



# Automotive Industry





# Welcome to Esco Lifesciences

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

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

**Availability and Accessibility.** Esco Lifesciences has headquarters in Singapore, Indonesia, and Philippines, with manufacturing facilities 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 Lifesciences products are of high quality, reliable, and dependable. Cross-functional teams from Esco Production, R&D, Quality Assurance, and Senior Management, are regularly assembled to review and implement areas for improvement.

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

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

**Esco Lifesciences Cares for the Environment.** Esco Lifesciences incorporates the latest proven technologically advanced components available. One in every four of Esco's employees is involved in Research and Development and are evaluating new components or designs for better efficiency. Whenever a new technology is available, Esco Lifesciences redesigns technology into our new products that will use lesser energy.

**Customer Service and Support.** Our service does not stop once purchase has been done. Esco Lifesciences gives on-time customer service such as service training, preventive maintenance, and re-certification, to respond to your equipment needs. Esco Lifesciences also offers free end-user seminars and provides educational materials and informative videos.

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



# OVERVIEW

Automotive Industry is one of the world's important economic sectors by revenue. It is involved in development, design, marketing and manufacturing and selling of motor vehicles. Reducing CO<sub>2</sub> emissions has become a priority for the automotive industry. Climate change and energy security concerns are one of the current discussion by drivers on CO<sub>2</sub> reduction in the automotive industry. It is widely assumed that global warming is caused by anthropogenic greenhouse gases (GHGs), with CO<sub>2</sub> playing the most prominent role.

Esco provides variety of equipment for innovative solutions for industrial laboratory community. Esco was created to design and produce Clean Air products. Being GREEN is more than modifying products to use new energy efficient technology which Esco does.

## Applications

- Preparation of polymer materials in automotive engineering.
- Chemical preparation for automotive paints.
- For treating of leathers to ensure bacteria/fungi will not grow.
- Automotive Oils, Process Oils, Hydraulic Oils, Metalworking Fluids, Industrial Oils
- Fuel consumption and CO<sub>2</sub> emissions tests.
- For manufacturing process of a cast piston made by permanent mold casting.

## Equipment

- Biological Safety Cabinet (AC2)
- Laminar Flow Cabinet (LVG and LHG)
- Laboratory Fume Hood (EFA, EFD)
- Laboratory Oven (OFA)
- Laboratory Refrigerator (HR1)
- Cleanroom Air Shower
- Soft Capsule® Soft Wall Cleanroom





AC2-4S-NS

# Airstream®

## Class II Biological Safety Cabinets

### Features

- Energy saving DC ECM blower
- Isocide™ antimicrobial powder coating
- H14 filter or ULPA filter with 99.999% efficiency at 0.1 – 0.3 µm selection.
- Large performance envelope
- Ergonomic design
- Low noise
- Easy to clean

### Introduction

Esco's Biological Safety Cabinet is a primary engineering control which provides user protection against biohazards as the inflow air creates airflow barrier preventing accidental release of biohazards from the cabinet's working area and at the same time provides product protection with the airflow barrier inside the work zone which is on the other hand created by the downflow air.

Esco is a world leader in biological safety cabinets, offering the industry's widest product range, with thousands of installations in leading laboratories in more than 100 countries around the globe. Esco's biological safety cabinets have earned more independent certifications in more countries, in more languages, than any other product, demonstrating our commitment to the industry's best safety and quality.

### Basic Principle

Ambient air is pulled through front grille to create inflow, without going through the work surface. Inflow is joined by half of the downflow, to create front air curtain that is fine-tuned to create a large performance envelope. The combined air stream travels through the back air column towards the blower. Approximately 1/3 of the air in the common plenum is exhausted through the ULPA filter to the room. The remaining 2/3 of the air is passed through the downflow ULPA filter and into the work area as a vertical laminar flow air to create ISO Class 3 work surface and prevents cross contamination.

