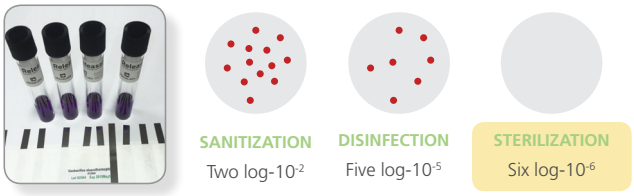
BioVap™
Bio-decontamination System

Introduction

Esco Pharma has developed an effective hydrogen peroxide based bio-decontamination system capable of achieving a log 6 reduction in bio-burden. The spore log reduction has been validated by biological indicator challenge using biological indicator stainless steel ribbons populated with *Geobacillus stearothermophilus* spores.



This BioVap™ has been developed in response to increasing demands from the pharmaceutical, biotech, pharmacy, veterinary and other related industries for microbial free environments and more stringent decontamination requirements. Hydrogen peroxide breaks down into oxygen and water on completion of the sterilization process which makes it one of the most environment-friendly decontaminant available. The BioVap™ is developed for performing bio-decontamination of aseptic barrier system, pass through systems, biological safety cabinets, cleanrooms and virtually any other space where surface sterilization of bio-decontamination is required

Industries Served

- Hospital
- Food, Beverages & Confectionary
- Manufacturing Facilities
- Veterinary Surgeries
- Dentist
- Primary Healthcare Facilities
- Pharmaceutical

Science Behined the Pocess

The Esco BioVap™ system is a process of atomizing the hydrogen peroxide sterilant creating a dry fog as it is injected into the space. This unique system (patent pending) creates a charge on the atomized droplets as it passes through the nozzle. This charge imparted on the droplets of sterilant creates two important synergies

a. Each droplet of the sterilant contains billions of reactive molecules to execute the microbial kill.

b. Through mutual repulsion, the droplets repel each other and distribute quickly through the space achieving a superior distribution of the sterilant. The charged droplets are attracted to the uncharged surfaces within the space so on impact the droplets burst and immediately start the sterilisation process.

Due to these important factors, the sterilant used is minimised and can be of less concentration than the conventional vaporising systems that needed the sterilant to be evaporated first then wait for micro condensation to carry out the sterilization.

This revolutionary bio-decontamination system is not affected by temperature or relative humidity therefore there is no requirement to precondition the space being bio-decontaminated and therefore leads to reduced cycle.

Conventional Gaseous Systems

BioVap™ System

Time

Flexibility Features

Esco Pharma BioVap™ system is developed to be flexible enough to work in all areas, from cabinets and transfer hatches up to modular enclosures to isolator keeping in mind that every customer and facility has different requirements.

Image of the cleanroom / BSC nozzle assembly

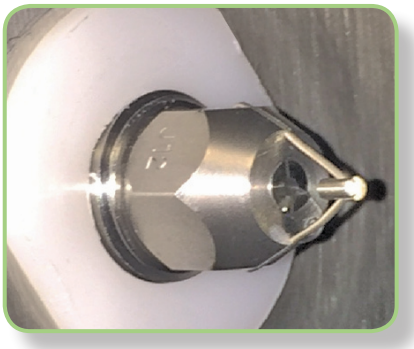


Image of fixed nozzle in isolator

Esco Pharma Transfer Hatch and BioVap™ integrated system

Esco Pharma BioVap™ system integrated into the isolator as our approach to a cost effective bio-decontamination.

Esco Pharma BioVap™ system as a premium solution for decontamination process for all sizes of biosafety cabinets.

Esco Pharma BioVap™ fogging system as an effective bio-decontamination for cleanroom and or laboratory.

Process Step

The BioVap™ bio-decontamination cycle will have the following phases

a. Injection Phase – In this phase, the sterilant is injected into the space as a dry fog at a pre-set pressure and flow rate and at a given period of time. During this period, the atomising pressure, injection airflow and injection air pressure are monitored.

b. Dwell Phase - During this phase, the sterilant is allowed to settle on the surfaces inside the enclosure for a set period of time.

c. Aeration Phase - In this phase the hydrogen peroxide sterilant is removed from the space / enclosure.

Controls

The BioVap™ system is PLC controlled with operator interface via a touch screen HMI terminal giving operator log on security and real time display of cycle parameters. Cycle parameters are also recorded and a printout of the cycle parameters is given at the end of a cycle for validation records. Electronic data recording of the cycles 21 CFR 11 compliant is available on request. 20 pre-programmed cycles can be saved on the PLC system selectable from the interface terminal. The BioVap™ can be controlled locally via the HMI located on the BioVap™ generator or can be controlled remotely from an Isolator or cabinet control system.

