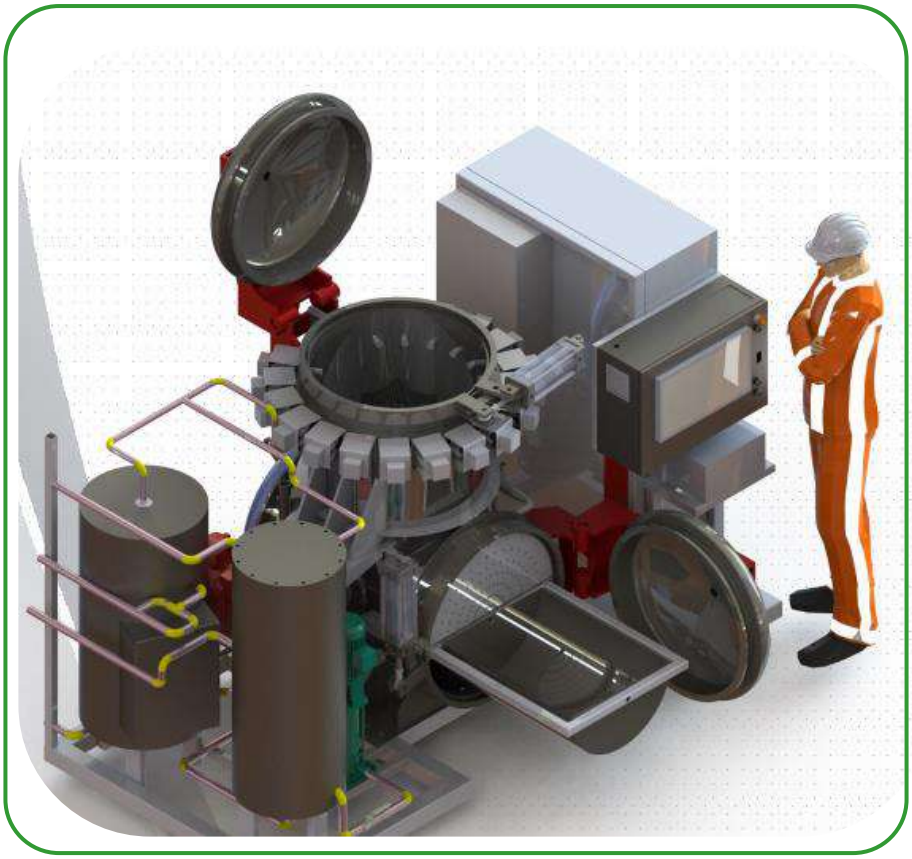


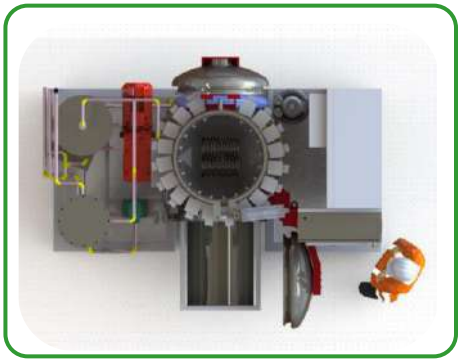


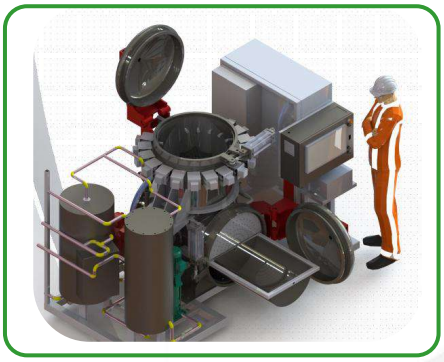


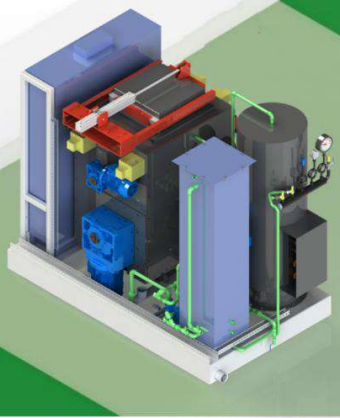


PROMED P150
Microwave-Assisted Pressurized Steam Medical Waste Sterilization System (Optionally available)









PROMED P150 TECHNICAL FEATURES

Technical Features	Value
Size (L x W x H) (mm)	2400 x 1450 x 1900
Loading chamber Size (L x W x H) (mm)	560 x 460 x 900 mm
Weight (Kg)	2930
Generated Steam Pressure (Bar)	8 Bar
Electrical connection required (Kw)	35-45
Working Characteristics	**Value**
Sterilizing Capacity (Kg/Cycle)	30 - 35
Sterilizing Capacity (Kg/Hour)	60 kg/h even more depending on the bulk density of the waste)
Process Volume Capacity (Min.)	290 L
Average Waste Density (Kg/m3)	100-150
Average Cycle Time (Min)	30
Maximum Steam Flow (Kg/Hour)	170
Sterilization Efficiency (SAL)	8 Log10 for bacillus subtilus/bacillus thermophilus spores
Electricity consumption (kWh / cycle)	1.7 **
Water Consumption Liter/cycle LL7Cycle	None ***