Near the work surface, the downflow splits. About half goes to the front grille, and half goes to the rear grille. A small portion enters the side capture zones to prevent dead air corners (small blue arrows). The design was optimized to give large performance envelope, that provides operator and product protection at wide Inflow and Downflow variation from the Nominal point.



NSF / ANSI 49



UL 61010



国家食品药品监督管理局



TÜV NORD, Germany



JIS K3800



EN 12469



SANS 12469



## Airstream® Class II Type A2 Biological Safety Cabinets

The World's Most Energy-Efficient, Quiet, and Compact Biosafety Cabinet

Aside from providing protection for you and your environment, Airstream® Class II biological safety cabinet provides protection for your microbiological samples.

**We understand your BSC requirements.**

Airstream® offers the most complete Class II cabinet range, with 9 models to choose from.



Model AC2-4E8



Model AC2-4D8



Model AC2-4G8



Model AC2-4S8



Model AC2-4S9-NS



Model AR2-4S9  
(Available only for USA)



Model AC2-4E8-TU



Model AC2-4S8-TU



Model AC2-4K8  
(Available only for Australia)

# OPTIONS AND ACCESSORIES



**Support Stands**

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



**Electrical Outlet**

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



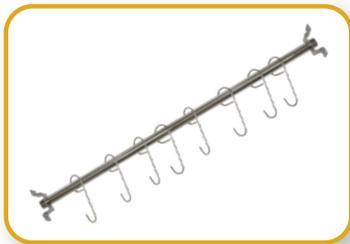
**Germicidal UV Lamp**

- 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



**Service Fixtures**

- European/ Worldwide style
- North American style
- Electronic adjustable height, with levelling feet or casters



**IV Bars with hooks**

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



**Exhaus Accessories**

- Air-tight damper and thimble exhaust collar
- SEAS (Sentinel Exhaust Alarm System)\*
- Anti-blow back valve
- Tri-safe exhaust collar with alarm



**Ergonomic Foot Rest**

- Angled, helps maintain proper posture
- Easily adjustable from 3" to 11" in 1" increment, 20" wide
- Anti-skid coating, chemical-resistant finish



**Ergonomic Lab Chair**

- Laboratory-grade construction
- Alcohol-resistant PVC materials
- Adjustable height 395-490 mm (15.6"-19.3")



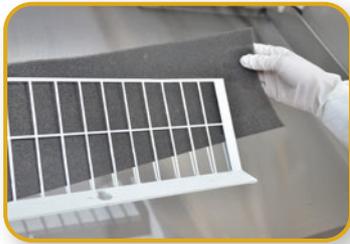
**PVC Arm Rest**

- Chemically treated, improves operator comfort, easy to clean



**VHP Port**

- VHP Out Top Box for Cabinet with or without exhaust collar installed



**Pre-filter**

- Pre-filter on paper catch



**Formalin Vaporizer**

- Dependable construction and innovative design
- Specifically designed for safety cabinet decontamination with automatic control

\* Type A Biological Safety Cabinets with thimble exhaust collar NOT equipped with alarm system can no longer be certified by an NSF-Accredited certifier.

## Other Accessories

Accessories	Description
Decontamination bag	<ul style="list-style-type: none"> <li>• Plastic decontamination bag for formalin decontamination on all BSC</li> </ul>
Port	<ul style="list-style-type: none"> <li>• Airtight cable port, installed on right side wall</li> <li>• Holds 1 to 4 cables</li> </ul>
Microscope Viewing Pouch	<ul style="list-style-type: none"> <li>• Factory-installed</li> <li>• Mounting and viewing pouch integrated into sash</li> </ul>
IQ/OQ	<ul style="list-style-type: none"> <li>• Installation Qualification and Operational Qualification Protocol</li> </ul>



LVG-4\_G-S\_

# Airstream® Gen 3 Laminar Flow Cabinet

## 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



UL 61010



Green Product

## Introduction

Esco laminar flow cabinets 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 cabinets are used in applications where there is no generation of biohazardous materials, hence operator protection is not required.

