

## VHP® ARD Mobile Biodecontamination System

The proven technology of vaporized hydrogen peroxide biodecontamination validated by our customers worldwide for isolators, rooms and other sealed enclosures



## Proven Performance for Room Decontamination

Since the introduction of STERIS's vaporized hydrogen peroxide low temperature biodecontamination technology in 1991, VHP® systems have become the predominant choice and industry standard for aseptic processing in research and production applications. VHP® Biodecontamination Systems have been validated by customers worldwide for use in isolators, workstations, aseptic filling lines, and rooms.

The VHP® Biodecontamination System process is fully controlled, repeatable, and easily validated. This "dry" process operates under low concentration and is highly efficacious against a wide variety of microorganisms. It is fast, environmentally-friendly and offers a wide range of material compatibility.

The new VHP ARD design provides biodecontamination for high volume applications up to 10,000 ft<sup>3</sup> (285 m<sup>3</sup>) with bulk Vaprox® Hydrogen Peroxide Sterilant options available for larger applications. Additional VHP® 1000-ARD units can be linked together to provide even greater capacity.

The VHP® ARD Biodecontamination System is designed for use in rooms, laboratories, and other sealed enclosures in research, production, and biological safety applications.

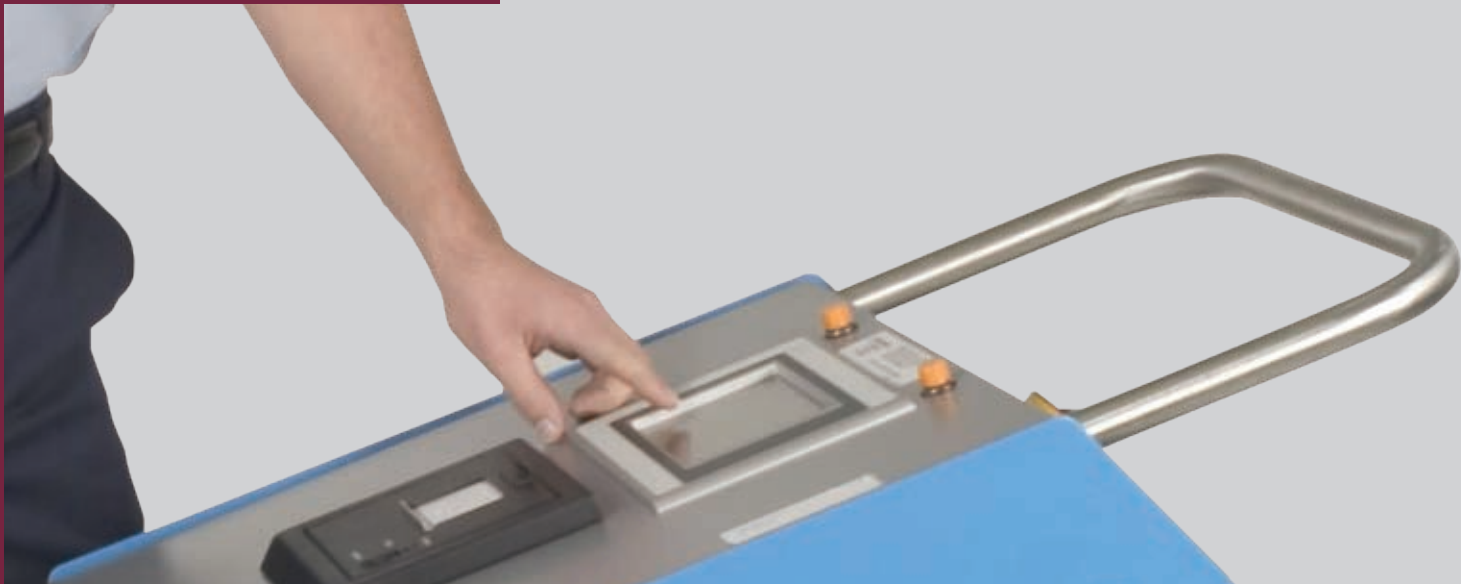
- > Capable of biodecontaminating large rooms.
- > Easy operator/service access is provided through expanded side doors.
- > Portable unit configuration can be maneuvered among several rooms and piped to each enclosure to be decontaminated.



VHP® 1000-ARD Biodecontamination System with Sensing Unit



**The VHP® ARD Biodecontamination System is a mobile hydrogen peroxide vapor generator.**  
This unit can be located where most convenient for the operator, while conserving floor space.



## Control System

B&R PLC comes standard within the VHP® 1000-ARD Biodecontamination Systems. Control system provides the precise required control and documentation.