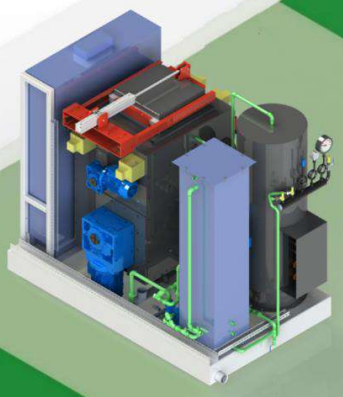
* P50–P100 –P150 includes built-in electrical steam boiler as a must and microwave option also is equipped with the steam boiler
** Electrical consumption of the sterilizer only
*** Water consumption of integrated steam boiler: Almost zero by 2-stage water saving mechanism (steam is condensed and directly recirculated and waste water is filtered and passed thrugh the RO, cleaned and sent to steam generator).

Power consumption of the steam generator is also ensured along with almost zero water consumtion.

Microwave generator , Automatic lift , Odor control system, Vacuum pump , Observation Window mounted on the Hopper and several other optionals are available.

All Systems can be customized to customer specifications and the manufacturer is free to change be the specifications any time to improve the functions and performance.

The system is a plug & play kind of equipment and the standard set-up basically consists of hopper, built-in shredder, electric steam generator, microwave generator (optional), sterilizing vessel, air compressor, Microsoft – cloud based software, 24 '' color HD touch panel monitör, PLC unit and all the other connecting cables, hoses, etc. Shredding & sterilization by pressurized hot steam and microwaves in one single vessel are encountered.



PROMED P150 SPECIFICATIONS

PROMED MEDICAL WASTE STERILIZATION GENERAL FEATURES

- Pressure container built of high-quality Stainless Steel
- Produced according to EU Directives PED 2014/68/EU, 2006/42/EC, 2007/47/EEC, 2014/30/EU&EU , 2006/42 EC
- Simultaneous Shredding and Sterilization process for higher capacity output
- Sophisticated automation control system with advanced reporting and monitoring software
- Fully automatic operation- no need for any operator intervention
- Automatic lift system for easier loading (optional)
- Microsoft Windows cloud based control software, with minimum 24-inch Full HD resolution, touch screen monitor is equipped.24 '' Touchscreen PLC control systems and a special program for eliminating viruses.
- Online access via the internet for online maintenance, supervision and troubleshooting
- Power supply: 380/480 VAC, 3 Phase, 50/60HZ
- Low electrical consumption by the integrated steam boilers, totaling 8.7 kW/Cycle together with the steam generator
- Very low water consumption (Average 10 L/Cycle) but almost zero by 2-stage water saving mechanism (steam is condensed and directly recirculated and waste water is filtered and passed through the RO, cleaned and sent to steam generator) ,

PROMED P150 MEDICAL WASTE STERILIZATION SYSTEMS TECHNICAL SPECIFICATIONS

General description

PROMED P150 is a sterilization system designed for infectious hazardous waste generated from healthcare activities. It employs hot, pressurized, and saturated steam and is equipped with an integrated shredder to process medical waste before the sterilization procedure. Microwave - hot and pressurized steam version is also optionally available.

Sterilization Efficiency

Sterilization is achieved by treating both the waste and all internal components of the system, including the shredder, with saturated steam at temperatures between 134°C and 135°C for a duration of 10 to 20 minutes, maintained at a pressure of 3.0 to 3.5 bar. Following the sterilization process, the inner temperature of the sterilizer is reduced using an air blower and vacuuming. The sterilization heat can be programmed, with an upper limit of 150°C, and sterilization time as well as cooling temperature can be customized upon request.

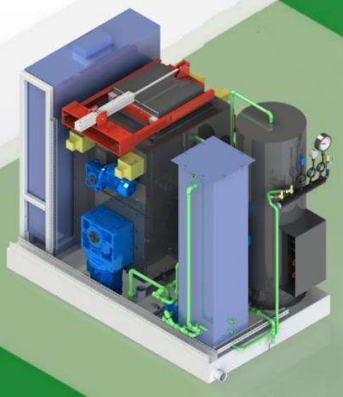
The disposed waste can be considered as sterile communal waste, meeting a minimum sterilization efficiency of 8 Log 10 for spores (the representative spores as bacillus subtilus and bacillus thermophilus) as confirmed by the HYGCEN independent testing laboratory certificate.

Materials

The materials used for the chambers and lids are all Stainless Steel. The shredder is also made of high-strength heat-treated quality stainless steel, which has a high resistance to fatigue and attrition

Quality control

The quality controls of PROMED brand products are carried out under the control of the manufacturer's rigorous control procedures for each product. All tests and trial cycles of the product are completed by the Vertisa engineering team before shipment.