## Basic Principle

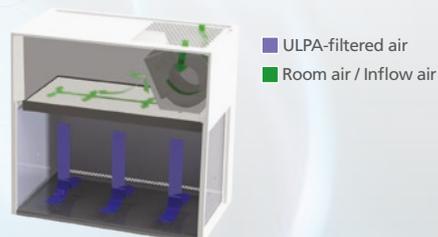
### Airstream® Horizontal Laminar Flow Stainless Steel Side Wall Version

- Room air is taken in from the top of the cabinet 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 cabinet; 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 cabinet to maintain cleanliness.
- The purified air travels across the internal work zone of the cabinet in a horizontal, unidirectional stream and leaves the main work chamber across the entire open front of the cabinet.



### Airstream® Vertical Laminar Flow Stainless Steel Side Wall Version

- Room air is taken in from the top of the cabinet 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 cabinet; 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 cabinet to maintain cleanliness.
- The purified air travels across the working zone of the cabinet 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.



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## Airstream® Gen 3 Laminar Flow Cabinets

The Leading Solution for Research Laboratories

Esco Airstream® Laminar Flow Cabinets 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 Cabinets



LHG-4\_G-F\_

LHS-4\_G-F\_

### Vertical Laminar Flow Cabinets



LVS-4\_G-S\_  
(Sliding Sash)

LVS-4\_G-F\_  
(Fixed Sash)

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



EFD-4A

# Frontier® DUO™ Laboratory Fume Hoods

## Features

- Dual wall design
- ASHRAE 110-2016 certified
- With black color phenolic resin worktop
- Has service fixtures added: 1 remote-controlled gas fixture and 1 swan-neck faucet
- Ergonomic 8° sloped front sash

Available sizes: 4, 5, 6, and 8 ft



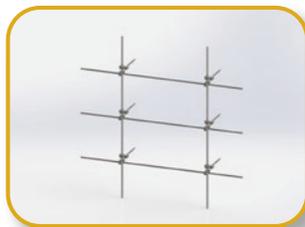
## Introduction

The Esco Frontier® Duo™ Fume Hood is an upgraded version of its predecessors representing design and engineering innovations that are at the forefront of fume hood technology. It has a rugged dual wall construction offering a much robust design that allows service fixtures and electrical outlets to be mounted on both sides of the wall.

## Optional Accessories:



Base Cabinet (EBD)



Distillation Grid



Service Fixtures



Sentinel™ Silver  
Microprocessor  
(for EFD-B models)



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.

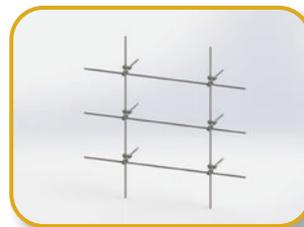
## Optional Accessories:



Base Cabinet (EBA)



Circuit Board Protection



Distillation Grid



Service Fixtures



Scrubber



Worktop



Sentinel™ XL Airflow Alarm



Support Stand (ASL)



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

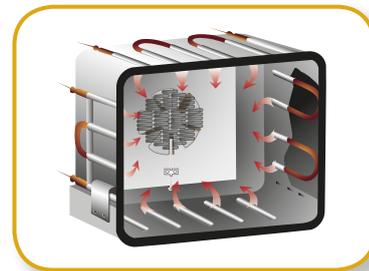
### Introduction

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

### Automotive 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



# HP Series

## Laboratory Refrigerators and Freezers

### Features

- Forced-air design
- Intelligent automatic defrost
- Excellent temperature uniformity
- Door lock
- Triple-pane glass doors for refrigerators
- Isocide™ antimicrobial powder coating
- High-quality stainless-steel interior for sample protection
- Internal LED lighting that saves up 70% power with less heat exposure
- Standard wheels for easy location or movement
- Audible and visual alarms

**ISOCIDE™**



CE



### Introduction

Laboratory professionals invest time, money and hard work on irreplaceable samples. A cold storage equipment can store thousands to millions of dollars' worth of valuable products. Once proper storage requirements are not met, these precious samples may be put at risk and eventually lead to sample spoilage and wastage. That is why, it is important to carefully choose the cold storage that can assure optimal product protection.

