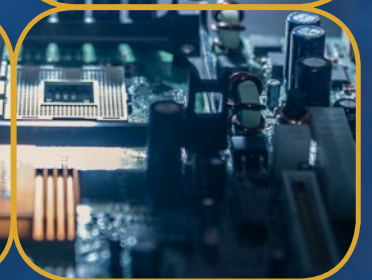




Electronics Industry





Welcome to Esco

Esco's Vision is to provide enabling technologies for scientific discoveries to make human lives healthier and safer.

The Esco Lifesciences Group is committed to deliver innovative solutions for the clinical, life sciences, research, industrial, laboratory, pharmaceutical, and IVF community. With the most extensive product line in the industry, Esco have passed a number of international standards and certifications. Esco represents innovation and forward-thinking designs, that are of the highest standard quality since 1978.

Availability and Accessibility. Esco has headquarters in Singapore, Indonesia, and Philippines, with manufacturing facilities are located in Asia and Europe. Research and Development (R&D) is conducted worldwide spanning the US, Europe and Asia. Sales, services and marketing subsidiaries are located in 42 major markets including US, UK, Japan, China and India. Esco regional distribution centers are located in Singapore, Malaysia, Thailand, Vietnam, Myanmar, Indonesia, Philippines, Bangladesh, Hong Kong, Taiwan, South Korea, China, Japan, India, UAE, Central and South Africa, Denmark, Germany, Italy, Lithuania, Russia, United Kingdom, and USA. Because of our worldwide presence, you can be sure that Esco is within your reach.

High Quality, Reliable, and Dependable. Esco products are of high quality, reliable, and dependable; assuring customers of research accuracy. Cross functional teams from Esco Production, R&D, Quality Assurance, and Senior Management, are regularly assembled to review and implement areas for improvement.

Esco Cares for Your Safety. Esco focuses on providing safety not just for your samples but also for you and the environment.

Esco Cares for Your Comfort. Building ergonomic designs and reducing noise levels of the units ensures comfort for our users.

Esco Cares for the Environment. One in every four of Esco's employees is involved in R&D and a number of them evaluate new components and/or designs to produce energy efficient equipment. Being GREEN is more than just modifying parts used to produce a new energy efficient technology, it is also embodied in the every aspect of the company.

Customer Service and Support. Our service does not stop once purchase has been done. Esco gives on-time customer service and offers end-user seminars, service training, preventive maintenance, and provides educational materials and informative videos.

As Esco takes the opportunity to respond to the world's needs, we aim not only to contribute in the advancement of scientific discoveries but also in making the world a safer, healthier, and better place to live in.

Electronics Industry

OVERVIEW

With the ever growing electronics industry, semiconductors and electronic devices get smaller and more complex year after year. At the same time, the size of particulate matter that can cause contamination also gets smaller. Semiconductors and other electronic components are manufactured and assembled inside a cleanroom to minimize the risk of particle contamination.