PROMED P150 SPECIFICATIONS

Medical Waste Size Reduction

Shredding & sterilization by pressurized hot steam and microwaves in one single vessel are encountered. The waste treatment system is offered as a complete unit and single body. Two-shaft shredder is equipped with shafts with low-speed rotating knives.

The medical waste is loaded into the chamber hopper, where an appropriate vacuum is applied to remove the air from the chamber after the shredding procedure is completed. The shredder shreds the medical waste into small sizes, so the volume of the final sterilized waste is reduced by 80 % .
Also, the liquid content of the waste is removed as discharge (which is circulated) and so the weight reduction in accordance with the liquid content of the waste input occurs. The minimum weight decrease is 15 % in accordance with the liquid content of the waste entry .

The process, along with neutralization of viruses, destroys the following micro-organisms:

-bacterial flora, micro bacteria, fungus, spores

The equipment is suitable for the treatment of infectious medical waste, sharp waste, and some of pathological waste.

The entire process is fully automatic and managed, programmed, and controlled by Windows cloud-based control software and equipped with a 24 '' size smart touchscreen monitor and dedicated PLC system.

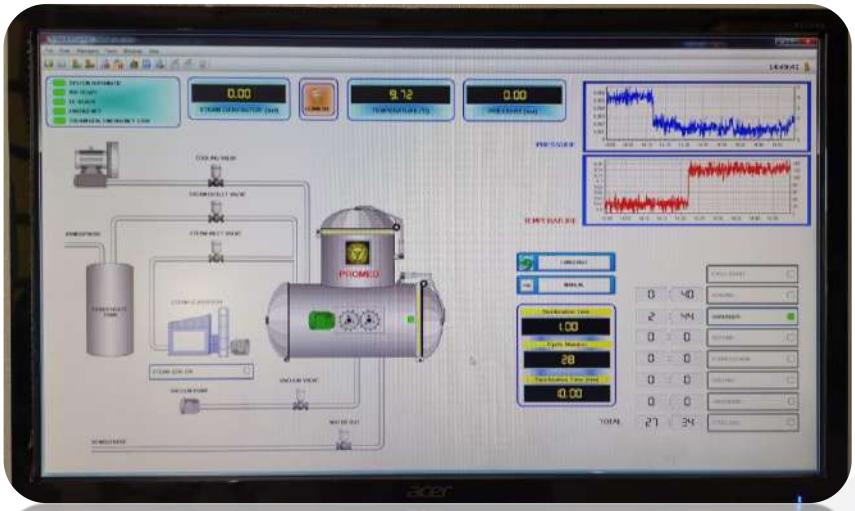
All of the process parameters with date and time are monitored, recorded, and printed out after each sterilization cycle. The process flow is monitored on the color touch-screen display and all visual and audial alarm features are possible.

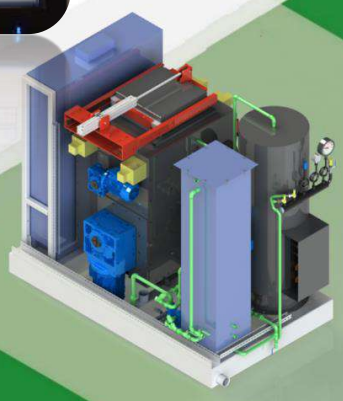
The equipment is equipped with over-temperature and over-pressure sensors, and relevant safety cut-off valves to prevent any explosion and damage during the operation in case of a multi-function. An emergency stop button is also available. In case of power failure during the operation, the cycle starts from the beginning when the power comes back again.

There are no hazardous emissions in the form of gas, water, or solid during or after the sterilization cycle.

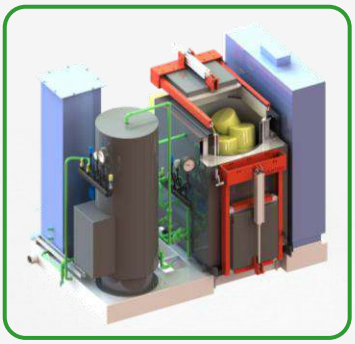
The operation is carried out without remarkable noise and is considered to be noiseless.

Further, odor reduction also is encountered to reduce the emission of odor which ensures almost no odor emitted from the equipment.