Esco HP Series is designed for laboratory use offering superior product protection with long term reliability and exceptional product quality. When superior levels of cold storage performance, reliability, and flexibility are needed, the Esco HP series of Laboratory Refrigerators and Freezers is the best choice—it provides a high-performance protection for your precious samples! Laboratory Refrigerators are generally used for storing non-volatile reagents and non-volatile biological specimens.



HR1-140S-      HR1-400T-

+2°C to +15°C

Laboratory Refrigerators



HF2-400T-      HF2-1500S-

(HF2): -10°C to -25°C  
(HF3): -20°C to -40°C

Laboratory Freezers



HC6-400S-      HC6-700S-

Refrigerator: +2°C to +15°C  
Freezer: -10°C to -24°C

Laboratory Combination  
Refrigerators and Freezers

### Automotive Industry

## OPTIONS AND ACCESSORIES



### Shelf Kits (SK\_)

Atoxic, plastic-coated steel, supported by anti-tilt clips. It is for additional space inside your chamber where you can place your samples. It also provides a good support for your samples to prevent damage and maintain organization of samples.



### Drawer Kits (DK\_)

A drawer extractible on telescopic slides, adjustable in height, bottom made of painted steel, beehive structure type, supplied with adjustable dividers made of polypropylene, front is fitted with an ergonomic aluminum handle, for the storage of samples in a more convenient and organized way.



### Digital Monitor (DM\_)

An independent visual/acoustic alarm and recording system, with an accuracy of 0.1°C due to the PT100 probe used for temperature detection. It will take over alarm failures, together with standard rechargeable batteries that record event such as unauthorized personnel.



### Access Port (AP\_)

A 15 mm or 35 mm diameter hole that will be placed at the back of the unit, closed with a white plastic cap, used for the access of additional probes inside the chamber.



### Basket Kit (BK1)

Made of stainless steel that provides an anti-corrosion environment for your samples. It is mounted on anti-tilt side slides and can be glided outside the chamber for the purpose of easy access to samples.



### Chart Recorder

The chart recorder provides an easy-to-read graph of data vs time. It is a reliable, accurate, and stable instrument, for on-the-spot written documentation of chamber temperature.

Model	Item Code	Description
SK1	1330063	Shelf Kits for HR1-140, HF2-140 (Standard and Touchscreen models)
SK2	1330064	Shelf Kits for HR1-400, HF2-400 and HC6-400 (Standard and Touchscreen models)
SK3	1330065	Shelf Kits for HR1-700, HF2-700, HF3-700, HC6-700, HR1-1500 and HF2-1500 (Standard and Touchscreen models)
SK4	1330066	Shelf Kits for HF3-400 (Standard and Touchscreen models)
DK1	1330067	Drawer Kits for HR1-140, HF2-140 (Standard and Touchscreen models)
DK2	1330068	Drawer Kits for HF2-400, HR1-400 and HC6-400 (Standard and Touchscreen models)
DK3	1330069	Drawer Kits for HR1-1500, HF2-1500, HR1-700, HF2-700 and HC6 700 (Standard and Touchscreen models)
DK4	1330070	Drawer Kits for HF3-400 (Standard and Touchscreen models)
DK5	1330071	Drawer Kits for HF3-700 (Standard and Touchscreen models)
DM1	1330072	Digital Monitor for single chamber models for Touchscreen models only
DM2	1330073	Digital Monitor for dual chamber models for Touchscreen models only
AP15	1330074	15 mm Access Port for all models (Standard and Touchscreen models)
AP35	1330075	35 mm Access Port for all models (Standard and Touchscreen models)
BK1	1330076	Stainless Steel Basket Kit for HR1-700, HR1-1500, HF2-700, HF2-1500, HF3-700 and HC6-700S (Standard and Touchscreen models)
Backup Battery	1330127	Standard backup battery for acoustic and visual alarm during power failure (Standard and Touchscreen models)
4-20 mA	1330129	4-20 mA Output (Touchscreen models)
GSM	1330216	GSM Module (Touchscreen models)
Chart Recorder	1330185	Chart Recorder for all models (Standard and Touchscreen models)
IQQQ	9010179	Installation Qualification Operation Qualification for all models



