

# MACS 500

Conquering the challenges of hazardous waste.

MACS autoclaves provide an outstanding economic solution by efficiently neutralizing germs, viruses, and bacteria on-site, significantly reducing hazardous waste transport costs and related CO<sub>2</sub> emissions. The system also effectively prevents cross-contamination and enables the efficient treatment of liquids and food. These benefits support a circular economy and promote sustainable resource utilization.

MEETS  
**ROBERT KOCH  
INSTITUTE**  
REQUIREMENTS

**Volume filling hopper:**  
500 liters

**Process capacity per cycle\*:**  
500 liters / 50–150 kg (density 0.1–0.3 kg/l)

**Height/ width/ depth:**  
3.370 / 2.800 / 1.850 mm

**Power consumption:**  
Unit-average 27 kW  
3 phase, 400 V, 50 Hz–60 Hz



## Effectiveness

Achieves up to 97 % waste volume reduction. The best sterilisation to energy consumption ratio in its class.



## Usability

Ergonomic and safe, standard utility connections, remote support capabilities.



## Sustainability

Through its chemical-free operation, energy efficiency, volume reduction, emission-free performance.



## Reliability

Consistent operation, security during power outages, independent from external services.



## Financial benefits

Rapid installation and setup, reduction of hazardous waste handling fees, low lifetime operating costs.

\* Standard process time=60min.

# MACS 500 KEY DATA

MACHINE	
Volume Filling Hopper	500 l
Volume Autoclave	245 l
Noise level	<65 dB
Steam generator	80 kW
Condensate/air	Oil-free air compressor, all exhaust air flows through a 0.2 micron HEPA filter
Shredder	Electric motors, each with reverse rotation, blades made of Hardox® steel
Frame	Steel
Casing/Bodywork	Steel optional: customizable machine's colour

PROCESS	
Process capacity per cycle	500 l / 50–150 kg (density 0,1–0,3 kg/l)
Process	Pre-vacuum plus plateau phase 10 alternatively 20 mins., temp. 136°C, pressure up to 4,5 bar
Process capacity/24 h (18 cycles, as theoretical maximum)	9.000 l / 2.700 kg
Processtime/Cycle	Standard 60 min
Shredding time	6–10 minutes depending on the waste composition
Biological inactivation	SAL=10 <sup>-24</sup> standard program, SAL=10 <sup>-48</sup> (20 minutes program)
Waste reduction	Up to 97% on volume, depending on type of waste and waste density

LIFE CYCLE ASSESSMENT	
Volume reduction potential/year*	262.800 l
CO <sub>2</sub> reduction potential/600km	11.038 t
CO <sub>2</sub> Emissions/Year	Zero

DIMENSIONS**	
Height/ width/ depth (mm):	3.370 / 2.800 / 1.850
Height machine opened:	4.000 mm
Weight net:	4.600 kg

CONNECTIONS	
Water inlet	3/4"
Water outlet	2"
Water quality/water pressure	Potable water, min 4.5 bar (booster pump optional)
Power	3 phase, 400 V, 50 Hz–60 Hz
LAN/WLAN	Connection to local network possible

CONSUMPTION	
Water consumption	Up to 200 liters/cycle
Power consumption	Unit-average 27 kW, peak 40 kW

DOCUMENTATION (INTEGRATED ON BOARD PRINTER)	
Pressure in bar, temperature, time, cycle number, every minute during plateau phase	
USB Data pass, step documentation on SD Card, connection to local network possible (LAN/WLAN)	

LOCATION	
Space requirement	Ca. 29 m <sup>2</sup> . Mindestabstand zur Wand: 0,5 m – Türseite – min 1,20 m
Ventilation	6 air changes per hour recommended
Equipment load on the floor	Approx. 920 kg/m <sup>2</sup>

\* Calculated on the MACS Liquid Program.

\*\* May change due to design changes or customer requirements.

## SAFETY- AND EMERGENCY FEATURES

- > Automatic leak test before a cycle starts, will not start if leak is discovered
- > Fast stop and emergency program in case of process is interrupted during the cycle period
- > Sterilization with hot steam is guaranteed every time before the lid is opened
- > Gaseous discharges are filtered with a 0,2 µ microbiological filtering system integrated water softener and steam generator
- > Shredder and its parts are sterilized with saturated steam every cycle
- > Programmable daily cleaning cycles
- > Liquids are only released into the sewer after sterilization and confirmation that the cycle performed correctly. Cycle continues where it stopped
- > Technicians don't need an education background

## PROCESSABLE TYPES OF WASTE

- > sharps (WHO-sharps)
- > metallic packing, but no pressure containers VOC's
- > blood bags and blood preserves (WHO-pathological waste)
- > VOC's Volatile and semi-volatile organic compounds, chemotherapeutic wastes and radiological wastes should not be treated in a MACS
- > wastes whose collection and disposal are subject to special requirements in order to prevent infection (i.e. dressings, plaster casts, linen, disposable clothing, diapers (WHO non-risk or „general“ health-care waste)

## MACS®

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