Halton - Ecology-*E*

Electrostatic Precipitator with Automatic Cleaning

Enabling Wellbeing

Halton

Ventilation is the critical factor to consider when investigating the feasibility of a new commercial kitchen site. New projects, new designs to existing buildings, and non-traditional sites often require uncommon solutions for kitchen ventilation problems. Ecology-*E* may be your solution to:

- Code requirements
- Environmental standards
- Multi-story structures
- High installation costs
- Limited roof top space
- Historical/Architectural sites
- Multi-restaurant applications

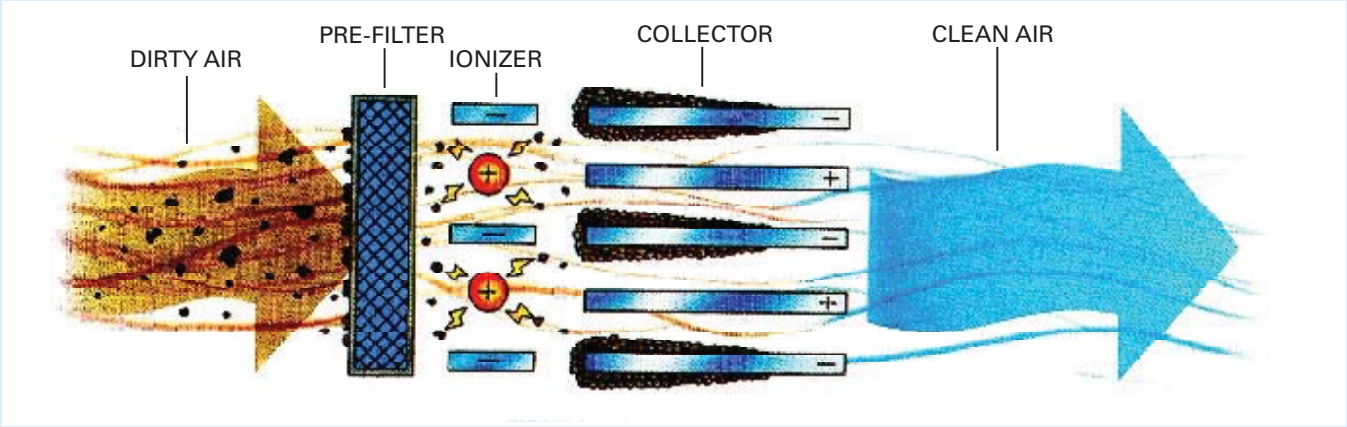
Halton has the equipment, design flexibility and experience to solve the problems of each site.

Key Features

- New Generation ESP designed for dependable operation
- Reliable high frequency electronics do not use fragile ionizing wires or insulators
- Specified efficiency is instant and constant
- Pressure drop is a constant 0.25" w.g., resulting in reduced fan horsepower
- Constant resistance to airflow prevents fluctuations in system air volume
- Permanent aluminum collector cells never need replacing
- Built-in automatic cleaning and PLC controls
- Optional bonded carbon for gas/odor control
- Optional custom blower/motor package
- Optional safety filter

