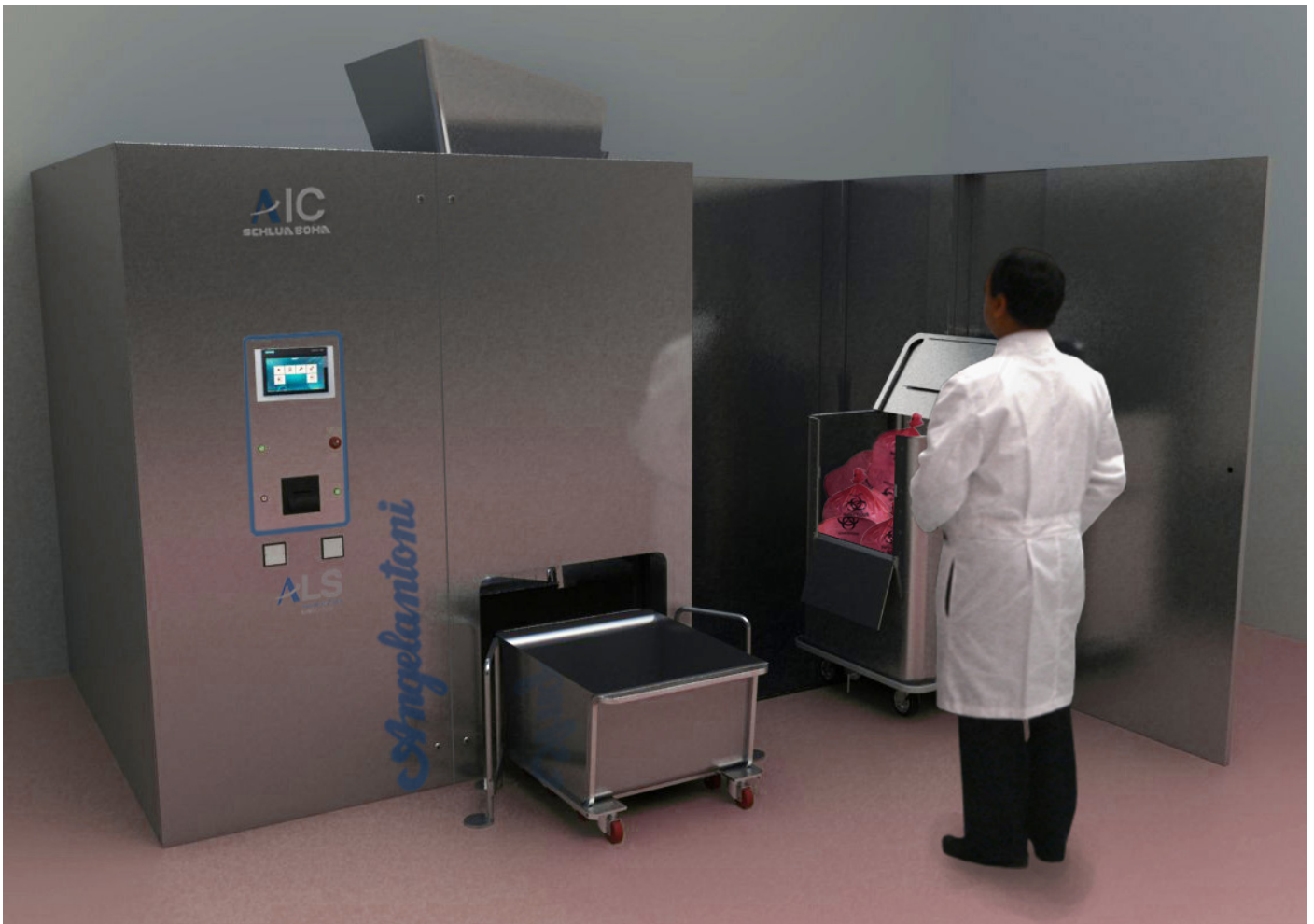


waSter®
Medical Waste Treatment





Dirty side

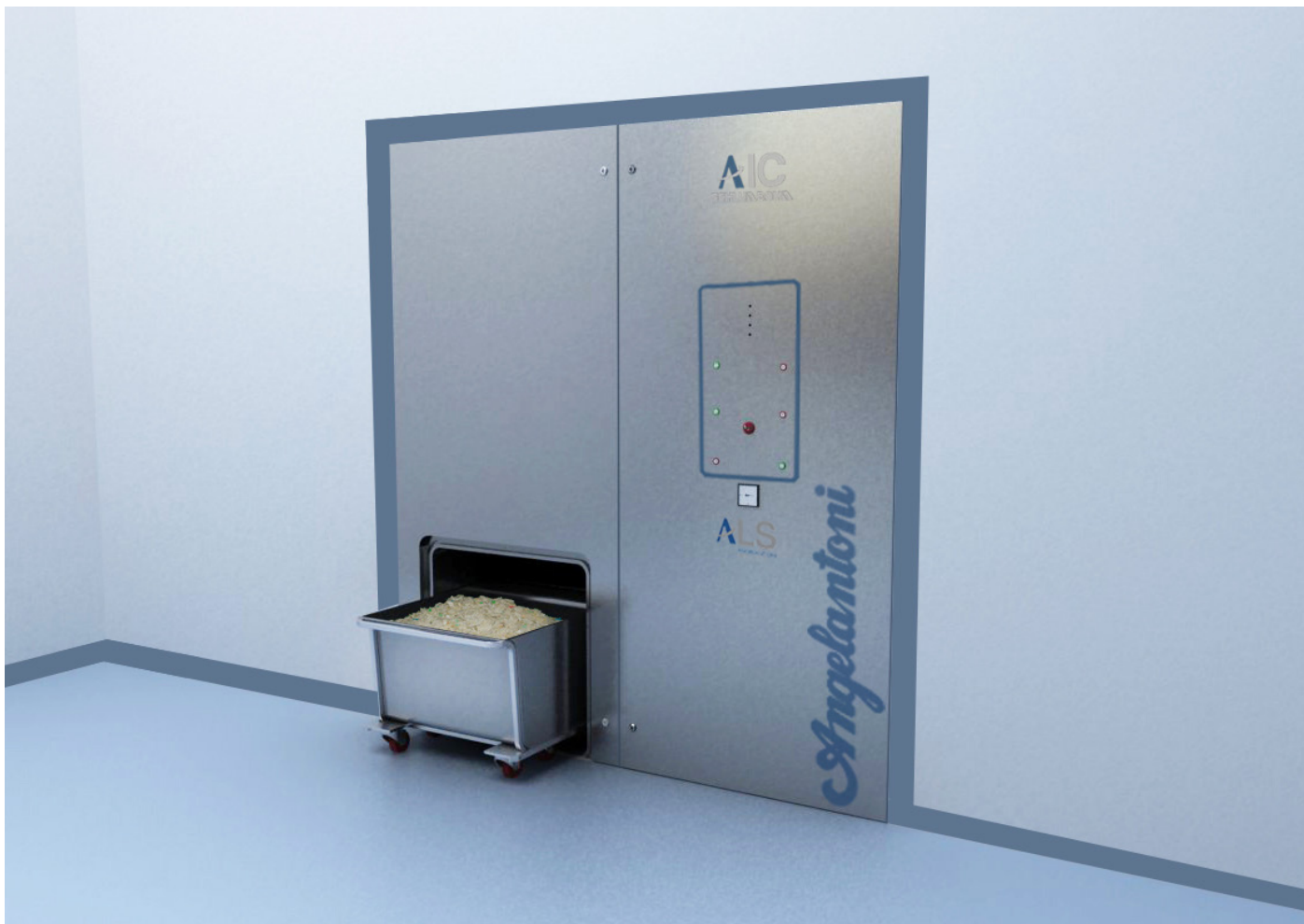
WaSter

Compact, Safe, Fast for the
Treatment of “Biohazard” waste.

The biological risk deriving from managing infected, or potentially infected, solid waste (“biohazard”), produced by hospitals, nursing homes, clinics and labs is extremely high and may be cause of transmission of infections for the population and, as a consequence, a real threat for the community.

WaSter is a new-generation compact equipment, designed with innovative concepts to eliminate the biological risk through a combined treatment of “trituration and sterilisation” with saturated steam and a final SAL of 10^{-6} of “biohazard” waste.

All as provided by the standards and restrictions on “Bio Safety Level” classes for the treatment of “biohazard” waste showing a high individual risk, also transmissible via aerosol.