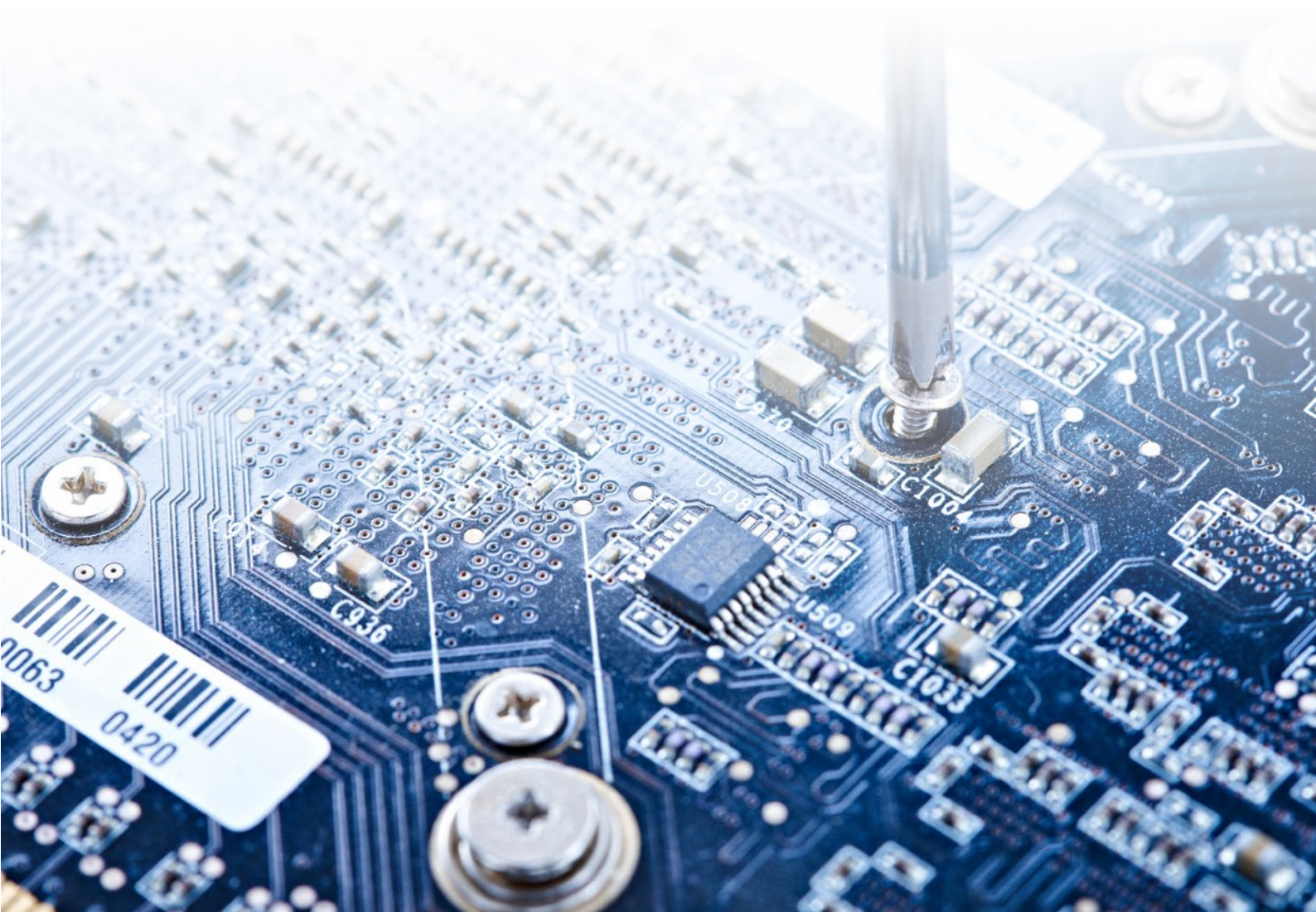
Esco is an industry leader in manufacturing cleanroom equipment like air showers and laminar flow clean benches. All Esco products are manufactured for the most demanding cleanroom applications. With Esco, you are assured to be given only the highest quality products.

Applications

- Semiconductor Assembly
- Medical Device Inspection
- Electronics Assembly and Inspection
- Robotics
- Nanotechnology
- Photonics

Equipment

- Laminar Flow Cabinets (LHG, LVG)
- Laminar Flow Straddle Units
- Polypropylene Fume Hood (PPH)
- Laboratory Fume Hood (EFA)
- Laboratory Incubator (IFA)
- Laboratory Oven (OFA)
- Cleanroom Air Shower
- Soft Capsule Soft Wall Cleanroom





LVG-4_G-S_

Airstream® Gen 3 Laminar Flow Clean Benches

Features

- Energy saving DC ECM Blower
- ISOCIDE™ antimicrobial powder coating
- ULPA Filter with >99.999% efficiency at 0.1 – 0.3 µm
- Low noise
- Sentinel™ Gold Microprocessor Control System
- Recessed central work tray to contain spills
- Ergonomic design



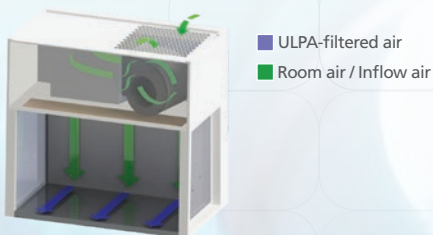
Introduction

Esco laminar flow clean benches are the premium selection for the discerning researcher, offering a combination of value, high quality construction, low operating noise levels, and a wide product range to suit all budgets from the industry leader. Laminar flow clean benches are used in applications where there is no generation of biohazardous materials, hence operator protection is not required.

Basic Principle

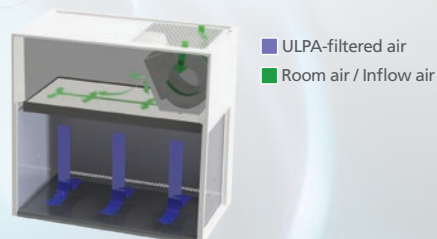
Airstream® Horizontal Laminar Flow Stainless Steel Side Wall Version

- Room air is taken in from the top of the clean bench through a disposable pre-filter with 85% arrestance; this serves to trap larger particles and increase the life of the main filter.
- Air is forced evenly across the ULPA/H14 filter(s); the result is a stream of clean laminar air within the workzone of the clean bench; this dilutes and flushes all airborne contaminants from the interior.
- A nominal filter face velocity of 0.45 m/s or 90 fpm ensures that there is a sufficient number of air changes within the enclosed area of the clean bench to maintain cleanliness.
- The purified air travels across the internal work zone of the clean bench in a horizontal, unidirectional stream and leaves the main work chamber across the entire open front of the clean bench.