- > B&R Power Panel 220 directs all biodecontamination system functions
- > Standard cycle or custom cycles parameter selection
- > Remote operation port enables connection to a personal computer for remote operation
- > Wireless operation also available using wireless router
- > Shows real-time status and all current cycle parameters
- > Service diagnostics mode for calibration, service, etc.
- > Cycle alarms for all cycle parameters
- > Security access code
- > Help screen
- > Battery back-up protects cycle memory for five years
- > Language options: English, French, German, Italian, and Spanish

## Printer

Optional ink-on-pad printer provides an easy-to-read permanent record of all cycle parameters.

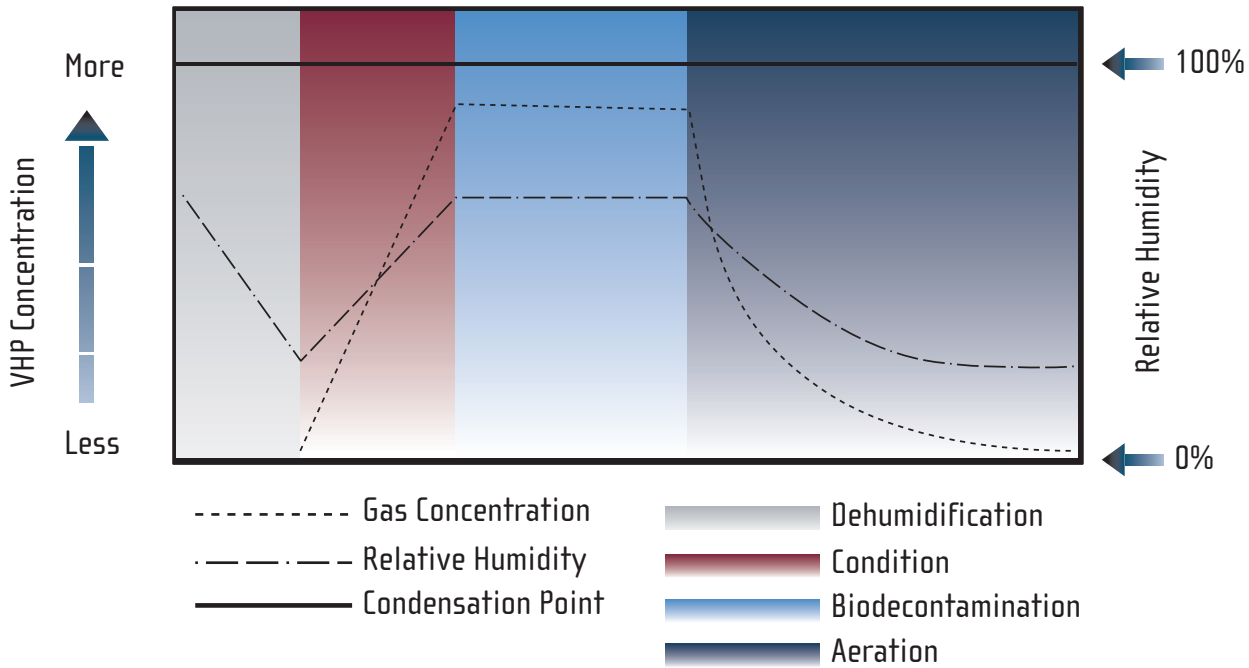
## Material of Construction

Powder coated aluminum body and side panels



VHP 1000-ARD Specifications		Operating Parameters	
Dimensions W x H x D inches (mm)	24 <sup>3</sup> / <sub>4</sub> " x 40 <sup>1</sup> / <sub>4</sub> " x 37 <sup>1</sup> / <sub>4</sub> " (629 mm) x (1028 mm) x (949 mm)	Injection Rate (grams per minute)	2-12
Weight lbs. (kg)	150 lbs. (68 Kg)	Airflow Range scfm (m <sup>3</sup> /hr)	8-20 (14-34)
Power Requirements	120 Vac, 60 Hz, 18 Amp 230 Vac, 50/60 Hz, 9 Amp	Temperature Range	100°F (38°C)

# Typical Biodecontamination Cycle

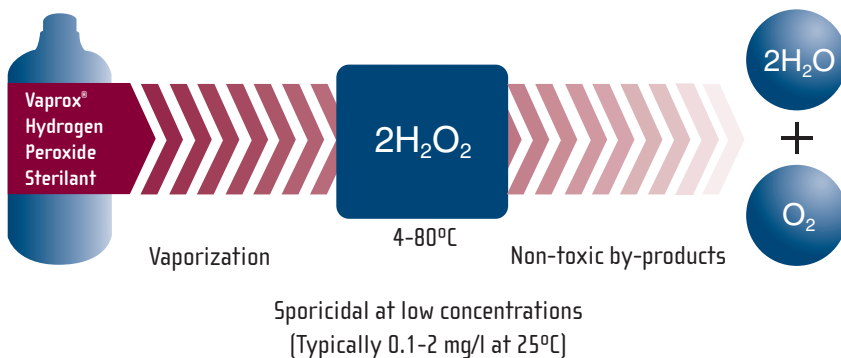


The VHP biodecontamination cycle operates in a closed-loop configuration where the enclosure is subjected to four phases:

- > **Dehumidification** – Reduction of relative humidity to a 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, volume and load. The process is fully automated, and all cycle parameters are monitored and recorded for process validation.