Steril side

Technology

WaSter is the result of the most advanced design by Schlumbohm & Angelantoni Life Science, Leader in the design and manufacture of advanced research labs to the highest class BSL4.

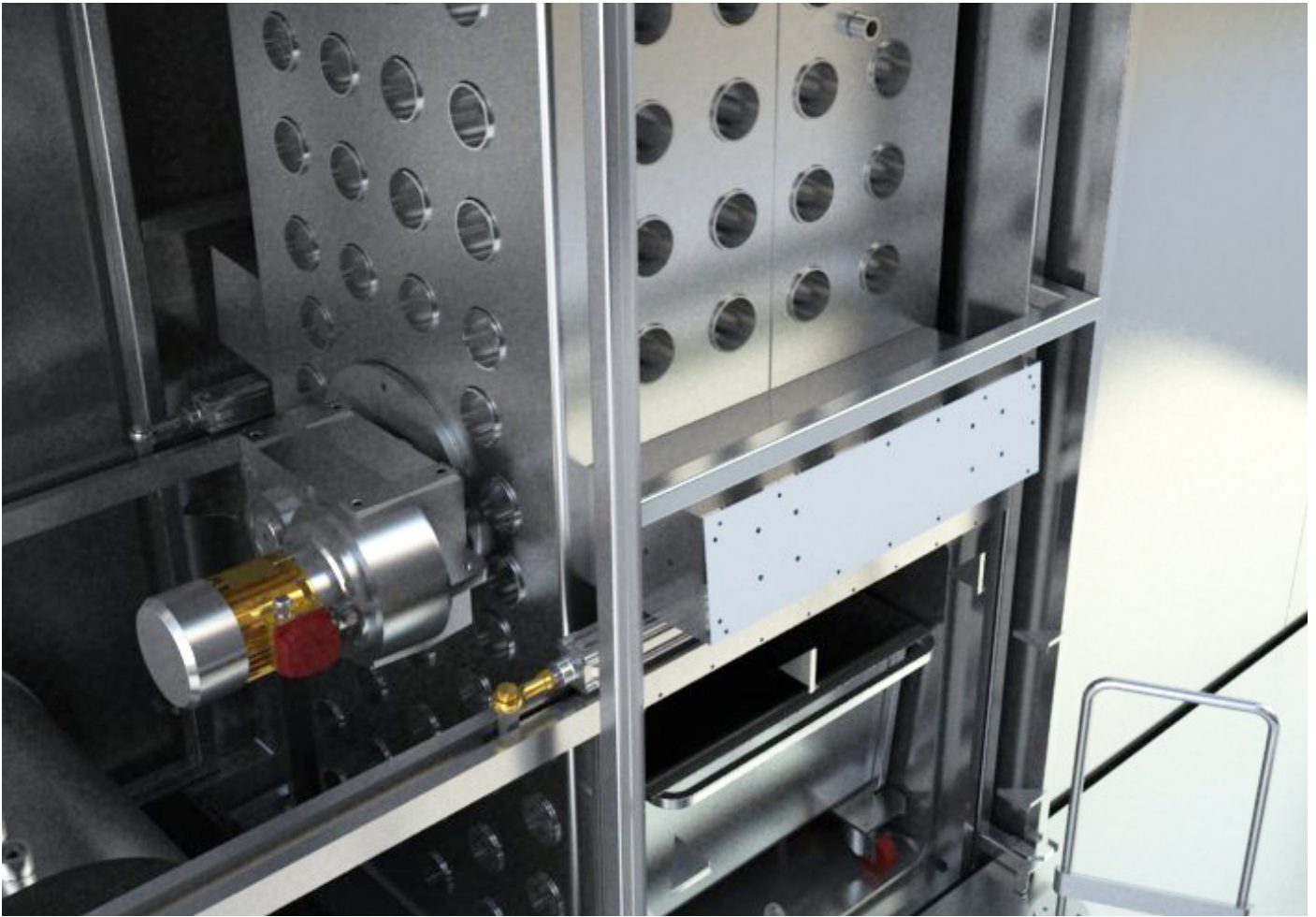
German technology combined with Italian creativity and design, combined with the Corporate Know-how matured over decades of activity and experience in the sector, has supported the development of equipment based on the concept of “total quality”, able to meet the requirements of an Elite market requiring total safety assurance, absolute reliability and processes that can be repeated in time, without burdening operators with the risk of assessment

for the treatment of “biohazard” waste with high construction standards, advanced techniques and innovative solutions.

Total quality for an environmentally sustainable project with an almost zero impact.

