



## **Flex-Kleen Pulse-Jet Dust Collector Systems and Service**



**Serving the Dry Particulate Control Industry since 1959.**

**CECO**  
**Flex-Kleen**

CECO Flex-Kleen has offered engineered solutions for a wide variety of dust collection and particulate control applications and environments for more than 60 years. We are proud to be a leading supplier of dry particulate collection solutions and systems for process dust control, product recovery, nuisance dust collection, and air pollution control for an expansive variety of industries and manufacturing applications. The CECO Environmental family of brands includes: Adwest, Busch, CECO Filters, Fisher Klosterman, HEE-Duall, KB Duct, and Kirk & Blum.

## TABLE OF CONTENTS

Custom Designed Solutions For Diverse Markets . . . . .	2
Parts and Service. . . . .	2
Markets Served. . . . .	2
Pulse-Jet Dust Collectors . . . . .	3
Dust Collector Housing Arrangement . . . . .	4
Flat Wall Baghouses . . . . .	5
Bin Vents and Small Baghouses . . . . .	6
High Pressure Baghouses . . . . .	7
Cartridge Collectors . . . . .	8
Filter Bag Media Selection . . . . .	9
Pleated Filters & Cartridges . . . . .	10
Trust Ceco Environmental . . . . .	Back Cover
Other CECO Solutions . . . . .	Back Cover

## CUSTOM DESIGNED SOLUTIONS FOR DIVERSE MARKETS

1. Proven Technology that lasts
2. Collectors are sized for optimal operation ... Not one size fits all
3. High temperature, high pressure (ASME Code Vessel) & explosive dust applications
4. Custom Designs to meet customer needs
5. Alternative inlet options to fit challenging applications
6. Full range of materials available including carbon steel, stainless steel, other exotic metals
7. Dedicated Customer service
8. Auxiliary products available-Support legs, Access package, Fans, Airlock, Screw conveyer
9. Regional fabrication across North America and Global Options
10. Turnkey solutions available by partnering with other CECO Environmental solutions

## PARTS AND SERVICE

### Rely on CECO Flex-Kleen Services

1. Commissioning/start-up
2. On-Site installation
3. Inspection plans
4. Flex-Kleen genuine OEM replacement parts
5. Service agreements
6. Diagnostic capabilities
7. Maintenance and repair
8. System assessments
9. Replacement parts for other dust collector manufacturers

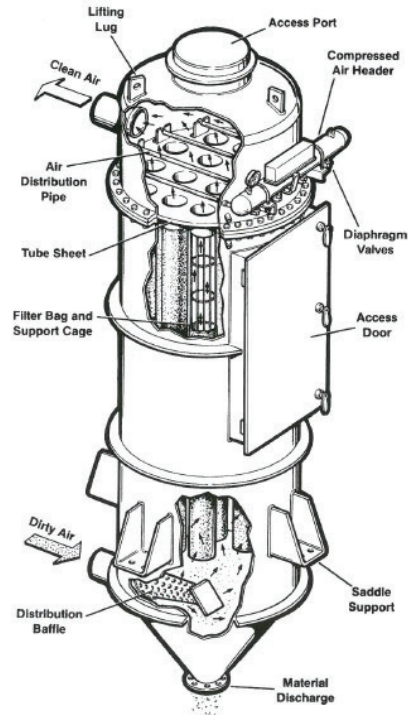
## MARKETS SERVED

- Building Products
- Consumer Products
- Material Recycling
- Food & Dairy
- Battery Manufacturing
- Cement Manufacturing
- Chemical Product Manufacturing
- Coal & Fly Ash
- Aluminum Processing
- Incineration
- Minerals & Clay
- Mining
- Oil Refining
- Paint And Pigments
- Plastics
- Pharmaceutical
- Power, Coal-Fired
- Petrochemical Manufacturing
- Pulp & Paper Manufacturing
- Gypsum Product Manufacturing
- Plastics & Rubber Manufacturing
- Metal Manufacturing Iron & Steel
- Wood Product Manufacturing

# PULSE-JET DUST COLLECTORS

## Operation

All Flex-Kleen pulse-jet collectors operate in essentially the same manner. Dust laden air enters the dirty air plenum or hopper where the heavier dust particles drop out. The air carries the remaining dust particles up and around the filter bag surfaces. As the air flows through the bags, the dust particles are captured on the bag surface material. The clean air continues up inside the bags, through the venturis, into the clean air plenum and is subsequently exhausted.