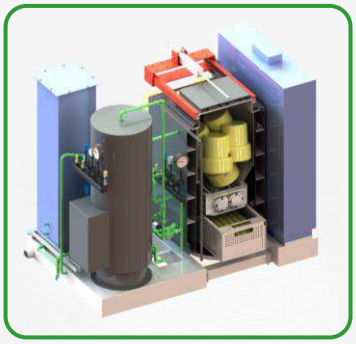


PROMED P150 STERILIZATION CYCLE STAGES



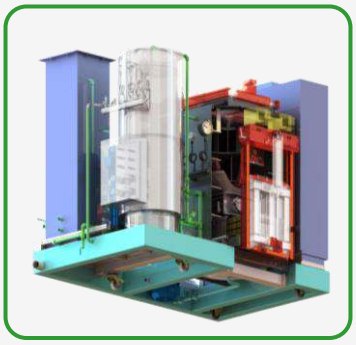
1 – LOADING

The PROMED P-150 system is fully automatic and equipped with an automatic lift mechanism. All operations and controls are managed by the intelligent PLC system.
Waste is loaded into the container, which is placed in the lift mechanism's designated location. After receiving the start command, the automatic lift raises the loaded waste and dumps it into the hopper after the upper lid automatically opens.
Meanwhile, the microwave (optional) and steam generator start operating. Once the upper lid closes, the shredding process begins. After shredding the medical waste in the upper chamber is completed, the intermittent vacuum process starts automatically. There is a paddle in the hopper that directs the waste towards the shredder.



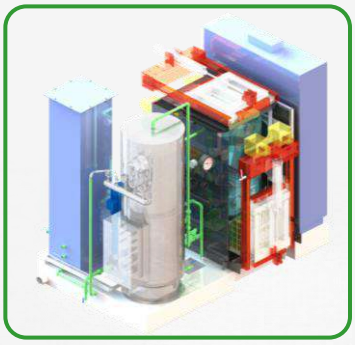
2 – SHREDDING

The shredder, controlled by the PLC unit, can change its rotation direction thanks to its "anti-blocking" capability, which prevents the blades from getting jammed. Our specially designed shredder is capable of grinding very hard materials commonly found in medical waste, such as surgical stainless steel instruments and hard ceramics. The mixing device in the upper chamber ensures the continuous feeding of the shredder.



3 - HEATING AND STERILIZATION

Heating is achieved by using microwaves and injecting saturated steam until the temperature in both the upper and lower chambers reaches 134°C - 135°C, a value programmable by the user. The temperature can be programmed up to even 145-150°C if preferred. Sterilization of the waste and all inner parts of the sterilizer, including the shredder, is completed by maintaining a temperature of 134°C – 135°C and an equivalent pressure of 3.0-3.5 bar for a period of 10 – 20 minutes, which can also be programmed by the user.
During this time, the magnetrons emit microwaves that penetrate through the waste, inducing and supporting the sterilization process cycle. These factors create the necessary conditions to reduce the pathogenic contamination level in medical waste by 8 Log 10 values for spores, bacteria, and viruses. The operating conditions are continuously monitored and validated to ensure complete sterilization.



4 - COOLING AND DRAINING OF CONDENSED WATER

The temperature in the sterilizer is reduced by creating a vacuum and introducing air into the treatment vessel. The condensed water, which is sterile, can be safely discharged into the sewage system (or sent back to the steam boiler via RO to save water consumtion) , and any remaining residual steam is vented out through the vacuum pump and sent back to condensor of the steam generator. .

5 - UNLOADING

Once all the safe operating conditions have been met, a digital sign prompts the operator to press the command button. This action causes the sterilized lower door to open, allowing for the easy unloading of the sterilized waste. The treated waste is unloaded by the operator into a closed container, which is provided with every sterilizer.

Once the unloading procedure is completed, the lower door closes automatically, and the sterilizer initiates the next cycle.

OPERATING CYCLE DESCRIPTION

The operating cycle of PROMED P150 equipment

PROMED P150 System combines heated steam, high pressure, microwave generation and shredding. PROMED P150 is a single body equipment and the integrated shredder is located between the hopper and sterilization vessel. The waste is loaded into the hopper, passed through the shredder, and cut materials are sterilized in the sterilization vessel. After the execution of every cycle, the machine is left in a sterilized and closed position.

The unit has a lift (optional automatic loading) system and loading is from the top of the machine. All process is performed in one automated cycle from loading to unloading and no intermediate handling of the waste during the treatment cycle is required.

With the pushing of the control button, the control device permits the feeding. The doors are locked and completely sealed for air, water, and particulate leakages. The machine eliminates the pressure of the sealing of the feeding lid, opens the safety mechanism and lock of the feeding lid and the Operator with the pressing of the permission button opens the feeding lid and stays steady for feeding. Feeding is done by loading waste into the chamber of the unit.

While feeding, the shredder is switched off throughout the feeding process, for safety precautions.

After closing the upper chamber air-tight, the PLC unit starts the complete treatment cycle, which automatically operates till discharging (Shredding start activation by button upon request).

First the feeding lid safety mechanism closes and the seal is put under pressure.