+50%
Service life





Management of “biohazard” waste

All solid and liquid waste coming from Operating Rooms, Day Hospitals, Infectious Departments and in general all those considered Infected or potentially infected coming from Hospitals, Nursing Homes, Clinics, Labs and Research Centres are considered a biological hazard and are classified and managed as “biohazard”.

Once sterilised, meaning without living microbial load, waste is no longer a hazard for people and can be assimilated with urban waste. It comes therefore natural and easier to end their course with this type of treatment.

According to the Legislation in force in the Country, the Management of “biohazard” waste must be carried out and the packaging, storage and treatment procedures applied.

WaSter is an equipment able to meet all legislative and operational requirements in force, trying to make its use as easy as possible.

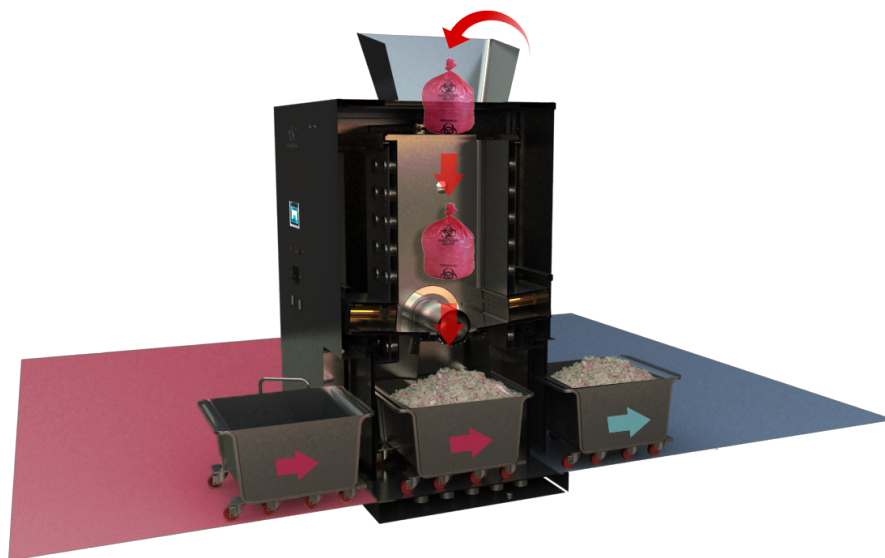
WaSter offers 5 competitive advantages

- A 80% reduction of volume in favour of transport with costs reduction,
- Easy handling at treatment end due to the fact that the waste is dry,
- Trituration inside the chamber that makes handling safer through sterilisation before intervention,
- The double productivity with dual sterilisation module,
- The installation with chamber at floor level to facilitate movement of the trolley.

Treatment combined with “5 Guarantees”

The combined treatment of WaSter has a number of guarantees that are essential for the safety of the result and repeatability over time:

- Treatment takes place in a tightly closed place to eliminate the risk of transmission via aerosol,
- The trituration system is extremely rigid as it reduces waste to unidentifiable pieces smaller than 15 mm to eliminate the risk of recyclability,
- A highly fragmented material is obtained through trituration of the waste that allows the easy removal of air, favouring penetration of saturated steam and, therefore, sterilisation to eliminate the risk of biological contamination,
- The type of plant made with innovative construction technical solutions specific for the application with controlled outlets to eliminate the risks of environmental contamination,
- The through-execution of the equipment allows a unidirectional path of the waste and only with positive outcome of the treatment to eliminate the risks of exchange.



WaSter - Operation

Certificates, quality and construction standards

The WaSter.STM line equipment is CE marked according to the European Machinery Directive 2006/42/EEC and the European Directive 97/23/EC pressure equipment (PED) and European directive 2009/125/EEC (ecodesign). Also to conform the following European directives: 2006/95/EC low-voltage directive, 2004/108/EEC for electromagnetic compatibility.

The construction is done in compliance with European Standard of reference UNI EN ISO 285: 2009 (steam sterilizers) and those related to it UNI EN ISO 17665-1 (development, validation, and routine tests), CEI EN ISO 61010-1 (electrical safety), CEI EN ISO 61010-1-040 (electrical safety), CEI EN ISO 61010-2-041 (electrical safety) CEI EN 60204-1 ISO (electrical), UNI EN ISO 15614-1: 2012 (welding procedures), UNI EN ISO 287-1 (welders qualification), UNI CEI EN ISO 17050-1: 2005 (conformity assessment), UNI EN ISO 14971-1: 2000 (risk analysis), EN IEC 62304: 2006 (validation of software) and EN IEC 62366: 2008 (human-machine interface). All of that within a UNI EN ISO 9001 Quality System (quality certification) and UNI EN ISO 13485 (medical quality certification).

WaSter composition

WaSter consists of a vertical storage chamber with relative load door and a horizontal through chamber with double door for the collection of waste in a trolley and their sterilisation. The module can operate independently and it can reach a production of 50 kg/h.