## On Line Cleaning

A burst of compressed air is used to clean a portion of the filter bags while the remainder of the bags continue to operate.

At preselected intervals a diaphragm valve opens, flooding one of the air distribution pipes above the bags with compressed air from a supply header. Precisely designed holes in the bottom of each distribution pipe direct the compressed air pulse into a venturi located in the top of the bag; this momentarily interrupts the process air flow through the bags and aspirates filtered air from the clean air plenum back into the bags, assisting in the cleaning process.

## Advantages:

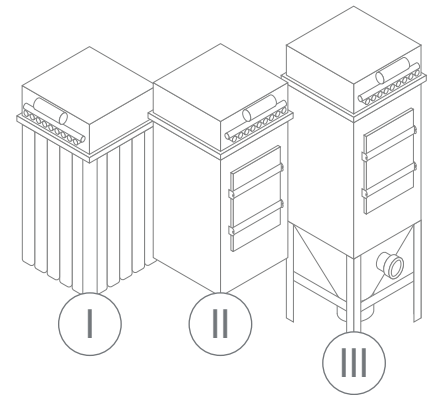
- **High Efficiency.** Particulate efficiencies available up to 99.99+ percent with select filter media.
- **Minimal Energy Requirements.** Compressed air usage is minimized through precise matching of cleaning requirements and cleaning frequency.
- **Low Maintenance Requirements.** No moving parts inside the collector.
- **Quick Installation.** Welded and built-in housing is shipped ready to install for minimum erection costs. Collector may be connected directly to a bin or silo, or supplied with a hopper and support legs as a free standing unit.
- **Quality, Economy, Dependability.** Many Flex-Kleen dust collectors are still in service after decades of use.

# DUST COLLECTOR HOUSING ARRANGEMENT

**Arrangement I:** Clean air plenum (CAP), tube sheet, bag cleaning system and bag support cages with bin line flanges for mounting to a bin or silo.

**Arrangement II:** Clean air plenum (CAP), tube sheet, bag cleaning system, bag support cages, dusty air plenum (DAP), for mounting to a bin or silo.

**Arrangement III:** Clean air plenum (CAP), tube sheet, bag cleaning system, bag support cages, dusty air plenum (DAP), hopper with inlet and flanged dust discharge, optional support legs, and access package.



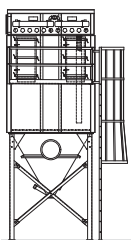
## FILTER REMOVAL STYLES:



**Top Access Units:** Bags and Trap-10 cages are removed and installed from above the tube sheet. Our Trap 10 design provides the most effective toolless - tube sheet/bag seal available anywhere.



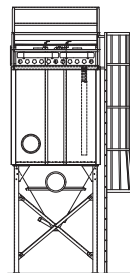
**Bottom Access Units:** Bags and cages are removed from beneath the tube sheet. A clamp is used to seal the bag and cage to a metal cup securely fastened to the tube sheet. To remove the bag, simply remove the clamp and pull the bag and cage down from the tubesheet.



### Bottom Bag Removal:

Bottom bag removal requires bags to be removed from the dusty side of the dust collector.

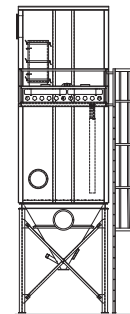
- Reduces required overhead space.



### Top Bag Removal Roof Doors:

Top bag removal features lift off roof doors allowing for filters to be removed.

- Removes filters from the clean air plenum to reduce dust exposure.
- Provides access to any filter without having to remove impeding filters.



### Top Bag Removal Walk-in Plenum:

A Walk-in Plenum provides a housing on the clean air side of the dust collector, while still providing the benefits of top bag removal design.

- Removes filters from the clean air plenum to reduce dust exposure.
- Limits exposure to the elements when removing filters.
- Provides access to any filter without having to remove impeding filters.

# FLAT WALL BAGHOUSES

## Models: WR, WS, WM, WX, PR, PS, PM, & PX

**Overview:** CECO Flex-Kleen’s baghouses offer a wide variety of sizes, material of construction, and filter media to fit your specific application needs. The housing sections are fully welded, reducing any crevasses that may cause dust to accumulate. Pyramidal and trough hopper designs available.

