MACS

Machine Autoclave Cutting Sterilization

Sustainability – environmentally safe

- Only water and energy are needed – no chemicals; connections only required for energy, water and wastewater
  - ✓ No expensive transportation
  - ✓ No special bags needed
  - ✓ Cross contamination therefore excluded
  - ✓ Reduction of volume for waste up to 97 percent
- On-Site Solution: disposal of hazardous waste directly in the respective facility
- No negative air emissions
- Long lifetime; extended warranty available on request
- Costs very favourable against collection costs (amortization of the investment within 2 years)
  - ✓ MACS has the best quality-price-ratio on the market

Usage

- safe and economic high-end solution for the decontamination of medical, infectious and other hazardous waste – the type of waste doesn´t matter
- MACS are stand-alone-solutions
  - ✓ Easy Plug and Play-installation
  - ✓ Available in various sizes and capacities, customized solutions
- automatic processing
- highest security standards
  - ✓ All applications equipped with emergency programs
- Remote access

In 10 minutes
SAL=10^{-24}

In 20 minutes
SAL=10^{-48}

MACS sterilizing:
Clostridium sporogenes
MRSA
Hepatitis viruses
HIV
SARS-CoV-2
Creutzfeld-Jakob prions

MACS serves any industry

- e. g. hospitals, laboratories, research facilities, military services, airports, cruise ships, hotels and many more
  - ✓ Safer for patients, employees and the community!

MACS is the most modern high-speed steam sterilizer / on-site solution for treating infectious waste using a lethal heat pressure thermal process (136 ° C - 142 ° C), simultaneously shredding, sterilizing and destroying HIPAA media in one compact environment. The device converts „red bag"-waste (biohazardous-/biomedical waste including sharps) into sterilized municipal trash in minutes!

MACS is economical, easy-to-use and install, (plug and play) fully automatic, uses an operating touchscreen with a web-based monitoring.

The **MACS** technology is certified by the German Robert Koch Institute, it reaches a Sterility Assurance Level (SAL) up to SAL = 10^{-48}. It surpasses the standards of WHO, which require SAL = 10^{-6}.

ERMAFA ENVIRONMENTAL TECHNOLOGIES

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MACS 500 IN DETAIL

TECHNICAL FACTS

Capacity per hour	50-150kg (depending on waste densitiy 0,1/0,3)
Filling hopper capacity	500 liters
Autoclave capacity	245 liters
Process	Pre-vacuum plus plateau phase 10 alternatively 20 mins., temp. 136° C, pressure up to 5 bar
Biological inactivation	SAL log-24 standard program, SAL log-48 (20 minutes program)
Waste reduction	Approx. 97% on volume, depending on waste density

Materials used	All parts in connection with steam made from stainless steel 1.4301
Frame	Steel, powder coated
Casing/ Bodywork	Steel, powder coated optional: customer´s choice of colour
Shredder	Electrical motors 3 kW each with reverse drive, knives made from Hardox steel
Shredding time	Max. 6-10 minutes according to material used

CONNECTIONS

diffrent connection valves can be adapted

Power consumption (customizable)	Unit-average 85 kW. 3 phase, 400 V, 50 Hz - 60 Hz optional
Water consumption	Approx. 250 l /cycle
Water inlet (customizable) A water softener is required, available as option.	3/4" water connection (Standard size)
Water outlet	32 mm / 1-1/2”
Condensate/ air	All exhaust air is going through a 0,2-micron HEPA filter
Noise level	< 65 dB
Steam Generator	80 kW
Air Compressor	Oil free, max. 1 kW
Documentation (integrated on board printer) pressure in bar, temperature, time, cycle #, every minute during plateau phase	USB Data pass, step documentation on SD Card, connection to local IT system possible

DIMENSIONS

(current data, all data approximately) *

Length/ height/ depth in mm	Approx. 2800 / 3370 / 1850 mm
Length/ height/ depth in feet	Approx. 9.2 / 11.1 / 6 feet
Height machine opened	Approx. 4000 mm / 13.1 feet
Weight net	Approx. 4600 kg, plus options
Shipping weight	depending on customer request
Shipping Dimension	depending on customer request

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

SAFETY/ 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
- A 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
- The 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)