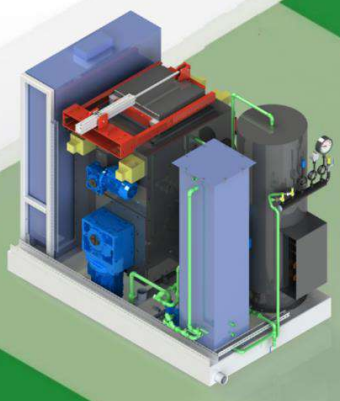
The machine checks the air-tight closing.
The first phase of the sterilizing program is the shredding, the shredder starts automatically, and with an optimum program cuts the waste into the required size. After shredding procedure is completed, intermittent vacuum process is implemented.
The average shredding time depends on the composition of the waste.

If shredding is observed automatically for safety reasons the shredding continues for a couple of minutes, so that the waste may completely empty the knives. But as this waste has been sterilized with the rest of the waste also, The size of the pieces resulting from the chopping is 2-10 mm. It does not matter if some waste remains in/on the shredder as this will be discharged with the next cycle.

After this stage, the temperature rises until the temperature in the center of the waste reaches 134 °C - 148 °C and pressure to 3.5 – 4 bar for 10 - 20 minutes.
The temperature of the waste should at least remain at not lower than 134 °C for 10 minutes.
During this time the magnetrons penetrate the waste with microwaves in
order for the sterilization to occur. These factors provide the possibility to decrease
the pathogenic contamination level in the medical waste by 8 Log 10 value.

As along with the temperature increase, the pressure also increases proportionally to temperature. The optimum sterilization and steam consumption are controlled by taking into consideration the quantity of steam, temperature, and pressure data.

After the sterilizing has been completed, the cooling process begins where cold water is injected through the double jacket of the vessel to ensure effective cooling to reduce the temperature to 80 °C. Meanwhile, excess steam is condensed and is vented out by vacuum which helps the temperature and pressure drop.



After reaching the cooling time, the following steps are taken automatically:

- Draining of condensed water into the sewage
- Pressure-equalizing
- Opening of safety mechanism of the discharging lid
- Signaling the operator to open the discharging lid

The opening of the discharge lid is done by the Operator by pushing the operating permission button.
When releasing the button the opening process will be interrupted for safety reasons. This level of safety is achieved by requiring the operator to constantly push the button till the opening process is finished.

After this stage, the waste-collecting container must be positioned below the unloading tray so the waste will be emptied into the waste-collection container.

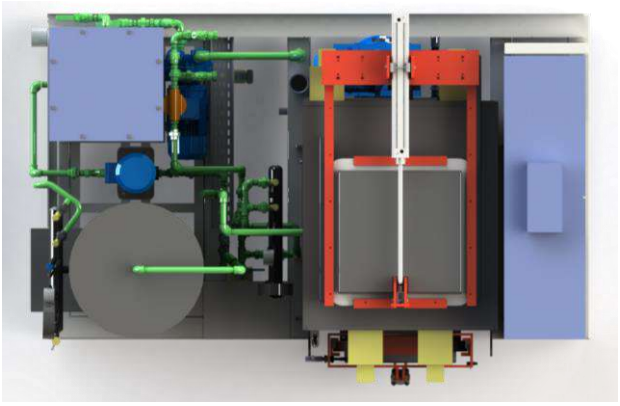
Once the unloading procedure is completed, the lid is closed, the control device automatically closes the lid's safety mechanism, and the sealing is put under pressure.

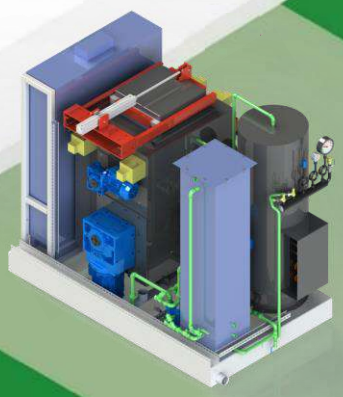
With the completion of this process, the sterilizing cycle ends

The whole cycle is controlled by the Control PLC, which not only controls the system but by the end of the program records, the temperature, pressure, time, sterilization value, etc.. of each phase.
Through the color monitor of the PLC, the condition of the equipment can always be followed by the operator.