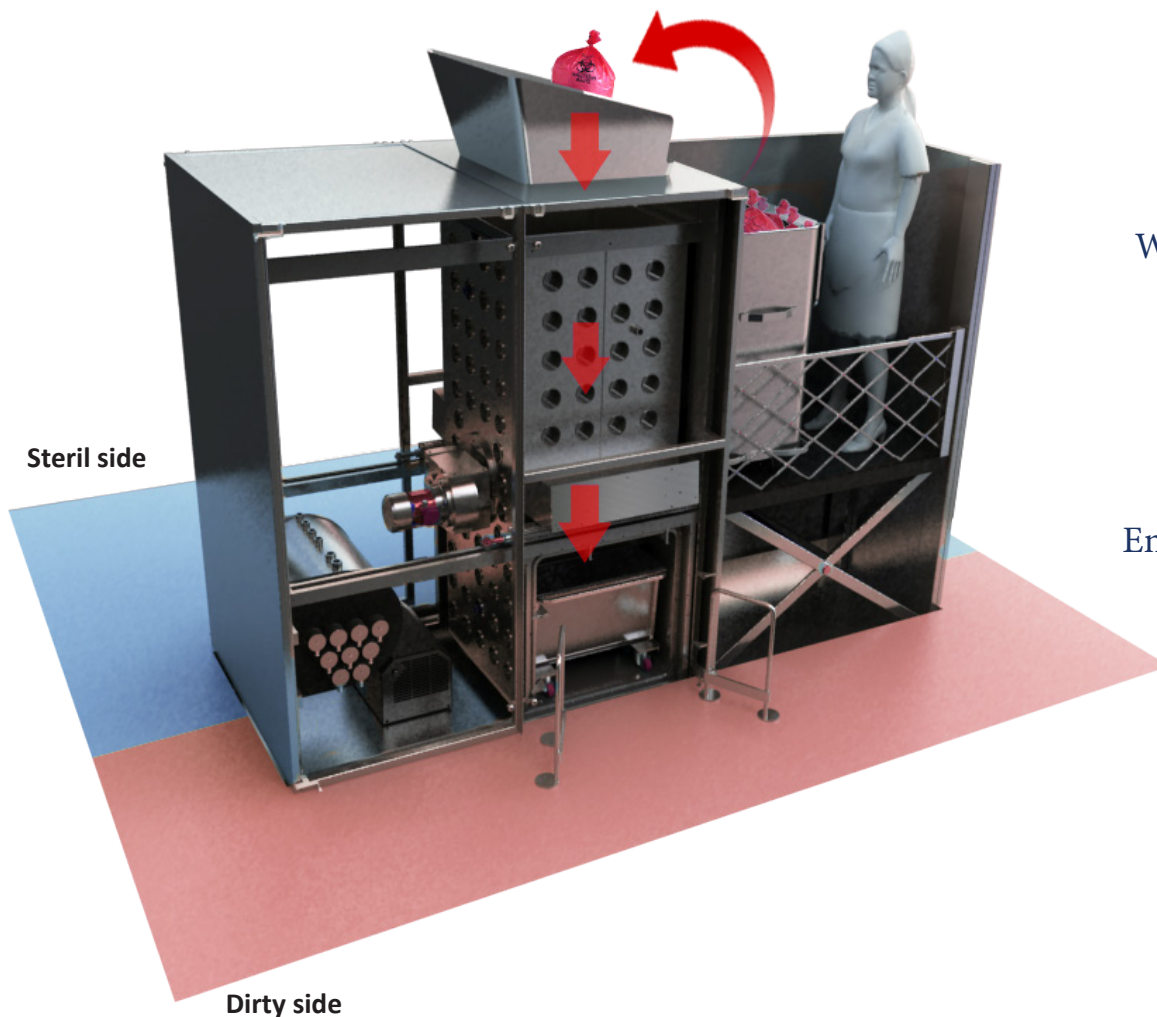
The trolley is introduced from the dirty side of the horizontal chamber to then load the "biohazard" waste in the vertical chamber. Treatment starts once the three doors are closed and it becomes fully automatic once the start is activated.

The cycle starts with trituration and continues with the sterilisation with saturated steam.

Treatment

WaSter is configured with the following treatments:

- 1 trituration and sterilisation treatment at 134°C for "biohazard" solid waste
- 2 sterilisation treatment at 134°C for "biohazard" liquid waste in open containers
- 3 steam penetration test (Bowie&Dick Test)
- 4 automatic and electronic steam penetration test cycle according to EN 285
- 5 vacuum seal test (leak test)
- 6 open treatment



-85%

Water consumption



-40%

Energy consumption



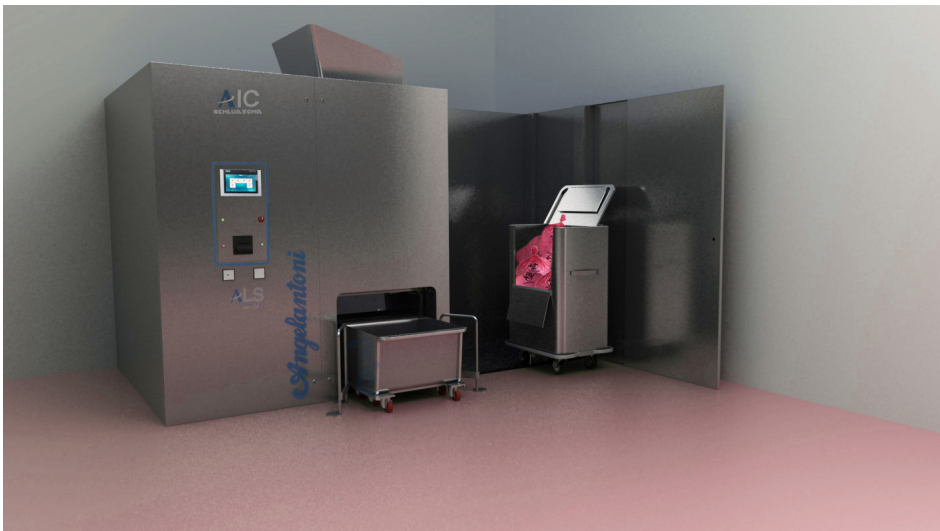
100%

Recycling



-25%

Total cycle time

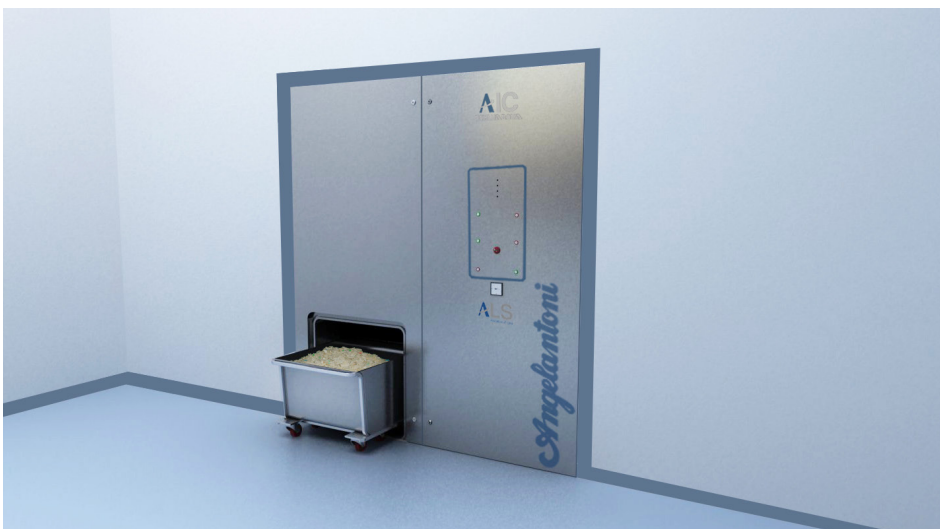
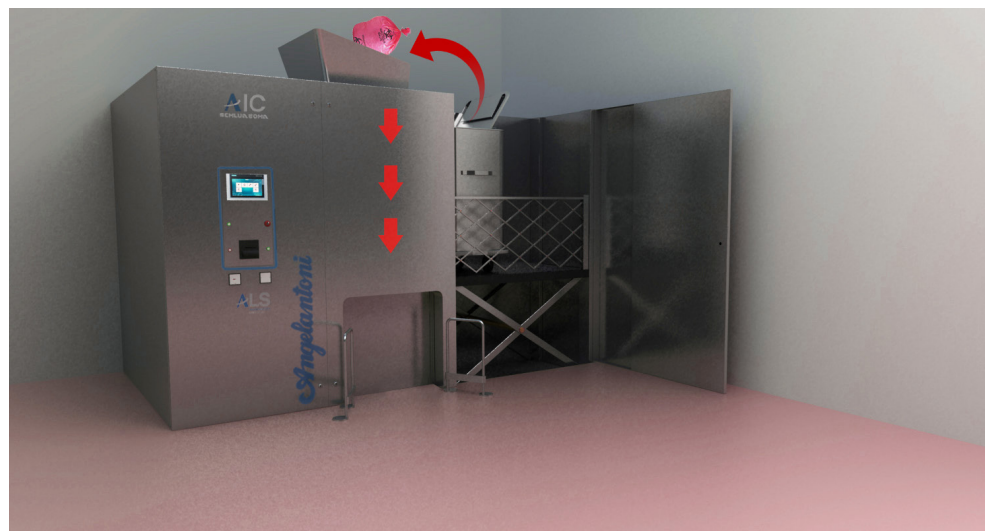