## How VHP Biodecontamination Works



## Advantages of VHP ARD Biodecontamination

- > Biodecontamination within low temperature range of 4-80°C
- > Proven efficacy against a wide range of microorganisms
- > Excellent material compatibility, including metals, plastics and elastomers
- > Environmentally friendly process yielding only water vapor and oxygen as by-products
- > Fast – Rapid biodecontamination and fast aeration with assistance from existing HVAC system.



Regenerate one VHP ARD Dryer Tank while operating with another for continuous use. VHP Dryer Regenerator can be conveniently located to service multiple units.



## VHP ARD Dryer Regenerator

- > Material: Carbon-steel housing with aluminum frame
- > Weight: 90 lbs. (41 kg)
- > Dimensions: W x H x D  
24<sup>1</sup>/<sub>8</sub>" x 45.0" x 13<sup>11</sup>/<sub>16</sub>"  
(613 cm x 1143 cm x 348 cm)
- > Power Requirements:  
120 V, 50/60 Hz, single phase, 8 A  
230 V, 50/60 Hz, single phase, 4 A

## Options To Fit Your Specific Application

To dehumidify the enclosure, select from either desiccant options for medium or large volume enclosures. Each option requires an insulation blanket:



### VHP ARD Dryer Tank

Constructed of aluminum, the reusable desiccant tank is wheel mounted, portable, and has a 2,000 gram capacity.



### VHP ARD Dryer Cartridge

Constructed of aluminum, the reusable desiccant cartridge is easily installed and removed. The cartridge has a 600 gram capacity.

### VHP ARD Contactor Unit

This device coordinates operation of the VHP ARD Sensing Unit, Circulation Unit, and Auxiliary Aeration Unit during large enclosure applications.



### VHP ARD Sensing Unit (H<sub>2</sub>O<sub>2</sub> and H<sub>2</sub>O)

This sensor measures hydrogen peroxide and water vapor concentrations within the enclosure during cycle operation and communicates this information to the VHP 1000-ARD System.



### VHP ARD Circulation Unit

This blower unit circulates Hydrogen Peroxide Vapor throughout the enclosure for optimal distribution.



### VHP ARD Auxiliary Aeration Unit

This high capacity catalytic converter enables higher aeration rates and reduces aeration time.

# System Requirements

- > 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.

## Standards

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

- > Underwriters Laboratories (UL) Standard 61010-1 2nd Edition as certified by ETL Testing Laboratories, Inc.
- > Canadian Standards Association (CSA) Standard C22.2 No. 61010-1:2004 as certified by ETL Testing Laboratories, Inc.



Vaprox Hydrogen Peroxide Sterilant is specially formulated to maintain optimum equipment performance.

To minimize exposure to the liquid hydrogen peroxide during handling, the system uses specially designed disposable cartridges (available separately) containing approximately 950 ml of Vaprox 35% Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>) Sterilant.

- > Designed to meet all applicable electrical requirements and international electrical codes.
- > 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.

## Training, Technical Support, and Service

- > Full operator training is provided either on-site or at a STERIS training facility.
- > Application Engineers are available to assist with onsite training, hands-on demonstrations, custom cycle development and validation training.
- > Field Service Engineers are available to assist with calibration, start-up and preventive maintenance.



Spordex Biological Indicators (*Geobacillus stearothermophilus*) and VHP Chemical Indicators are available for use with 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.



STERIS Corporation  
5960 Heisley Road  
Mentor, OH 44060-1834 • USA  
440-354-2600 • 800-444-9009  
www.steris.com

All rights reserved. Printed in the U.S.A.  
Manufactured exclusively by STERIS Corporation in our Mentor, OH facility.

### STERIS OFFICES WORLDWIDE

Benelux	32 2 523 2488	Italy	39 22 130341
Brazil	5511 5053 9823	Japan	81 78 321 2271
Canada	800 661 3937	Latin America	800 884 9550
China	86 21 6137 1166	Nordic	358 9 25851
France	33 0 2 38 70 83 50	Singapore	65 68 41 7677
Germany	49 2203 890 6969	Spain	34 916 585 920
Greece	30 210 6800848	United Kingdom	44 1256 840400

Document # M3169EN.2007-09, Rev. A  
GPSI Printed 09/2007, 2500

©2006-2007 STERIS Corporation.  
All rights reserved. Printed in USA.