Airstream® Vertical Laminar Flow Stainless Steel Side Wall Version

- Room air is taken in from the top of the clean bench through a disposable pre-filter with 85% arrestance; this serves to trap larger particles and increase the life of the main filter.
- Air is forced evenly across the ULPA/H14 filter(s); the result is a stream of clean laminar air within the workzone of the clean bench; this dilutes and flushes all airborne contaminants from the interior.
- A nominal filter face velocity of 0.45 m/s or 90 fpm ensures that there is a sufficient number of air changes within the enclosed area of the clean bench to maintain cleanliness.
- The purified air travels across the working zone of the clean bench in a vertical, unidirectional stream and leaves the main work chamber across the entire open front of the clean bench and through Auto-Purge™ slots at the back wall of the work zone which are designed to eliminate air turbulence and the possibility of dead air corners in the work zone.



Airstream® Gen 3 Laminar Flow Clean Benches

The Leading Solution for Research Laboratories

Esco Airstream® Laminar Flow Clean Benches are designed to provide superior product protection for your samples in research laboratories by preventing the entry of room and airborne contaminants. They are built with the latest laminar flow technology and innovation, and offers a wide range of options for user preferences.

Horizontal Laminar Flow Clean Benches



LHG-4_G-F_

LHS-4_G-F_

Vertical Laminar Flow Clean Benches



LVS-4_G-S_ (Sliding Sash)

LVS-4_G-F_ (Fixed Sash)

LVS-4_G-F_ (Black Interior)

LVG-4_G-F_ (Fixed Sash)

LVG-4_G-S_ (Sliding Sash)

OPTIONS AND ACCESSORIES



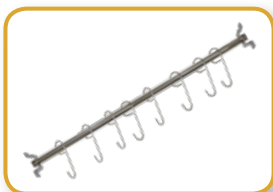
Germicidal UV Lamp

- Emission of 253.7 nanometers for most efficient decontamination
- Lamp is positioned away from operator's line-of-sight for safety and proper exposure to interior surfaces



Electrical Outlet

- European/ Worldwide Style, available in Type C, D, E, F, G, H, I
- North American style



IV Bars with hooks

- Stainless steel construction, Max Load 6 Kg (13 lbs)
- Available for all standard Esco cabinets



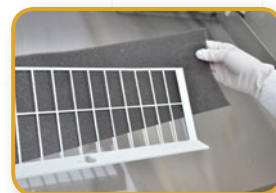
PVC Arm Rest

- Chemically treated, improves operator comfort, easy to clean



Support Stands

- Fixed height, with levelling feet or casters
- Telescoping height, with levelling feet or casters
- Electronic adjustable height, with levelling feet or casters



Pre-filter

- Pre-filter on paper catch



EQU/06-ESUS

Enterprise™

Laminar Flow Straddle Units

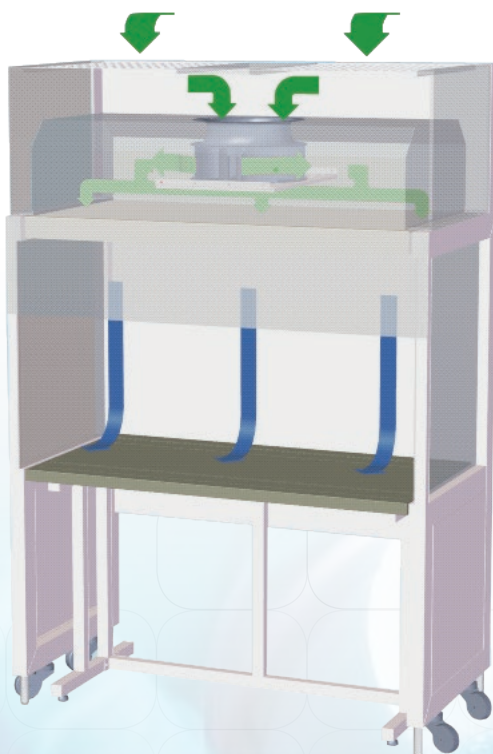
Features

- Quiet, reliable, permanently lubricated direct drive centrifugal blowers.
- Long-life ULPA filter for supply airflow.
- Sterile work zone environment created for optimum product protection.
- Low Noise
- Reduced Vibration

Introduction

Esco Enterprise™ Laminar Flow Straddle Units are designed for larger-scale process protection in industrial applications typically requiring multiple units connected in an assembly line configuration. They may be placed within an ISO Class 8 cleanroom to provide an ultra-clean environment directly at the process level, without the initial and operating costs associated with a full-sized ISO Class 3 or 4 cleanroom.