1- Reception of infected material

The infected material is brought inside the special cart and placed inside the cargo area.
A different cart to receive the shredded enters [WaSter](#)

2- Manual charge of infected material and starting of cycle

The cart containing the infected material is raised by lift integrated on the charge level. The load is carried out manually. The basket is hermetically sealed in position to receive the rape. The cycle begins.



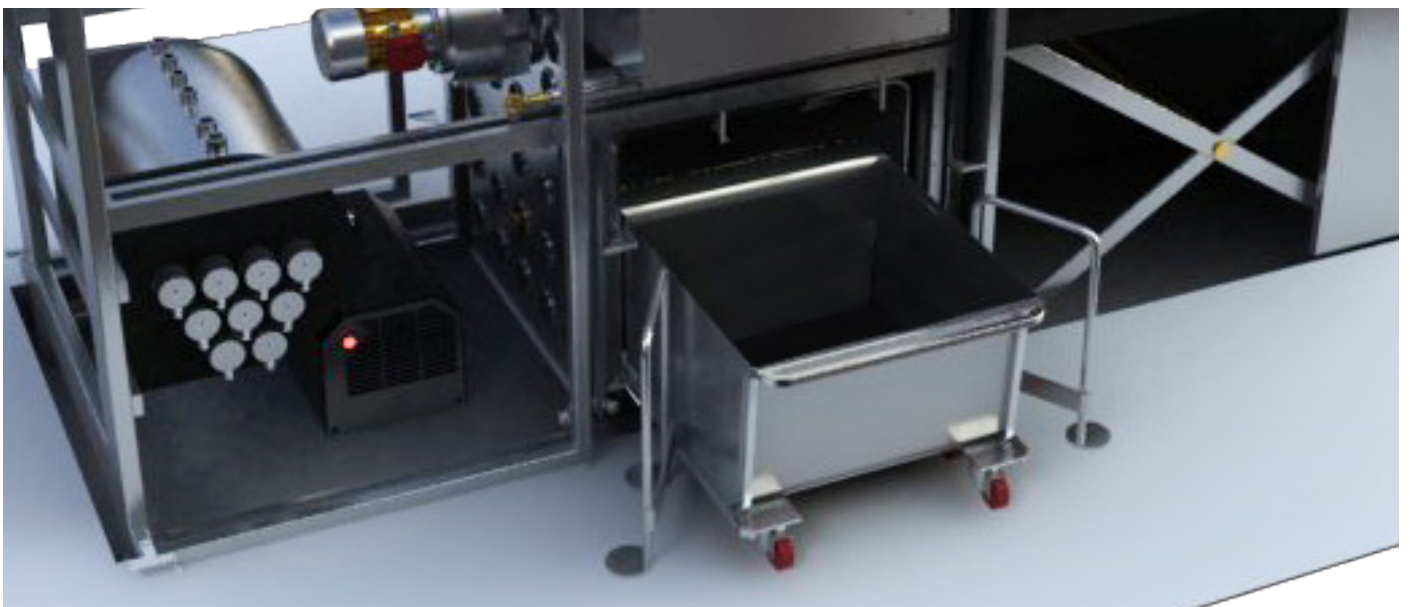
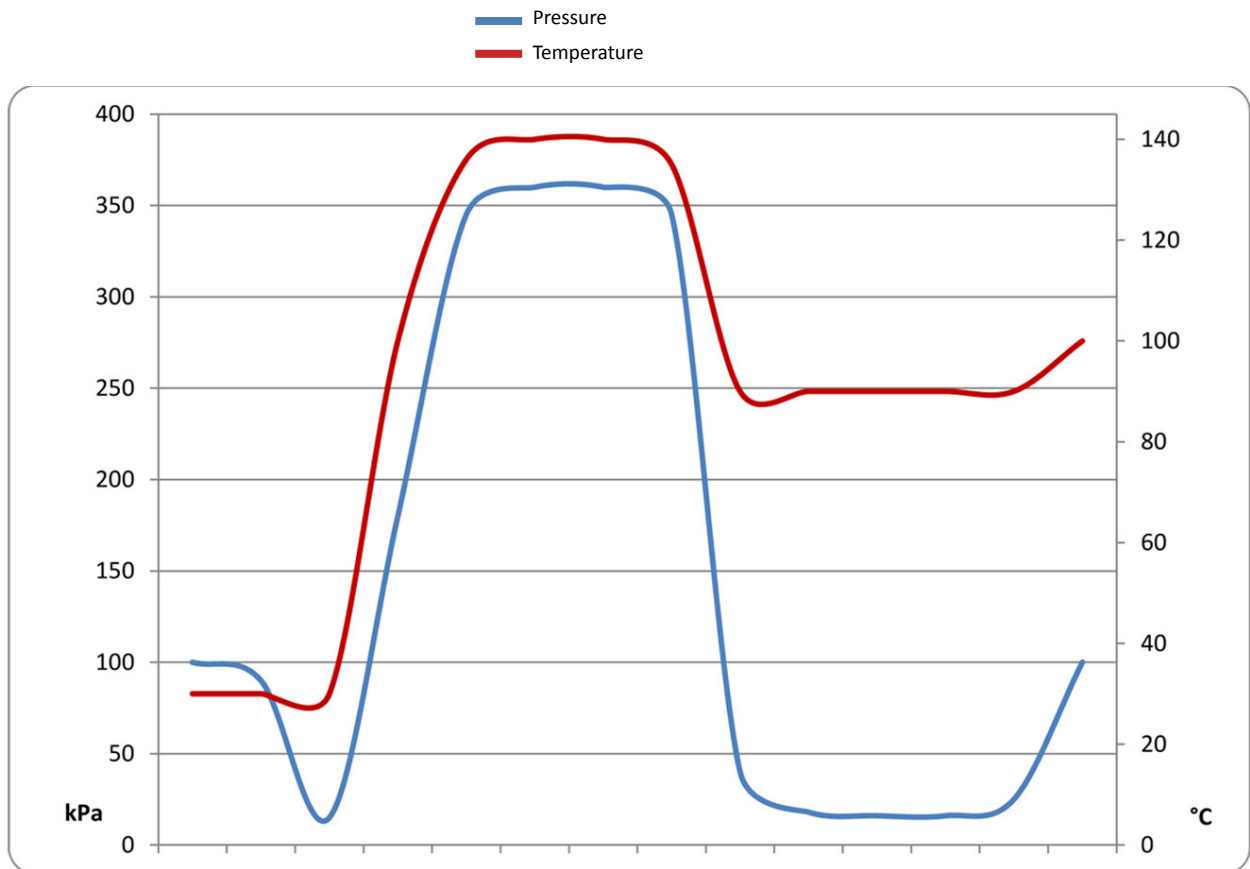
3- Removing sterile material