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\_

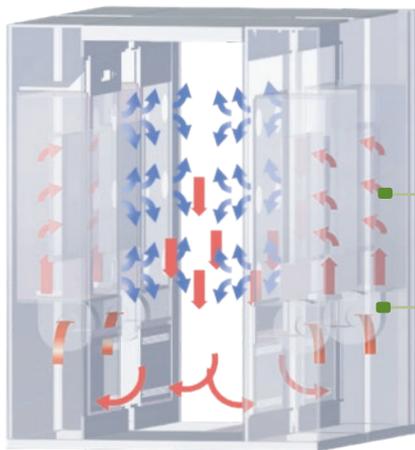


EAS-2B\_



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.

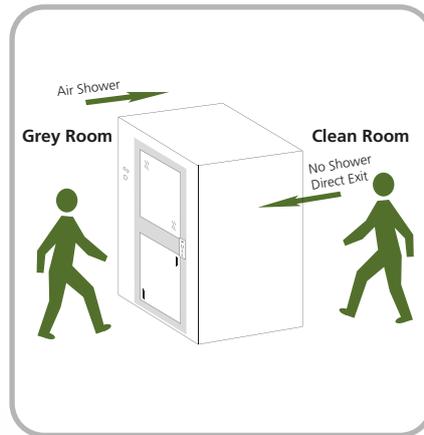
## Air Shower Operating Sequences

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:



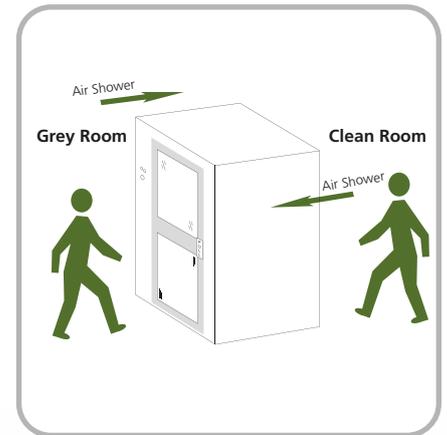
### One-Way

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

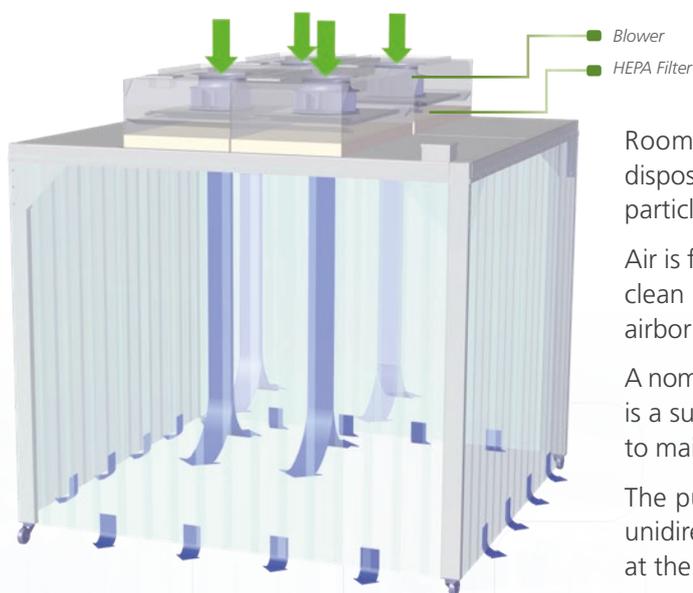


SC-887

## 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



- HEPA-filtered air
- Room air / Inflow air

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.

