# VHP® M100 Biodecontamination Systems: Closed Loop

The proven technology of vaporized hydrogen peroxide biodecontamination for a variety of applications



STERIS

# Proven Technology for Small Volume Applications

Since the introduction of STERIS's vaporized hydrogen peroxide technology in 1991, VHP® Biodecontamination Systems have become the predominant choice and industry standard for aseptic processing in research and production applications. With over 1700 VHP systems installed world-wide, STERIS is proud to provide a product platform that offers both closed loop and open loop** systems for a wide range of applications within production and research facilities.

## Biodecontamination Applications Include:

> Biological safety cabinets

> Isolators

> Glove boxes

> CO2 incubators

> Pass-through chambers

> Aseptic filling

## VHP® M100 Closed Loop Biodecontamination Systems

> Modular unit can be conveniently integrated into isolator or biosafety cabinet

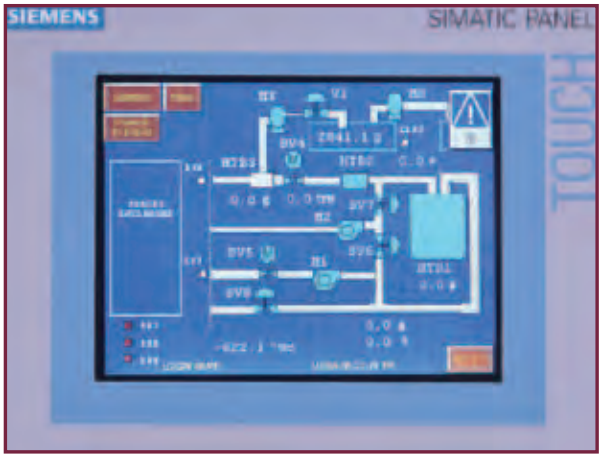
> AISI 304 (DIN 1.4301) Stainless steel enclosure wall and access door construction

> Easy access design for daily operation, service and maintenance

> Now available in mobile configuration for multiple-site biodecontamination applications requiring PLC features



**Check local regulations regarding environmental hydrogen peroxide discharges.







## Material of Construction

AISI 304 (DIN 1.4301) SS enclosure wall and access door construction

## Dimensions W x H x D

31" x 26" x 9"
(787 mm x 660 mm x 229 mm)
Mobile Cart: 43" x 41" x 20"
(1092mm x 1041mm x 508mm)

## Weight

160 lbs. (72 kg)
Mobile Cart: 200 lbs. (91kg)

## Operating Parameters

Injection Rate: 2-6 grams per minute
Air flow Range: 8-11 scfm (14-19 cmh)
Pressure Control: +/- 1 in WC (250 Pascal)

## Power Requirements

120 V, 50/60 Hz, Single Phase, 20 Amp
230 V, 50/60 Hz, Single Phase, 10 Amp

## Printer

Ink-on-pad printer provides an easy to read permanent record of all cycle parameters

## Control System

> PLC (Allen-Bradley or Siemens) control permits interfacing with existing equipment

> Operator Interface: Allen-Bradley Panel View Plus 600, Siemens TP277, or Mitsubishi GT 1155

> Custom biodecontamination cycles

> Custom cycle parameter selection

> Cycle alarms for all cycle parameters

> Security access codes

> Help screen

> Battery backup protects cycle memory

> GAMP Software documentation packages available

> Language options:

- Siemens: English, German, French, Dutch, Italian, Spanish and Portuguese
- Allen-Bradley: English, French

## Vaprox® Interface

> 1 L cartridge interface

## Dehumidification System

> Reusable cartridge option (Regenerator required) or Disposable cartridge option (adapter accessory required)



## VHP M100 Reusable Desiccant Cartridge Regenerator

> Stainless steel industrial designed cabinet

| | |
|---|---|
| > Weight: | 105 lbs (48 kg) |
| > Dimensions: W x H x D | 18.3 x 45.5 x 18.5 in (46.4 x 115.6 x 47.0 cm) |
| > Power Requirements: | 120 V, 50/60 Hz, single phase, 8 A |
| | 230 V, 50/60 Hz, single phase, 4 A |

## VHP M100 Reusable Desiccant Cartridge

The reusable aluminim cartridge is easily installed and removed. A prompt notifies the operator when to remove the cartridge and install in the VHP 100 Reusable Desiccant Cartridge Regenerator. An indicator on the cartridge signals the user when it is ready for reuse.





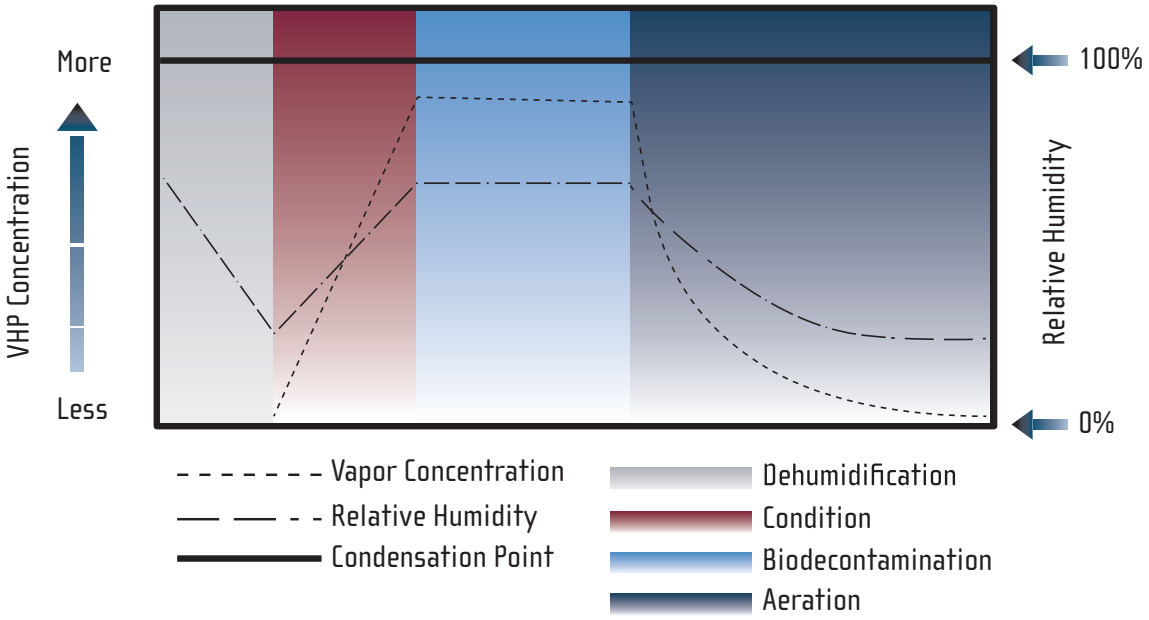
Regenerate one desiccant cartridge while operating with another for continuous use. Regenerator can be conveniently located to service multiple units.