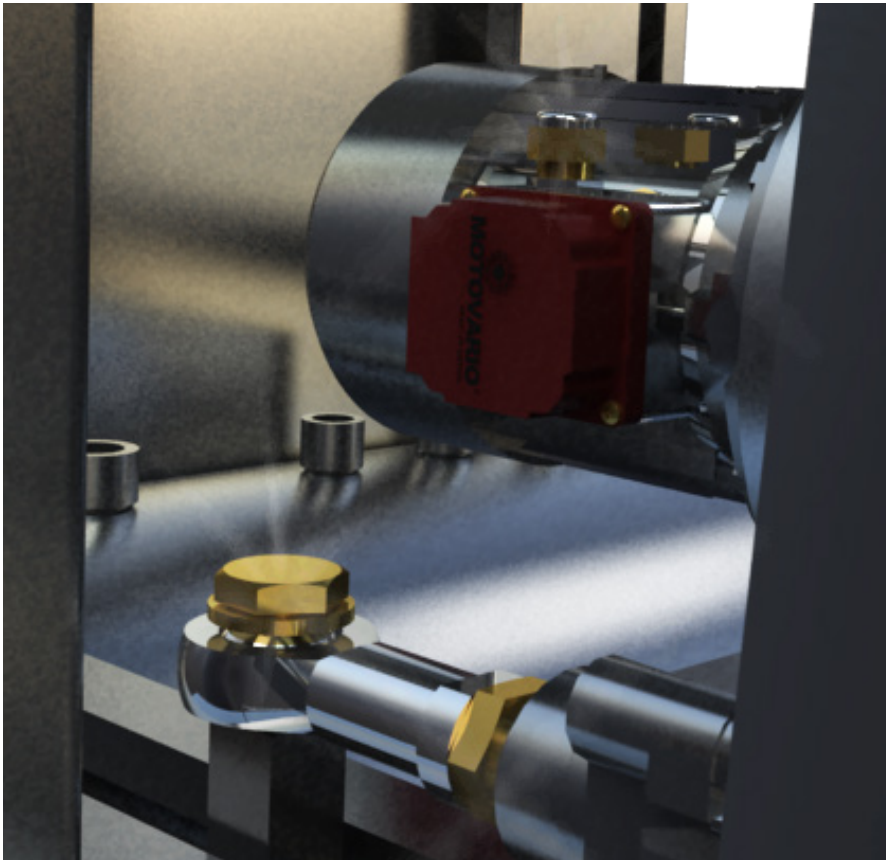
The cart containing the shredded waste leaves the sterile side of [WaSter](#).

Safe treatment

WaSter has a series of features that make the treatment safer thanks to the application of the concept of redundancy combined with the care in the details of plants, components and devices affecting and intervening during the treatment.

Treatment for “biohazard” was also certified for the application by the “Robert Koch Institute” Laboratory. Safety is not limited to the process but extends to all components and devices affecting the “reliable and safe” result.





Environmental impact

WaSter has been developed by applying environmentally friendly design with the aim of preserving the environment in which we live as much as possible, adopting innovative technical solutions and high quality components, in order to significantly reduce consumptions and, therefore, the environmental damage during the entire life cycle. Building on the idea of producing sustainable consumption equipment, at compatible environmental impact, significant and measurable objectives have been reached that enhance it, in view of the performances it reaches. Greater focus aspects are: water consumption, energy consumption and recyclability. The vacuum is generated by an innovative vacuum pump that runs fully dry and is compatible with steam. Water consumption for generating vacuum is zero.

The only water consumption, even if minimal, relates to the production of steam and cooling of outlets.

Validation

WaSter was subjected to validation with a “type” load to verify that the pressure, temperature, time and non-condensable gases fall within the correct parameters in compliance with the Standard of reference UNI EN ISO 17665 and the microbiological tests, as provided by the standards regulating steam sterilisation.

Bioseal

The constructive concept of a treatment centre must provide equipment, flows, paths, procedures and checks that must be implemented in order to consider the treatment of all that goes in and out, safe. From here the need to create a “bioseal barrier” inside the WaSter that, sealed with the wall, prevents contact between the dirty and clean areas.