EQU/0_-ESUS Enterprise™ Laminar Flow Straddle Unit Airflow Diagram



- During operation, room air is drawn through the top of the straddle unit via a washable polyurethane pre-filter with 20% arrestance, trapping larger particles and increasing the life of the main filter.
- The air is then forced evenly through the ULPA filter with >99.999% efficiency, resulting in a unidirectional stream of clean air projected vertically over the internal work zone. All airborne contaminants are flushed and diluted, resulting in a particulate-free work environment.
- The purified air then leaves the storage area across the entire open front of the straddle unit.
- A nominal filter face velocity of 0.45 m/s (90 fpm) ensures that there is a sufficient number of air changes within the enclosed area of the straddle unit in order to maintain cleanliness.

- Room air / Inflow air
- ULPA-filtered air



PPH-4UDPVW-₋

Frontier® PPH™ Laboratory Fume Hoods

Features

- ASHRAE 110-2016 certified
- Full polypropylene construction
- Polycarbonate sash window
- Tapered Exhaust Collar

Available sizes: 4, 5, 6 and 8 ft



Introduction

The Frontier® PPH™ Fume Hood provides the highest level of protection and containment against highly corrosive chemicals. Full polypropylene (PP) interior makes the hood metal-free and ideal for sensitive work such as trace metal analysis. PP also has an excellent rating against corrosion and chemical staining.

Optional Accessories:



Base Cabinet (EBP)



Circuit board protection



Service fixtures



Sentinel™ XL Airflow Alarm



EFA-4UDRVW_-

Frontier® ACELA™ Laboratory Fume Hoods

Features

- Tri-wall design
- ASHRAE 110-2016 certified
- Low energy-consumption, high performance fume hood
- 5° sloped front sash design
- Superior containment at 0.3 m/s face velocity

Available sizes: 4, 5, 6 and 8 ft



Introduction

The Esco Frontier® Acela™ Fume Hood is a high performance, low flow fume hood engineered for safety, performance and energy efficiency, all combined in one multi-featured product. Its ability to operate at a reduced face velocity of 0.3 m/s allows for an exhaust volume reductions of up to 58% as compared to a conventional fume hood. This directly translates to more savings for your company.

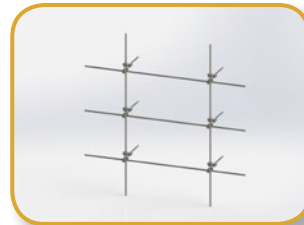
Optional Accessories:



Base Cabinet (EBA)



Circuit board protection



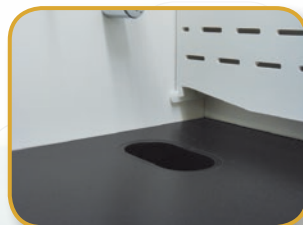
Distillation grid



Service fixtures



Scrubber



Worktop



Sentinel™ XL Airflow Alarm



Support Stand (ASL)



IFA-110

Isotherm®

Forced Convection Laboratory Incubators

Features

- Ventiflow™ Ventilation System – Forced air convection design
- Pre-heat Chamber Technology – 4-zone heated air jacket
- SmartSense™ Microprocessor PID Control Technology
- ISOCIDE™ Antimicrobial Powder Coating
- Door Keylock
- Multiple Redundant Over-Temperature Protection System
- Superior Insulation

Available sizes: 32, 54, 110, 170, and 240 L

ISOCIDE™



CE

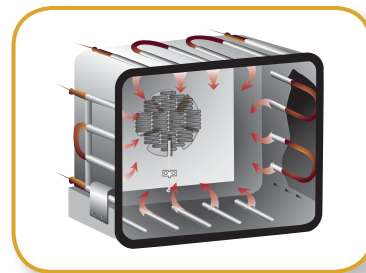
Introduction

Esco Isotherm® world class laboratory incubators are used for thermal convection applications such as bacteria culture and Coliform determination among many others. With ergonomic design, microprocessor PID controls, 4-zone heated air jacket and precisely tuned and tested ventilation and insulation package, Esco Isotherm® is your reliable incubator for universal application.