## VHP M100 Disposable Desiccant Cartridge

The disposable cartridge is plastic, lightweight and easy to install. A prompt notifies the operator when it is time to replace the cartridge.



# About VHP Biodecontamination Cycle




## A typical cycle operates in a closed-loop or open-loop configuration where the enclosure is subjected to four phases:

> Dehumidification - reduction of relative humidity to pre-determined level

> Condition - rapid increase to desired VHP concentration

> Biodecontamination - maintenance of desired VHP concentration and relative humidity (for retention of vapor phase)

> Aeration - rapid reduction of hydrogen peroxide vapor

Cycle times vary with initial temperature and humidity, enclosure type, size and configuration, and load. The process is fully automated. All cycle parameters are monitored and recorded for process validation.

With water vapor and oxygen as by-products, VHP® Biodecontamination Systems offer your best formaldehyde replacement option.

## Advantages of STERIS VHP Biodecontamination Systems

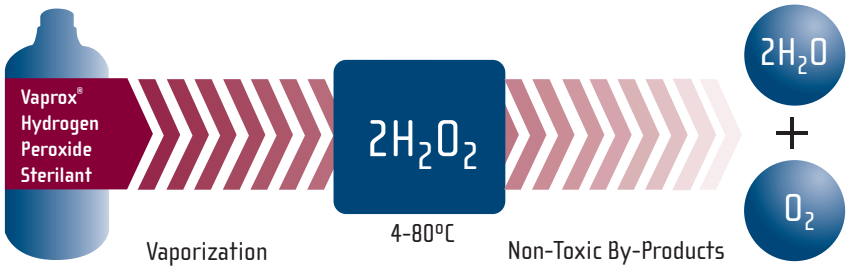
> Biodecontamination under ambient conditions

> Proven efficacy against a wide range of microorganisms

> Broad range of material compatibility, including metals, plastics and elastomers

> Environmentally friendly process yielding water vapor and oxygen as by-products

## How VHP Biodecontamination Works




Sporicidal at Low Concentrations

## System Requirements

> Dehumidification system desiccant cartridges – select either reusable or disposable

> Regenerator accessory for reusable desiccant cartridges. Regenerate one desiccant cartridge while operating with another. Only one regenerator accessory is required to service multiple machines and can be conveniently located.

> Dedicated grounded electrical circuit

> Vaprox® 35% Hydrogen Peroxide Sterilant (EPA Registration No. 58779-4), formulated to provide optimum equipment performance

> VHP® Chemical and Spordex® Biological Indicators

NOTE:The user is responsible for ensuring that enclosures are properly sealed before using any VHP Biodecontamination System.



To minimize exposure to the liquid hydrogen peroxide during handling, the system uses specifically designed disposable cartridges (available separately) containing approximately 950 ml or bulk containers containing approximately 5 gallons (19L) of Vaprox 35% Hydrogen Peroxide ($H_2O_2$) Sterilant.

## Training, Technical Support, and Service

> Specialists are available to assist with onsite training, hands-on demonstrations, custom cycle development and validation training.

> Field Service Engineers are available to assist with IQ/OQ, calibration, start-up and preventive maintenance.

## Standards

The unit and control systems have been designed to meet the applicable requirements of the following:

> Underwriters Laboratories (UL) Standard 61010-1

> Canadian Standards Association (CSA) Standard C22.2 No. 61010.1

> EMC Directive: 89/336/EEC, 92/31/EEC, 93/68/EEC

> Low Voltage Directive: 73/23/EEC, 93/68/EEC and bears the CE mark

Spordex Biological Indicators (*Geobacillus stearothermophilus*) and VHP Chemical Indicators are available for use in Vaporized Hydrogen Peroxide distribution, efficacy studies and sterility testing.



* When using VHP® equipment with Vaprox Hydrogen Peroxide Sterilant in the United States, the term biodecontamination referred to in this document is defined as sterilization of exposed porous and non-porous surfaces in a pre-cleaned, dry, sealed enclosure. Any reference to biodecontamination as it relates to the use of this equipment in the United States does not impart additional claims of effectiveness beyond that approved in the EPA-registered labeling of Vaprox Hydrogen Peroxide Sterilant.

Manufactured exclusively by STERIS Corporation in our ISO-9001 certified Mentor, Ohio facility.

Mixed Sources
Product group from well-managed forests, controlled sources and recycled wood or fiber

Printed with Soy based inks and water based coatings on FSC/Green Seal-certified paper.

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