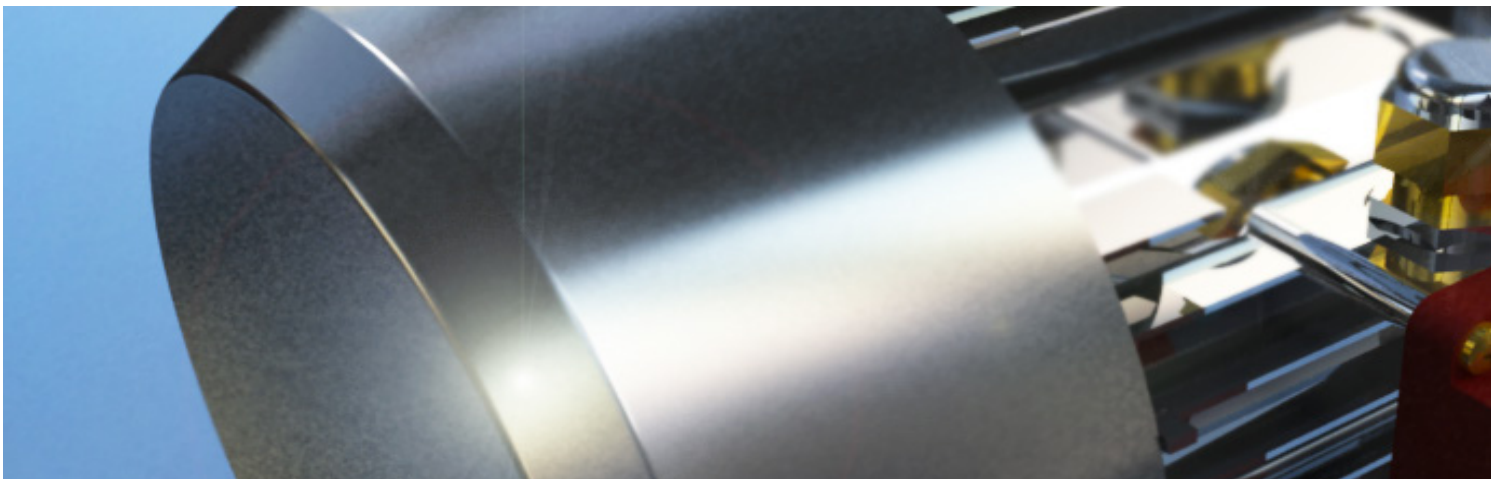
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=====
+   AIC-SCHLUMBOHM   +
=====
WASTER.50      Rel.01.00
ID-LS00000
Operator:
Operatore 1
Standard cycle
Steriliz.      T=140.0{C
                t=0020min
=====
Start cycle    14:05:13
                22/09/15
Progressive n. 00000028
=====
14:05  103.6{C  100.0kPa
CONDITIONING
14:05  103.6{C  090.6kPa
Vacuum N.01  030.0
14:12  102.2{C  022.6kPa
HEATING      140.0 {C
14:22  140.6{C  370.2kPa
STERILIZATION 0020 min
Time   T. Cham.  P. Cham.
14:23  140.6{C  371.8kPa
14:23  140.7{C  370.9kPa
14:24  140.7{C  372.6kPa
14:24  140.7{C  374.3kPa
14:25  140.6{C  377.1kPa
14:25  140.6{C  377.2kPa
14:26  140.6{C  378.8kPa
14:26  140.6{C  378.7kPa
14:27  140.5{C  379.9kPa
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14:29  140.6{C  382.8kPa
14:30  140.7{C  383.6kPa
14:30  140.5{C  383.8kPa
14:31  140.5{C  383.7kPa
14:31  140.6{C  386.2kPa
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14:36  140.6{C  386.7kPa
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14:38  140.6{C  386.4kPa
14:38  140.6{C  385.5kPa
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14:39  140.6{C  385.3kPa
14:40  140.6{C  387.4kPa
14:40  140.6{C  385.8kPa
14:41  140.6{C  386.3kPa
14:41  140.7{C  385.0kPa
14:42  140.6{C  384.6kPa
14:42  140.6{C  383.7kPa
DRYING      030.0 kPa
14:55  103.3{C  029.9kPa
DRYING      0010 min
15:05  104.8{C  017.1kPa
AERATION
=====
15:06  106.1{C  092.8kPa
CYCLE ENDED VALID
Temper. Max  140.8 {C
Temper. Min  140.5 {C
Total time   0059 min
=====

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Main technical constructive features of WaSter