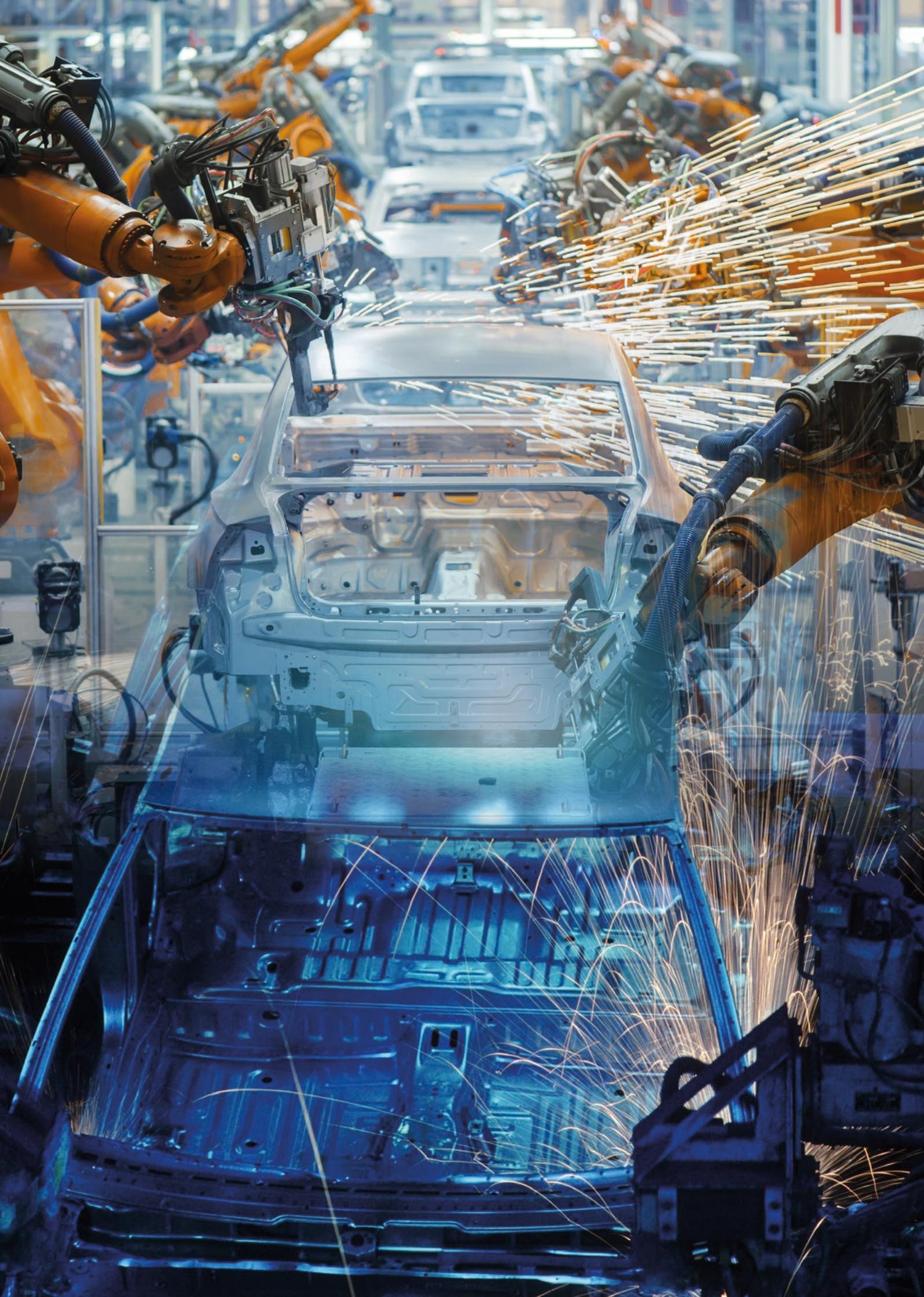
Air is forced evenly across the HEPA filter(s); the result is a stream of clean laminar air within the work zone; this dilutes and flushes all airborne contaminants from the interior.

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.

## Automotive Industry



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