Ventiflow™ Ventilation System

- Forced convection design produces faster temperature response rates, improves uniformity and reduces fluctuation
- Low energy consumption and low noise level



Pre-Heat Chamber Technology

- 4-zone heated air jacket ensures stable heating and maximum temperature uniformity in the chamber
- 2-point door seal and eccentric hinge ensures maximum gasket



Multiple redundant over-temperature protection system

- Over-all temperature protection meets DIN 12880 Class 3.1 standards
- All electrical components are UL recognized



SmartSense™ Microprocessor PID Control Technology

- Connected to an instrument-grade precision platinum temperature probe
- Ensures fast ramp time. Prevents overshoot and ensures stable temperature once set point is achieved



OFA-110

Isotherm®

Forced Convection Laboratory Oven

Features

- Ventiflow™ Ventilation System – Forced air convection design
- Pre-heat Chamber Technology – 4-zone heated air jacket
- SmartSense™ Microprocessor PID Control Technology
- ISOCIDE™ Antimicrobial Powder Coating
- Door Keylock
- Multiple Redundant Over-Temperature Protection System
- Superior Insulation

Available sizes: 32, 54, 110, 170, and 240 L

ISOCIDE™



CE

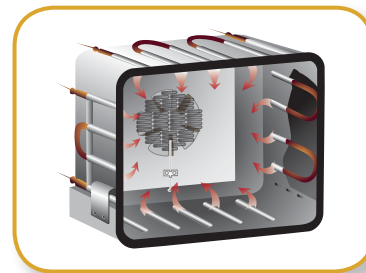
Introduction

The Esco Isotherm® world class laboratory ovens are used for high-forced volume thermal convection applications such as drying and curing among many others. With ergonomic design, microprocessor PID controls, 4-zone heated air jacket and precisely tuned and tested ventilation and insulation package, Esco Isotherm® is your reliable oven for universal application.



Ventiflow™ Ventilation System

- Forced convection design produces faster temperature response rates, improves uniformity and reduces fluctuation
- Low energy consumption and low noise level



Pre-Heat Chamber Technology

- 4-zone heated air jacket ensures stable heating and maximum temperature uniformity in the chamber
- 2-point door seal and eccentric hinge ensures maximum gasket



Multiple redundant over-temperature protection system

- Over-all temperature protection meets DIN 12880 Class 3.1 standards
- All electrical components are UL recognized



SmartSense™ Microprocessor PID Control Technology

- Connected to an instrument-grade precision platinum temperature probe
- Ensures fast ramp time. Prevents overshoot and ensures stable temperature once set point is achieved

Electronics Industry

OPTIONS AND ACCESSORIES (for Isotherm® products)



Wall bracket (only for 32 L and 54 L chambers)

- Accommodates desired operating heights



Reversed Door Swing (Factory-installed)



Voyager® Software Kit

- Esco Voyager® is a PC-based software package developed for remote monitoring, datalogging and programming/device configuration of Esco controlled environment laboratory equipment



Support stands fixed height at 720 mm (28.3")



Additional Shelf

- Two shelves are included for 32 L, 54 L, 110 L, 170 L and 240 L models as standard. Additional shelves may be ordered.



Optional Stainless Steel Exterior

- Robust construction and corrosion-resistant surface that meets pharmaceutical and clinical laboratory requirements



EAS-2C_

Cleanroom Air Showers

Features

- Disposable prefilter
- SS air nozzles
- Energy Efficient
- Sentinel Silver Microprocessor Controller
- High velocity shower jets
- Emergency stop buttons

Introduction

Air Showers are self-contained chambers installed at entrances to cleanrooms and other controlled environments. They minimize particulate matter entering or exiting the clean space. Personnel and materials entering or exiting the controlled environment are "scrubbed" by high velocity ULPA (U15)-filtered air jets with velocities of 18-20m/s (3543-3937 fpm). Contaminated air is then drawn through the base within the unit, filtered and recirculated.