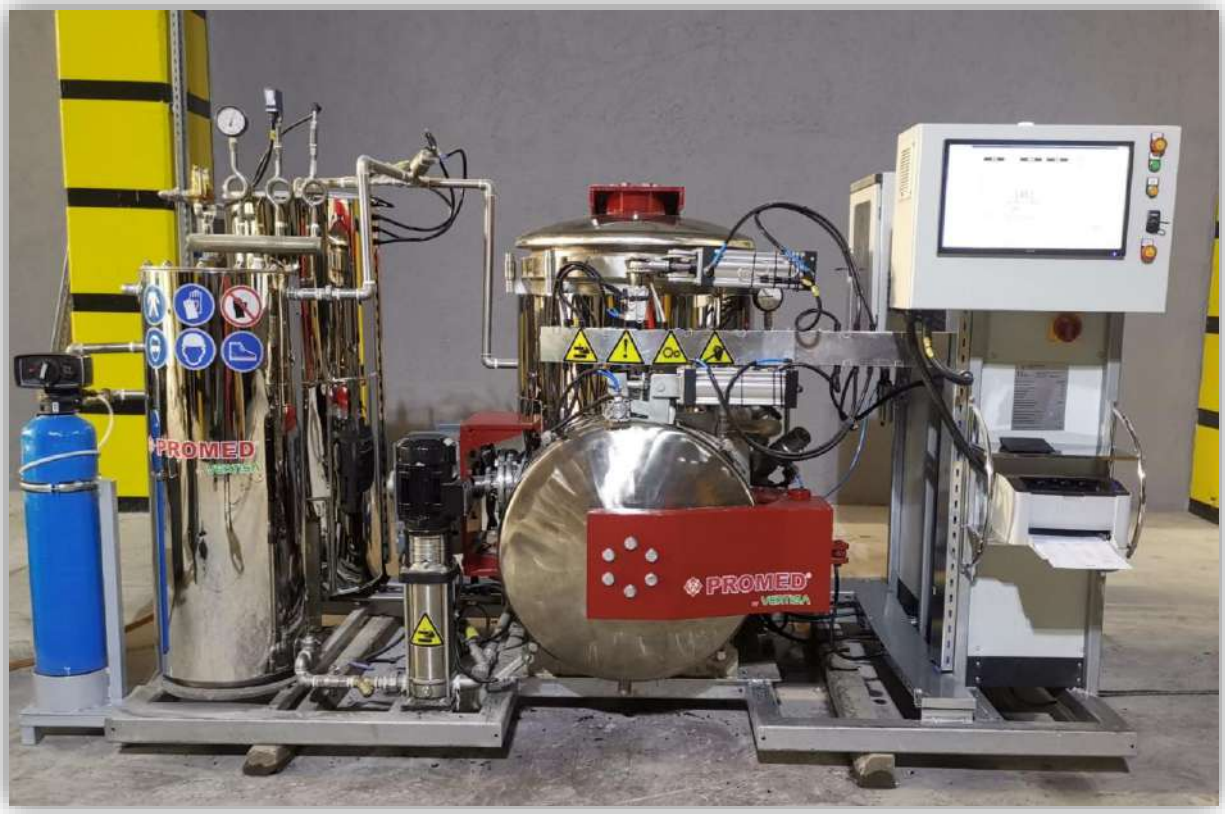
Energy Balance

The pressure vessel is insulated. The aim of heat insulation is to decrease temperature loss and to improve the average efficiency.

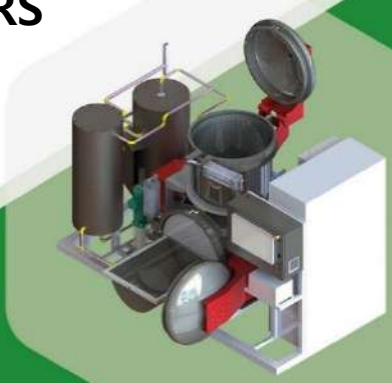




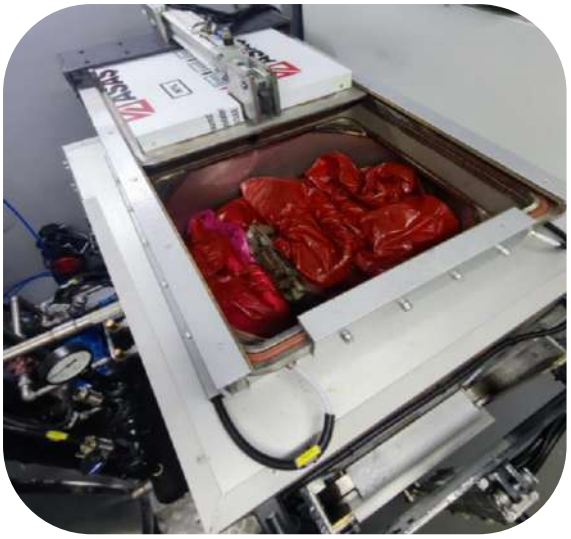
PROMED P150 MEDICAL WASTE STERILIZATION SYSTEM