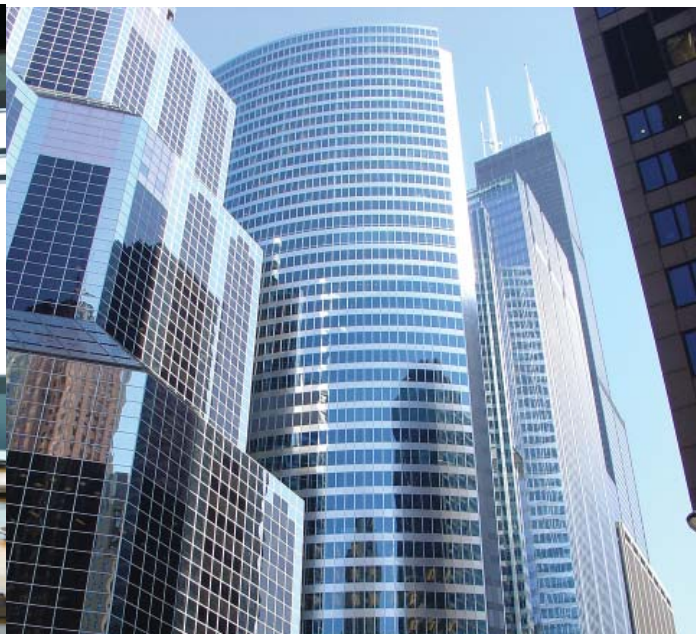
Electronic Air Cleaning

Halton's Ecology-*E* is a new generation electrostatic precipitator used to extract cooking effluents and odors from commercial kitchen exhaust. Ecology-*E* is a reliable solution for minimizing the restaurants impact on the surrounding environment. It's available in side access units for use with central air handlers or as a stand alone fan powered unit.



Dependable high frequency electronics, safe/no-short charging system, rugged ionizer electrodes and improved automatic cleaning are just a few of the innovations developed to make Ecology-*E* the most reliable ESP ever. High efficiency particle collection is delivered instantly and continuously. The extremely low resistance to airflow means less fan horsepower is needed, compared to conventional media filtration, and since resistance to airflow is constant, the system air volume is always maintained. Optional bonded activated carbon can be added for odor control, making Ecology-*E* the IDEAL SOLUTION for ventilation or exhaust air quality problems.

Reliability, high performance and low operating cost make Ecology-*E* an excellent choice for indoor air cleaning or exhaust air pollution control.



Halton Ecology-*E*

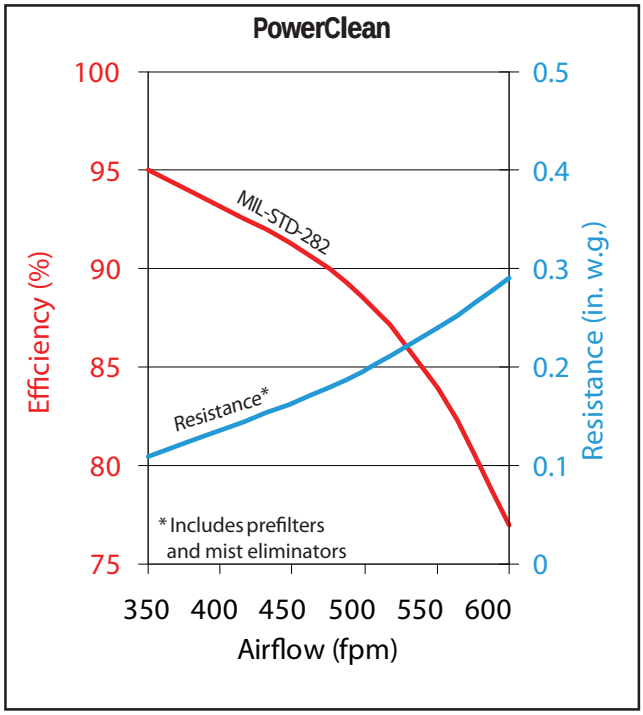
Ecology-*E* Delivers

Performance

Ecology-*E* uses a 2-stage electronic collector for Particulate control. A high-density, low power first stage charges each particle. The charged particles then travel downstream into the second stage where they are repelled from the air stream, captured, and retained on collector plates.

The electronic collector uses an airfoil design that eliminates air-bypass, so all of the system air and airborne particulate pass directly through the charging and collecting stages. This assures that all contaminated air is treated.

Ecology-*E* delivers the rated efficiency instantly and continuously. The high-density charging and collecting zones produce an immediate and constant removal rate regardless of particle size.