Models:



EAS-2A_

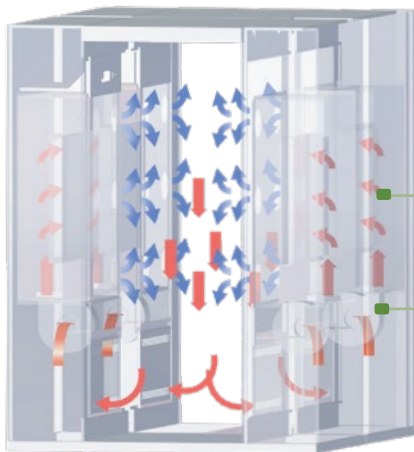


EAS-2B_



EAS-2C_

Air Shower Filtration System



■ ULPA-filtered air
■ Unfiltered/potentially contaminated air
 Blower
 ULPA Filter

- Air is forced by the blower(s) through ULPA filter(s) which are 99.9995% efficient against particles of 0.3 microns.
- Filtered air is ejected through nozzles at high velocities into the chamber. These turbulent air streams disperse particulate matter on all surfaces.
- Dispersed particulate matter migrate with the air stream towards the lower areas in the air shower chamber. Air enters the blower supply plenum through pre-filter(s) installed at the base of the chamber.
- The air is continuously filtered and recirculated. The air shower is a self-contained device and does not exchange air with the environment it is placed in.

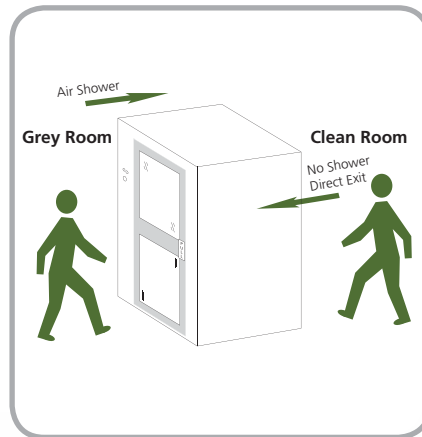
Air Shower Operating Sequences

Unlike conventional air showers which are delivered with a fixed operating sequence, the Esco Air Shower's operating sequence may be selected from three pre-programmed sequences:



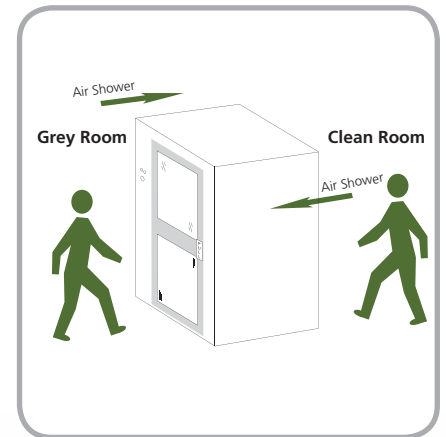
One-Way

Personnel may enter the controlled environment but not exit through the air shower. At the idle state, the clean side door is locked while the grey side is unlocked. This mode of operation is useful for controlling traffic patterns into and out of the controlled environment.



Two-Way One-Way

Personnel may enter or exit the controlled environment through the air shower. When entering the controlled environment the shower is activated. When exiting the shower is disabled to reduce throughput time. The air shower program is able to detect if the person is entering or exiting the controlled environment via door sensors and a time-sequenced control.



Two-Way

Personnel may enter or exit the controlled environment through the air shower. In both directions the air shower is activated. This mode of operation is useful in pharmaceutical and lab animal research applications to prevent the egress of hazardous substances and allergens from the controlled environment.

Soft Capsule® Soft Wall Cleanroom

Features

- Mild steel hollow section (50 x 100mm)
- Abrasion-resistant Esco ISOCIDE™ antimicrobial coating oven-baked powder coat
- Isostat™ vinyl curtains
- Low Noise

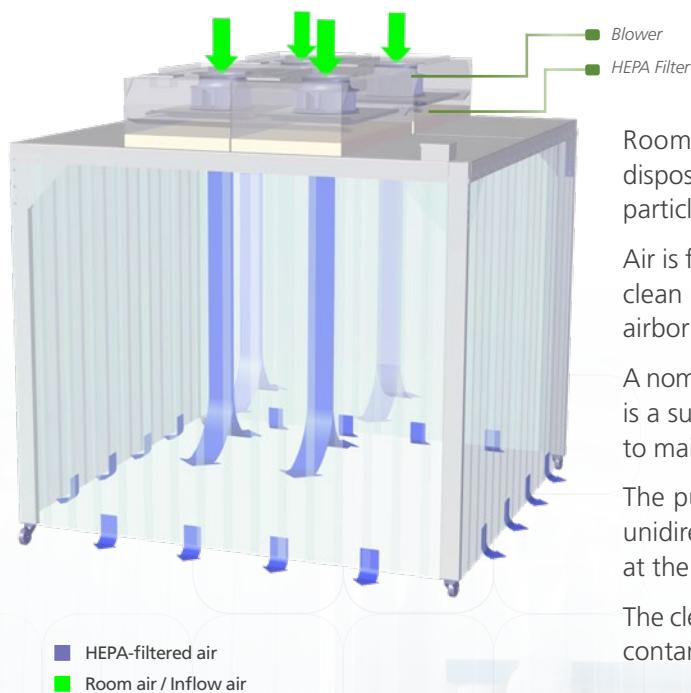


SC-887

Introduction

Esco Soft Capsule® Soft Wall Cleanrooms are an ideal solution when clean air areas need to be created on a small to mid-scale. Flexible and economical, they may be easily relocated when application requirements change. Esco offers a complete range of soft wall cleanrooms to meet various construction, dimensional and cleanliness class requirements.