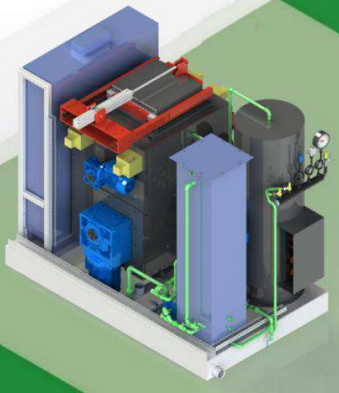


P150 WITH CIRCULAR DOORS



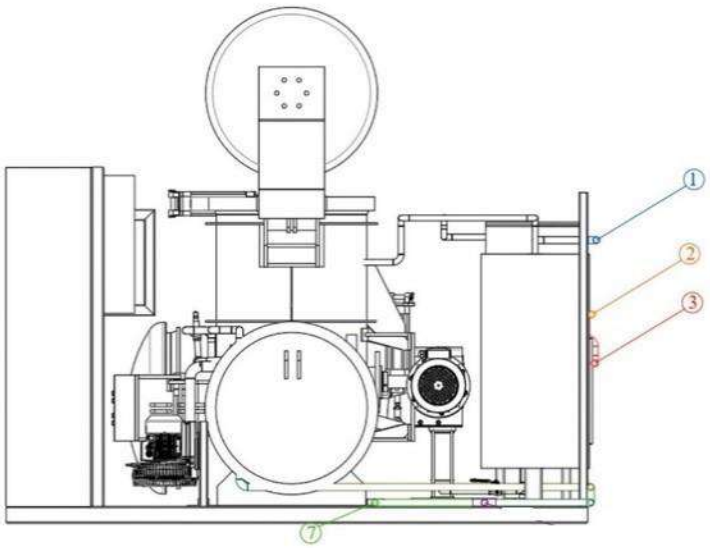
PROMED P150 SLIDING DOOR PHOTOS FROM FACILITIES





COMPONENTS DESCRIPTION OF THE EQUIPMENT

The components of the equipment are illustrated in the following diagrams.



PROMED
P150

1- Safety valve of the steam boiler
2- Steam outlet
3- Municipal water inlet
4- Safety valve of the sterilization unit
5- Vacuum system discharge
6- A cooling water supply for the vacuum motor
7- Wastewater system discharge

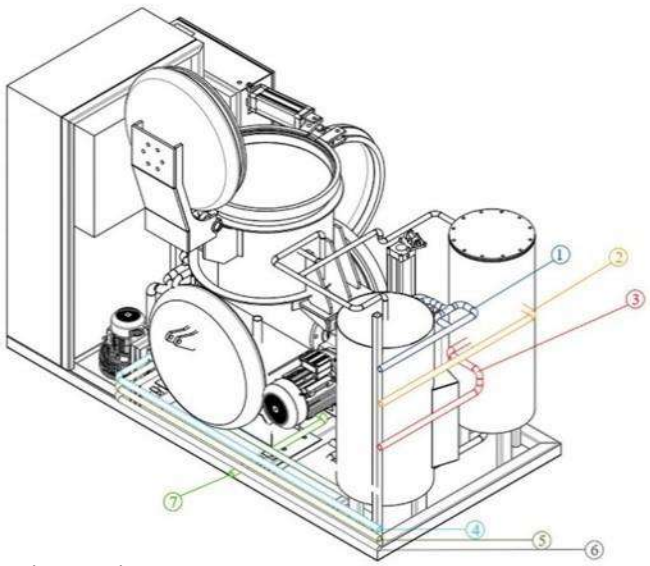


Diagram: a sketch of the machine with main nominations.

MAIN COMPONENT OF THE SYSTEM

The openable lid of the feeding chamber
Insulation layer on feeding lid
The openable lid of the feeding chamber
Opening /closing device of feeding lid
Security mechanism for feeding lid
Opening /closing device of security mechanism
Security lock mechanism for security lock
Opening /closing device of security lock
Position sensor on locking mechanism
Position sensor on security mechanism
Sealing for feeding lid
Steam Generator
Steam Generator Pump
Water depot
Funnel over shredder
Shredder unit
Shredder shaft (x1)
Shredder reduction gearbox (x1)
Shredder reduction gearbox motor (x1)
Shredder shaft pressure sealing components
Water level sensor of Steam Generator
The openable lid of discharging chamber
Insulation layer on discharging lid
Opening /closing device of discharging lid
Security mechanism for discharging lid
Opening /closing device of security mechanism
Security lock mechanism for security lock
Opening /closing device of security lock
Position sensor on locking mechanism
Position sensor on security mechanism
Sealing for discharging lid
Temperature sensor
Pressure sensor
Control and Electrical Panel with PLC unit
Mechanical safety pressure valves (2x)
Steam inlet valve
Steam outlet valve
Cooling water/air inlet valve
Draining valve
Color Touchscreen Monitor
Plc control panel
User control panel
Air compressor
Sterilized Waste Tray
Sterilized Waste Tray Handle
Sterilized Waste Container

REVERSE OSMOSIS SYSTEM (Optional)

Reverse Osmosis System

A Reverse Osmosis system is used to improve the quality of the water used to generate steam in the electric steam generator and to secure fully automatic operation.

The use of mineral-free water will contribute to better performance and longer life of the autoclave chamber.