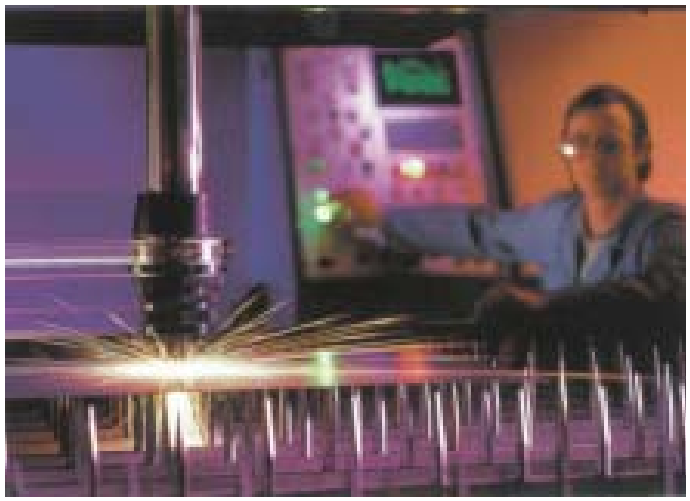


Reliability

Ecology-*E* uses a programmable logic controller (PLC) for system control and monitoring, in conjunction with high frequency electronics, to deliver optimum performance and assure the highest degree of reliability.

The versatile control system can be easily integrated with existing process systems, adding another degree of reliability in the overall system operation.

The durable, all aluminum 2-stage electronic collectors feature unitary construction and are designed to last the lifetime of the system. The integrated automatic wash system assures optimum performance and maximum system reliability.



Value

Ecology-*E*'s design features increased collector surface area in a smaller package compared to conventional systems, resulting in higher dirt holding capacities and reduced system footprint. This translates into extra available floor space, up to 30% in some instances.

Ecology-*E*'s low resistance to airflow results in reduced fan horsepower and fan energy cost. Over time, this reduction amounts to significant energy savings. Since

Ecology-*E* uses wash-in-place electronic collectors, replacement filter cost, disposal cost and labor cost are eliminated. When it comes to value, Ecology-*E* delivers. High performance and reliability in a compact design, and low operating cost make Ecology-*E* the ideal choice for today's industrial air quality problems. Call us, and we'll help evaluate your application.

Ecology-*E* (HE) Components

System PLC Control

High Voltage Power

Model HE-0604-W
(Metal mesh mist eliminators removed)

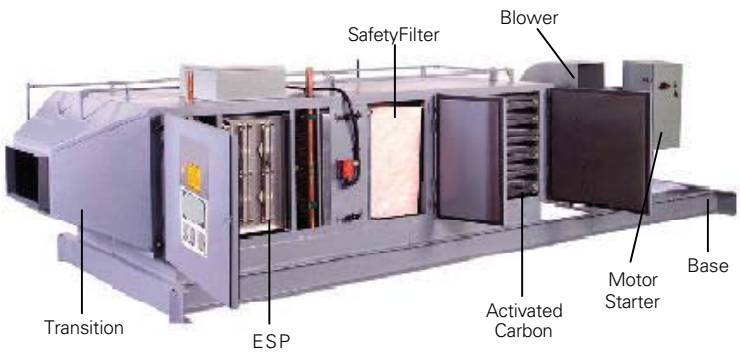
Detergent

System Accessories
(solenoid valve, backflow preventer)

System Description

Ecology-*E* Side Access Model (HE) is a factory packaged system including side access housing with upstream and downstream flanges, integral wash system, pre and post mist eliminators, electronic collectors, system control, detergent dispenser, and accessories. The factory assembled system is designed for mating to air handlers and ventilation systems or as a stand alone unit factory furnished blower/motor package.

The System PLC Control is programmed to start and stop the system according to customer requirements. At a predetermined schedule, the Control also initiates a water/detergent wash cycle to clean away collected contaminants. Spent wash water is drained from the bottom drain pan, Ecology-*E* is forced dried and ready to continue operations. Start, stop and wash functions can also be initiated by manual push button.



System Accessories

Each Ecology-*E* Model HE is furnished with the following standard accessories.

Pressure gage .....1 each
Wash water strainer .....1 each
Ball valve .....1 each
Backflow preventer .....1 each
Solenoid valve .....1 each
Detergent .....55 gal

Utilities

Electrical: Standard: 120 Vac, 1 Ph, 60 Hz
Optional: 208 - 230 Vac, 1 Ph, 50/60 Hz
Wash Water: (See Selection Table) gpm @ 50 psig
System Drain: Integral 3" FNPT

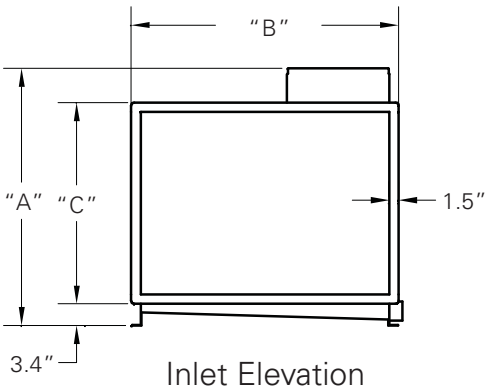
Options

Transitions, plenums and steel channel support base are furnished to the customers specifications.