HMI Controller

BioVap™

GENERAL SPECIFICATIONS	
Power Supply	240/110V, 50/60 Hz single phase
Air Supply	6 bar pressure 200 l/min flow (clean & dry air)
Sterilant	12% vol hydrogen peroxide (100 - 400 ul / min flow)
PLC	Siemens S7-1200 series
HMI	Siemens TP170 komfort
Printer	Gebe ticket label printer
Spore Log Reduction	Up to Log 6

ORDERING INFORMATION	
Option 1	**Isolator integration kit without PLC.** Utilizes Isolator PLC to control, monitor and report on bio-decontamination.
Option 2	**Isolator integration kit with PLC** System complete with PLC, HMI & ticket printer mounted on 304 STST enclosure
Option 3	**Mobile BioVap™ complete with PLC, HMI and printer.** All housed in within sturdy mobile case. Available with choice of nozzle assembly.
Nozzle Assembly A	Cleanroom Nozzle Assembly
Nozzle Assembly B	Remote Control Assembly

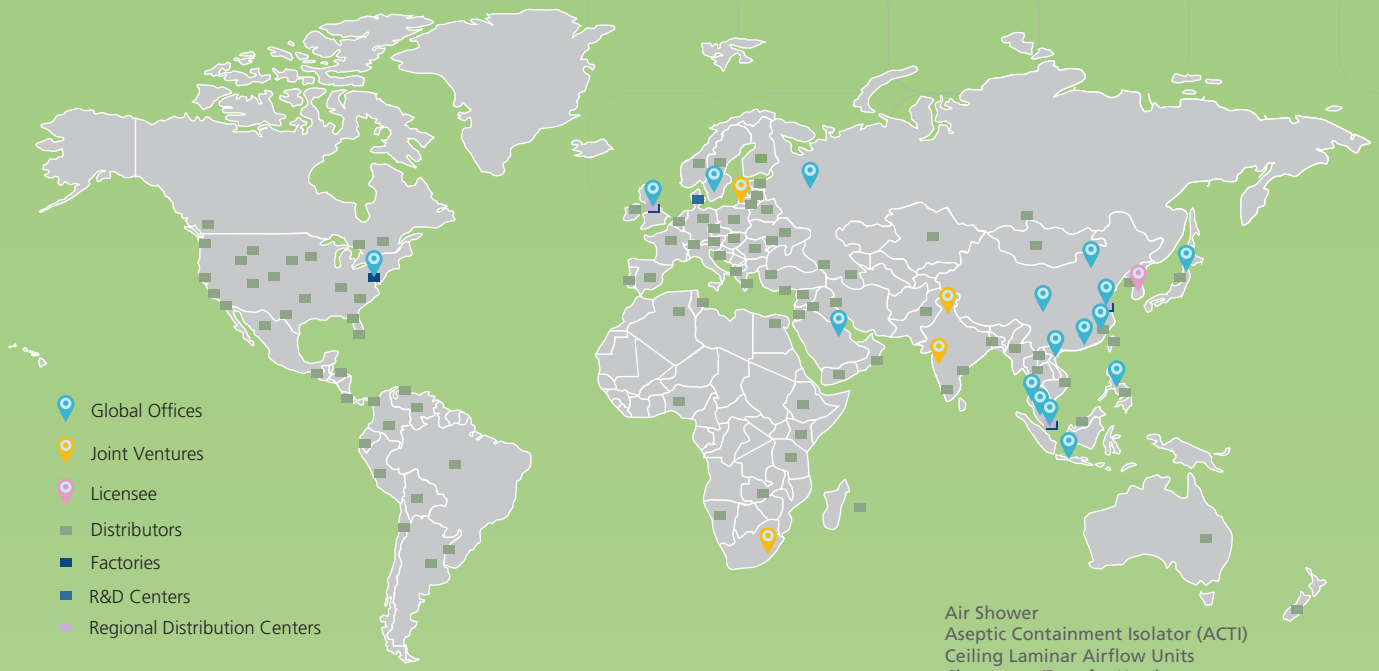
INNOVATIVE DESIGN

Catalytic Converter

Adjustable tripod for bio-decontamination of cleanroom and BSC

Mobile BioVap™ System is fitted inside a handy case

ESCO GLOBAL NETWORK



Air Shower
Aseptic Containment Isolator (ACTI)
Ceiling Laminar Airflow Units
Cleanroom Transfer Hatch
Containment Barrier Isolator (CBI)
Compounding Aseptic Isolator
Compounding Aseptic Containment Isolator
Downflow Booth (DFB)
Dynamic Floor Label Hatch
Dynamic Pass Box
Evidence Drying Cabinet
Garment Storage Cabinet
General Processing Platform Isolator (GPPI)
Healthcare Platform isolator
Laminar Flow Horizontal Trolley
Laminar Flow Straddle Units, Single and Double Laminar Flow Vertical Trolley
Pass Box
Soft Wall Cleanroom
Sputum Booth
Ventilated Balance Enclosure (VBE)
Weighing and Dispensing Containment Isolator (WDCI)

Since 1978, Esco has emerged as a leader in the development of controlled environment, laboratory and pharmaceutical equipment solutions. Products sold in more than 100 countries include biological safety cabinets, fume hoods, ductless fume hoods, laminar flow clean benches, animal containment workstations, cytotoxic cabinets, hospital pharmacy isolators, and PCR cabinets and instrumentation. With the most extensive product line in the industry, Esco has passed more tests, in more languages, for more certifications, throughout more countries than any biosafety cabinet manufacturer in the world. Esco remains dedicated to delivering innovative solutions for the clinical, life science, research and industrial laboratory community. www.escoglobal.com.

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PLATFORM SPECIALIST.

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