Reverse Osmosis Stages

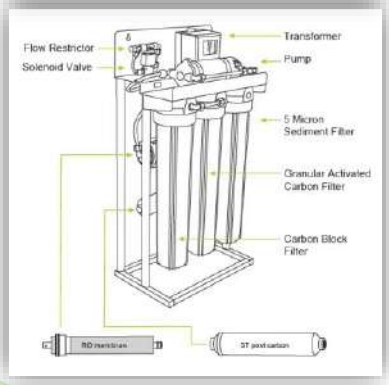
Stage 1: The 5-micron pp sediment filter is a pre-torlu filter and it protects the following filtrations and especially the membrane filter by keeping the floating matter and particles in the water. (1 mm = 1000 microns)

Stage 2: The activated carbon filter keeps the organic substances in the water, chlorine, and chlorine compounds, which are carcinogenic, and removes the pollution that is harmful to human health and the membrane filter from the water.

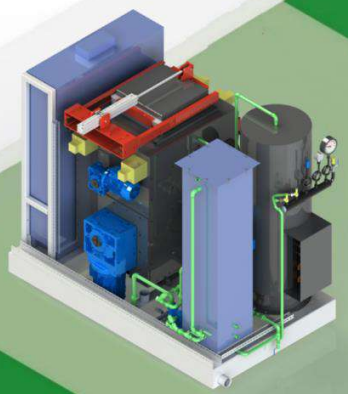
Stage 3: The block carbon filter is subjected to more sensitive particle filtration to retain the floating materials in the water.

Stage 4: Membrane filter 8-12 Angstron pores in the semi-permeable membrane, bacteria, viruses, and heavy metals in the water are kept at a rate of 95-98 and are sent to the drainage from the wastewater part of the membrane and thrown out.

Stage 5: Stage 5: The last carbon filter filters the remaining sediments, organics, and ions and finally clear water is obtained which is adequate to feed the steam generator up.



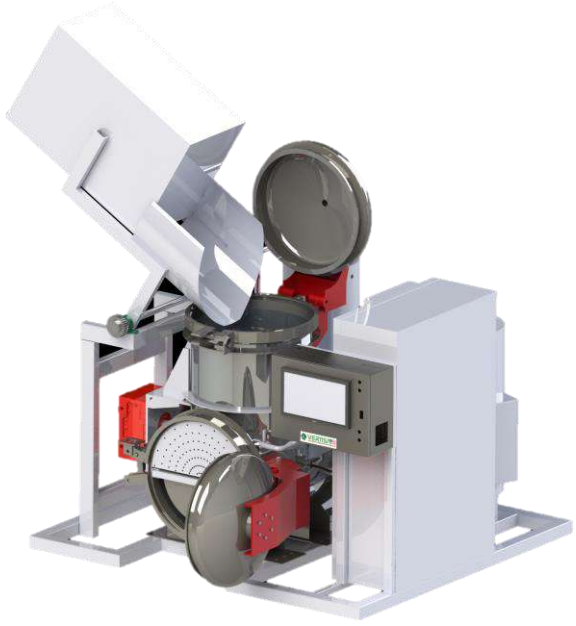
Technical Features	Value
Capacity Lt/H	70 Lt/ Hour
Min. Operating Water Temperature	5 °C
Max. Operating Water Temperature	40 °C
Min. Inlet Pressure	200,000 Pascal's
Max. Inlet Pressure	500,000 Pascal's
Max. Inlet TDS (ppm)	< 400 ppm
Max. Inlet water SDI	3
Inlet Diameter	8-10 mm
Dimensions (mm)	490 x 330 x 900
Weight (kg)	23
Treatment Rate	95 % ~ 99 %

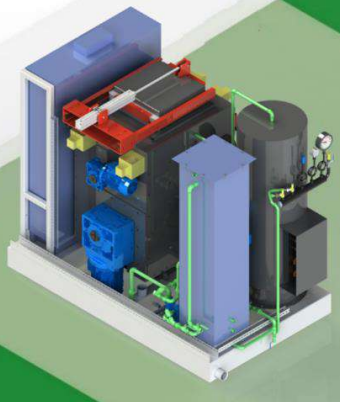


PROMED AUTOMATIC ELEVATOR SYSTEM (Optional)

Automatic elevator system is an optional feature of P150 that facilitates the loading of the waste to the sterilization system

- Industrial Design
- Fully Automated
- User-Friendly Interface
- Minimal Maintenance
- Odor Minimized
- Auto Waste Elevator
- Pneumatic System
- Steel Body Construction
- Casting Wheel
- Steel-Bearing Housing
- High Quality
- Ergonomic Design
- Durable
- Easy to Use
- Efficient
- Easily Transported





VERTISA
MEDICAL WASTE STERILIZATION SYSTEMS

PROMED P150

QUALITY STANDARDS

ISO 9001
Quality Management Systems

ISO 10002 Customer Satisfaction Quality Management

ISO 14001 Environmental Management Systems

ISO 45001
(OH&S) Management Systems

OHSAS 18001 Occupational Health and Safety Standards

ISO 13485 Medical Device Quality Management System

CE
Certificate of Conformity

TÜV
EU Type-Examination Certificate

GREEN HOSPITAL CERTIFIED
ISO
NATO OTAN
CE

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