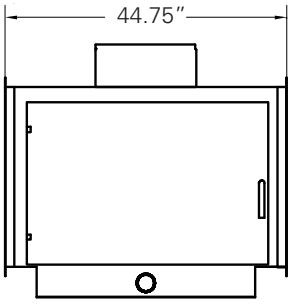
Odor/Gas Phase Control: Bonded, activated carbon panels are furnished to remove a broad range of both base and acid gases. Panels are held in place by gasketed, extruded aluminum tracks arranged in a Vee bank configuration.

Blower: Custom blower/motor and motor starter combinations are available in a variety of sizes and styles to meet system air volume and static resistance requirements.

Ecology-*E* (HE) Size Selection Table



Inlet Elevation



Access Side Elevation

Model	Face Area (ft^2)	Air Volume (cfm) (1.2) Efficiency		Dimension (in) Overall		Inlet/ Outlet	(3) Wash Cycle Water	Detergent	(4) Wt (lb)
		95%	90%	A	B	C	gpm	gal	
HE-0203-W	5.6	2,000	2,500	40 ¼	41 7/8	31 ½	7.2	.72	510
HE-0204-W	7.6	2,500	3,500	40 ¼	54 3/8	31 ½	9.6	.96	570
HE-0205-W	9.4	3,500	4,500	40 ¼	65 1/8	31 ½	12.0	1.20	650
HE-0206-W	11.3	4,000	5,500	40 ¼	76	31 ½	14.4	1.44	785
HE-0403-W	11.3	4,000	5,500	64 1/8	41 7/8	55 1/8	14.4	1.44	710
HE-0404-W	15.2	5,500	7,000	64 1/8	54 3/8	55 1/8	19.2	1.92	810
HE-0405-W	18.9	6,500	9,000	64 1/8	65 1/8	55 1/8	24.0	2.40	930
HE-0406-W	22.6	8,000	10,500	64 1/8	76	55 1/8	28.8	2.88	1,110
HE-0407-W	26.4	9,000	12,500	64 1/8	88 5/8	55 1/8	33.6	3.36	1,225
HE-0408-W	30.0	10,500	14,500	64 1/8	99 3/8	55 1/8	38.4	3.84	1,335
HE-0409-W	33.8	12,000	16,000	64 1/8	110 1/8	55 1/8	43.2	4.32	1,445
HE-0603-W	16.9	6,000	8,000	88	41 7/8	79 ¼	21.6	2.16	860
HE-0604-W	22.8	8,000	11,000	88	54 3/8	79 ¼	28.8	2.88	1,100
HE-0605-W	28.3	10,000	13,500	88	65 1/8	79 ¼	36.0	3.60	1,180
HE-0606-W	33.8	12,000	16,000	88	76	79 ¼	43.2	4.32	1,315
HE-0607-W	39.6	14,000	19,000	88	88 5/8	79 ¼	50.4	5.04	1,500
HE-0608-W	45.0	16,000	21,500	88	99 3/8	79 ¼	57.6	5.76	1,685
HE-0609-W	50.8	18,000	24,000	88	110 1/8	79 ¼	64.8	6.48	1,860

(1) MIL-STD-282, DOP Smoke Penetration Test Method
(2) Capacities may be rounded to the nearest 500 cfm
(3) Based on 50 psi water pressure. Typical wash cycle is 4 mins.
(4) Total system net weight

Model Number Development

Standard

HE — **02** **03** — **W**

- **HE**: Side Access
- **02**: 2 ft. High Nominal
- **03**: 3 ft. Wide Nominal
- **W**: Wash System

Optional Features

SF — **C** — **B**

- **SF**: Safety Filter
- **C**: Activated Carbon
- **B**: Blower/ Motor

Unit Selection Guide

1. From the Size Selection Table below, select the Model HE with Air Volume and Dimensions that meet the required efficiency and arrangement.
2. Two Model HE units of the same height may be arranged side-by-side to create a larger, multi-section unit. Specify one unit with left hand and one unit with right hand access doors.
3. Each Model HE is shipped complete with the Power Pack, System Control, Detergent Dispenser and System Accessories as shown on Page 5.