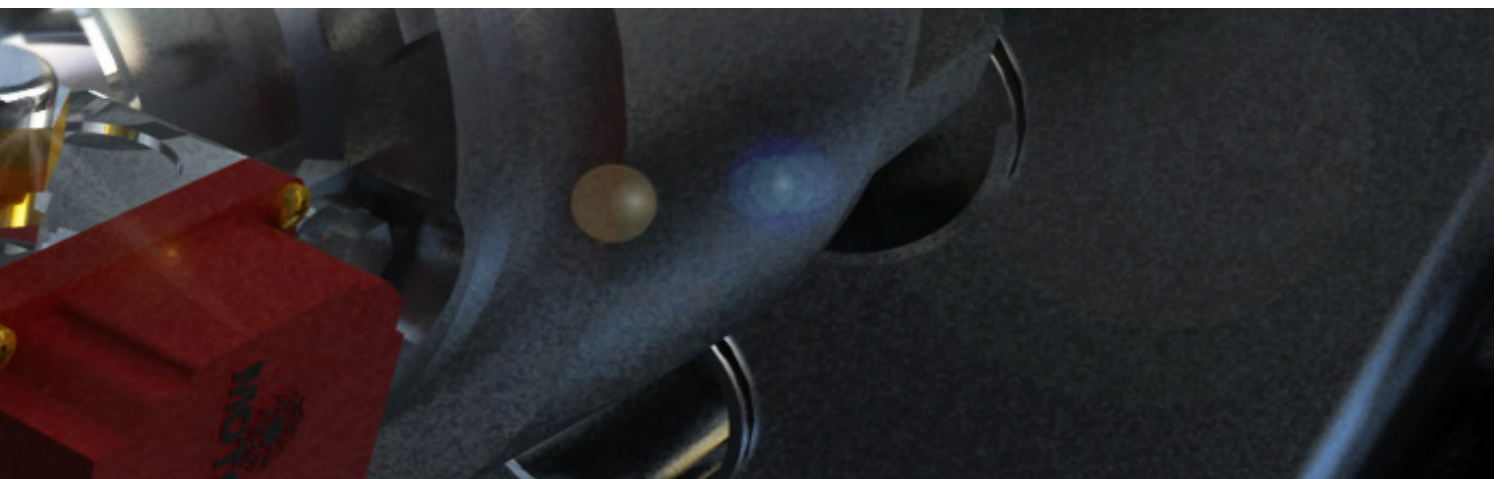
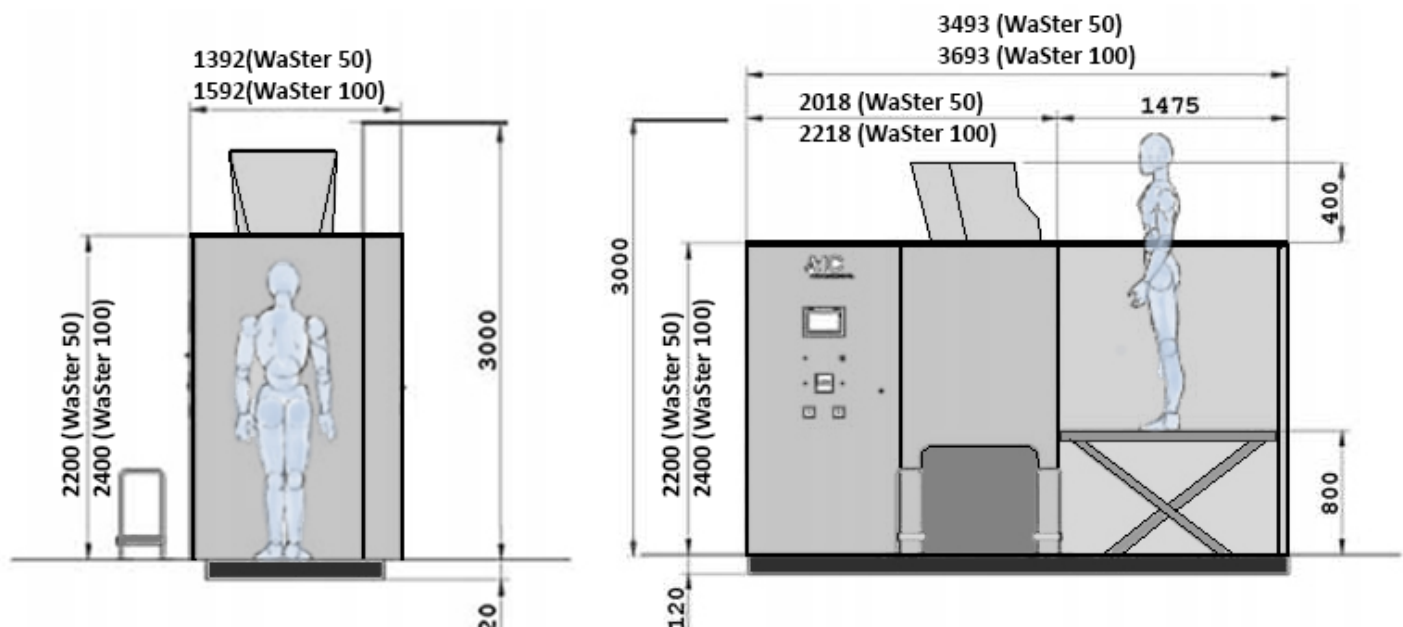
1. Supporting structure, front and side panels in AISI 304 stainless steel.
2. Vertical and horizontal 8 mm thick, 316Ti STAINLESS STEEL chambers, fully drainable and cleanable.
3. Drainable chamber bottom with central draining and filtering.
4. Cavity with total cover of 5 mm thick AISI 316Ti stainless steel chambers.
5. Master module with three AISI304 stainless steel doors.
6. Chamber internal finishing and mirrored doors with a degree of roughness below 0.2 microns.
7. Door vertical and horizontal automatic sliding device.
8. Door seal device of doors with dynamic chamber with "air chamber" type gasket.
9. Stainless steel grinder integrated in the vertical chamber.
10. Dual pressure device of waste against the trituration roller.
11. Chamber insulation, doors, steam and condensation generator and piping with internal kevlar fabric.
12. Separation bioseal of dirty side from clean side.
13. AISI 304 Stainless steel electrical steam generator (E).
14. Direct steam (S).
15. Direct steam and electrical steam generator (ES).
16. Generator water pre-heating device.
17. Energy recovery device.
18. Outlet temperature control device.
19. Generation group of dry vacuum compatible with steam.
20. Double data detection systems.
21. Siemens integrated safety, programmable electronic controller.
22. Siemens colour, high resolution touch screen monitor.
23. Second Siemens colour, high resolution touch screen monitor on clean side.
24. Alphanumerical printer on board the machine.
25. Remote connection-ready.
26. Sterilisation cycles for empty glassware, rubber materials, fabrics, liquids in sealed containers and
27. liquids in open containers and cycle for infected liquids and materials.
Microbiological filter at outlet.
28. Condensate vaporisation device.
29. Sterilisation of in-line filter and integrity check.
30. Burner at chamber air outlet.
31. B&D Test Electronic / Automatic.



WaSter range of products

Model	Productivity	Waste weight/volume ratio	Waste volume reduction ratio	Waste loading volume	Treated waste final volume	Cycle time
WaSter 50	50 kg/h	1/10	1/5	500	100	1h
WaSter 100	100 kg/h	1/10	1/5	1000	200	1h

Volumes (mm)





Our skills and basic services for total customer satisfaction:

- Training, either at our premises or at the customer's premises
- Testing and quality control
- Process Validations (IQ-OQ-PQ)
- Design for Central of sterilization (CSSD) and central of disinfection (CSDD).
- Management of traceability and remote control of the equipment
- Certificate tools SIT Calibration
- Service contracts "full risk"
- Extended warranties
- Research and development
- Production and Assembly
- Installation and commissioning
- Preventive maintenance
- Market analysis and advice
- Special applications

Angelantoni Life Science

Angelantoni Life Science (ALS) is sub-wholly-owned holding company Angelantoni Industrie, is among the internationally leading supplier of refrigeration equipment and designing technological solutions in the biomedical field, with a constant commitment to innovation and safety, environmental or biological.

Research centres, hospitals, laboratories, universities, industrial companies of chemical and pharmaceutical sectors are the target Customers of ALS, which covers all the requirements of refrigeration, control of infection (Infection Control) and microbiological safety through a wide range of standard and special products.

Angelantoni Life Science is present in more than 40 countries and can be an ideal partner in Science and Technology.

Angelantoni Life Science, with agents and distributors in over 40 countries, is the ideal partner for the health sector and scientific research. Angelantoni Life Science has a long presence in refrigeration applied to biomedical field, both in research and industrial sectors within the cleaning, disinfection and sterilization with a complete range of equipment and services to meet the needs of sterilization (CSSD), disinfection stations (CSDD) and special applications BSL3 laboratories-BSL4 and treating infected waste (Biohazard).

Our strength comes from the expertise of engineers and handed experience that they have acquired in the design, by the professionalism of the technicians in the production and service, from coordinating manager who complete our team.

Each team member brings their enthusiasm and their scientific and industrial knowledge, in a working environment that stimulates innovation and development.

Angelantoni Life Science invests more than 10% of its turnover in research and development, which involved a multidisciplinary team of scientists that provides clients with cutting-edge solutions in terms of quality, reliability and innovation



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