Soft Wall Cleanroom Filtration System



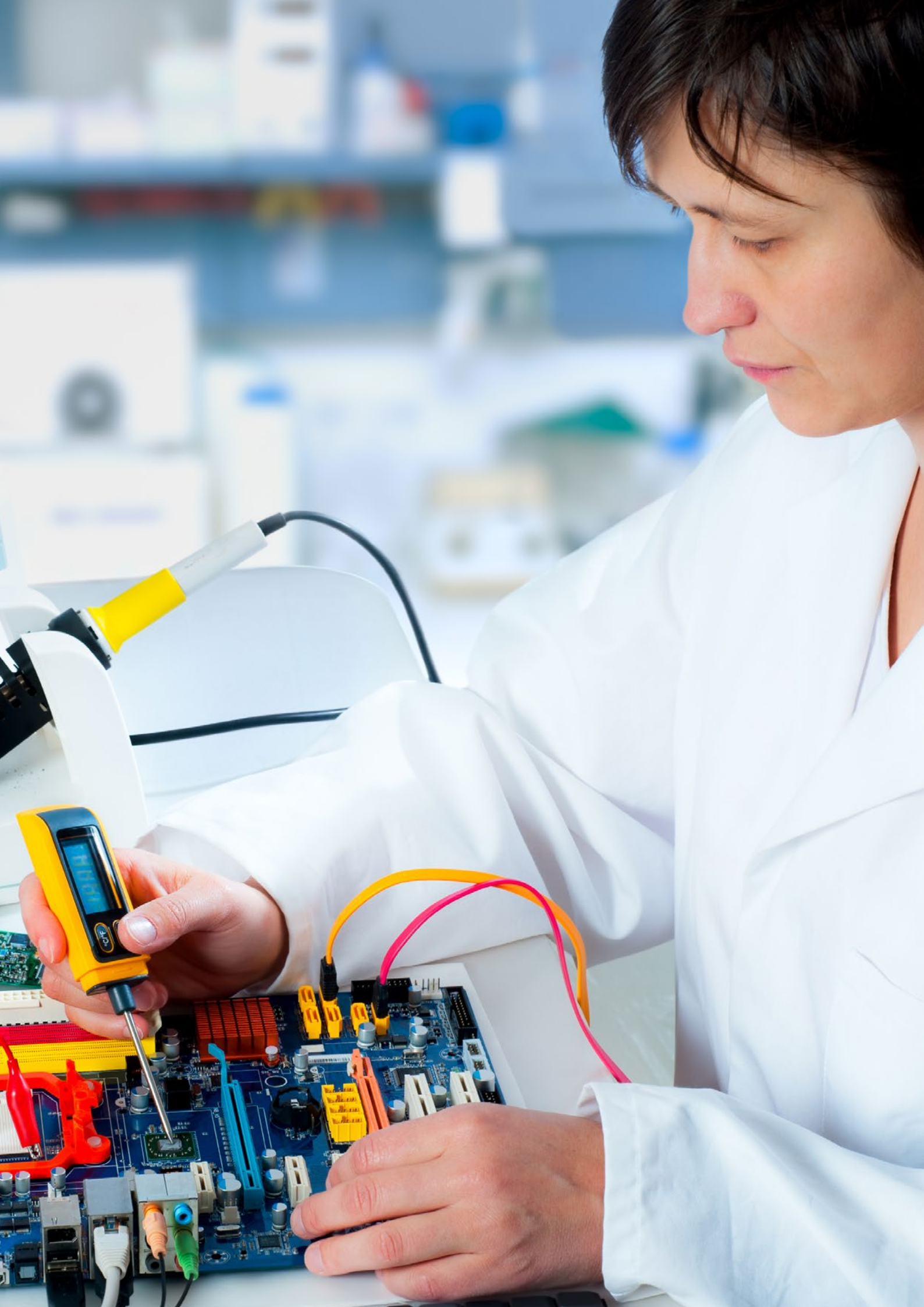
Room air is taken in from the top of the cleanroom through a disposable pre-filter with 85% arrestance; this serves to trap larger particles and increase the life of the main filter.