Ecology-*E* (HE) Size Selection Table

General

The electrostatic precipitator (ESP) shall be the two stage, dual voltage, plate type, sized to clean the airflow capacities scheduled on the Contract Documents at an efficiency of (specify %) when tested per MIL-STD- 282, DOP Smoke Penetration Method.

Configuration

The ESP shall be furnished in a side access housing, fabricated from 14 gage galvannealed steel, continuous welded, primed and painted. The housing shall be furnished with gasketed, hinged access door, flanged inlet outlet collars and sloped bottom drain pan. The housing shall be tracked for and furnished with aluminum pre and post mist eliminators.

Ionizer-Collector Cells

Ionizing-collecting cells shall be of industrial design integrity and single unit construction. The cells shall be all aluminum construction except the ionizing electrode shall be of the rigid stainless steel type. Repelling and collecting plates shall be positively retained in place using tie rod and tubular spacer design. High voltage insulators shall be molded from structural, self-glazing ceramic; shall contain no appurtenances; shall be of radial and bilateral symmetry; and shall contain no high voltage penetrations.

Built-in Cleaning System

Detergent, wash and rinse water shall be applied by oscillating copper manifolds containing brass spray nozzles, located on both the air entering and air leaving side of each cell tier. Complete, effective washing of all ionizing-collector cell surfaces and all appurtenances shall be provided. Drive motors, used to oscillate the manifolds, shall be high torque, gear reduced, totally enclosed fan cooled type, and be permanently lubricated. Drive linkage shall be the rigid, positively fastened type without tracks or sprockets. A detergent dispenser assembly shall be provided and shall consist of a (specify 30, 55 or 100) gallon anticorrosive reservoir, positive displacement pump, motor, and flow volume control valve, Solenoid valve, strainer, backflow preventer, ball valve, pressure gage and an initial supply of detergent shall be furnished by the ESP manufacturer.

Control and High Voltage Power Supplies

The System Control shall be the programmable logic (PLC) type, furnished in a NEMA 3R enclosure, pre programmed to sequence the ESP through wash cycles at a schedule to be determined with the Owner. Integral electronic time clock with manual override shall be provided.

High voltage power supply, furnished in a NEMA 1 enclosure, shall be the high frequency, solid state type, supplying a dual voltage and current output specified by the ESP manufacturer. Power supply shall have a regulated input and output for line fluctuations of 10% and shall have a current limiting shutdown and restart feature.

The face panel of the enclosures shall contain indicators for electronic air cleaner control status (run, wash, etc.), individual power supply, primary circuit indicating light, monitoring instrumentation, and on-off switch.

Electrical Interlocks

All access to ESP and high voltage power packs shall contain electrical safety interlocks which de-energize the primary power circuit prior to accessing high voltage.

Optional

Blower/motor, motor starter, channel iron hang base and odor control custom selected to meet individual requirements.

Each Ecology-*E* Side Access system is ETL listed, conforming to ANSI/UL STD 867 & UL STD 710.

Halton – Enabling wellbeing in indoor environments

Halton is a family owned company specializing in indoor climate and indoor environment products, services and solutions. Halton's aim is to create comfortable and safe indoor environments with energy-efficient and sustainable life cycle.

Halton solutions range from public and commercial buildings to industry, commercial kitchen and restaurant applications. Halton is also one of the most recognized indoor climate solution providers for marine and offshore applications. Areas of expertise and product ranges cover air diffusion, airflow management, fire safety, kitchen ventilation, air purification and indoor environment management.

Halton operates in 23 countries around the world. Headquarters are located in Finland and in the USA. Production facilities are located in Finland, France, Germany, Hungary, the UK, the USA, Canada and Malaysia. Indoor environment laboratories are located in the USA, France and Finland.

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