

MACS 135

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 CO₂ 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:

135 liters

Process capacity per cycle*:

270 liters / 27–81 kg (density 0.1–0.3 kg/l)

Height/ width/ depth:

2.300 / 2.200 / 1.400 mm

Power consumption:

Unit-average 17,5 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 135 KEY DATA

| MACHINE | |
|-----------------------|---|
| Volume Filling Hopper | 135 l |
| Volume Autoclave | 85 l |
| Noise level | <65 dB |
| Steam generator | 30 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 | 270 l / 27–81 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) | 4.860 l / 1.458 kg |
| Processtime/Cycle | Standard 60 min |
| Shredding time | 6–10 minutes depending on the waste composition |
| Biological inactivation | SAL=10 ⁻²⁴ standard program, SAL=10 ⁻⁴⁸ (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* | 70.956 l |
| CO ₂ reduction potential/600km | 2.980,2 t |
| CO ₂ Emissions/Year | Zero |

| DIMENSIONS** | |
|----------------------------|-----------------------|
| Height/ width/ depth (mm): | 2.300 / 2.200 / 1.400 |
| Height machine opened: | 2.500 mm |
| Weight net: | 2.010 kg |

| CONNECTIONS | |
|------------------------------|--|
| Water inlet | 1/2" |
| Water outlet | 1-1/2" |
| 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 100 liters/cycle |
| Power consumption | 17,5 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. 18 m ² . Mindestabstand zur Wand: 0,5 m – Türseite – min 1,20 m |
| Ventilation | 6 air changes per hour recommended |
| Equipment load on the floor | Approx. 783 kg/m ² |

* 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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