Air is forced evenly across the HEPA filter(s); the result is a stream of clean laminar air within the work zone; this dilutes and flushes all airborne contaminants from the interior.

A nominal filter face velocity of 0.45 m/s or 90 fpm ensures that there is a sufficient number of air changes within the cleanroom in order to maintain cleanliness.

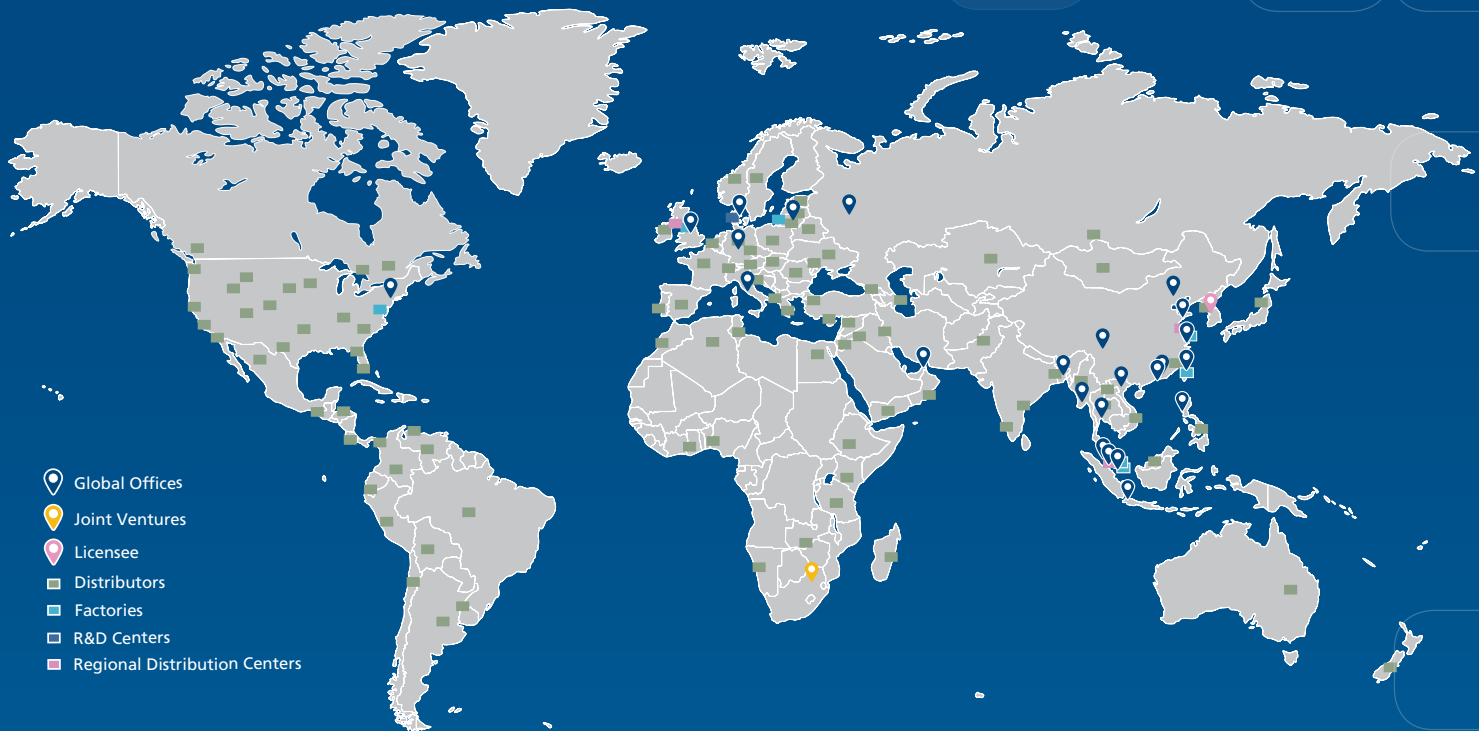
The purified air travels downward within the interior in a vertical, unidirectional stream, and leaves the cleanroom close to floor level at the perimeter.


The cleanroom is positively pressurized to prevent ingress of airborne contaminants from the external environment.



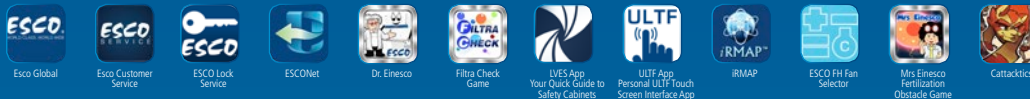
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