Flat wall baghouses are used when you have large airflows that require a large amount of filter area, generally at lower pressures (less than 35” w.g.).

### Material of Construction

- Mild Steel
- 304 Stainless Steel
- 316 Stainless Steel
- Other exotic materials

### Standard Design Pressure

- 20” W.G.
- Higher pressures available

### Electrical Area Classifications

- NEMA 4
- NEMA 4x
- NEMA 4/7/9
- ATEX
- Other classifications

### Filter Removal Styles

- Bottom Bag Removal
- Top Bag Removal
  - Lift Off Roof Doors
  - Walk-In Plenum

### Filter types

- Bag and Cage
- Vertical Pleated Filter

### Explosion Protection Options

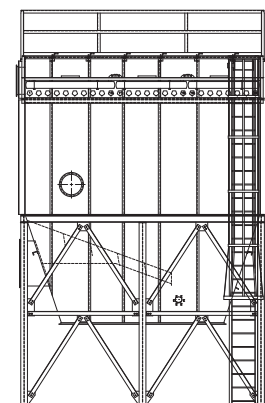
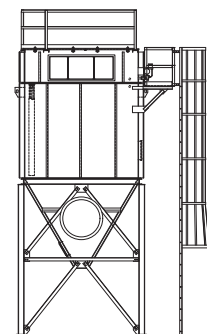
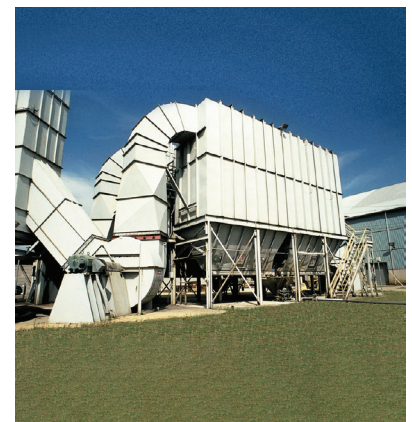
- NFPA 68 rupture-type explosion vents
- Flameless Vents
- Explosion Suppression
- Sprinkler Systems

### Auxiliary Options

- Airlocks
- Fans
- Screw Conveyors
- Slide Gates
- HEPA Filters
- Controls & Instrumentation

### Alternative Inlet Options

- High Inlet



# BIN VENTS AND SMALL BAGHOUSES

## Models: BV & PV

**Overview:** CECO Flex-Kleen's Bin Vent Dust Collectors (BV and PV model series) feature rugged welded housings, and can be furnished to handle air volumes ranging from 50 to 5,000 cubic feet per minute. All Flex-Kleen Bin Vent Filters are equipped with automatic on-line pulse-jet cleaning. Individual unit sizes range from 17 to 2592 square feet of media.

### Material of Construction

- Mild Steel
- 304 Stainless Steel
- 316 Stainless Steel
- Other exotic materials

### Standard Design Pressure

- 20" W.G. (for pleated filters)
- 17" W.G. (for Bag and Cage)
- Higher pressures available

### Electrical Area Classifications

- NEMA 4
- NEMA 4x
- NEMA 4/7/9
- ATEX
- Other classifications

### Filter Removal Styles

- Bottom Bag Removal
- Top Bag Removal
  - Lift off Roof Doors
  - Walk-In Plenum

### Filter types

- Bag and Cage
- Vertical Pleated Filter

### Explosion Protection Options

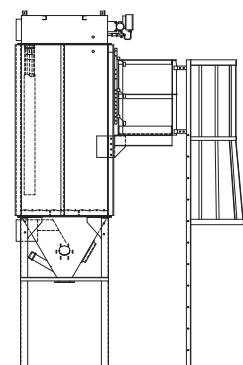
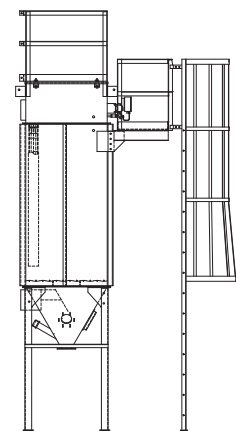
- NFPA 68 rupture-type explosion vents
- Flameless Vents
- Explosion Suppression
- Sprinkler Systems

### Auxiliary Options

- Airlocks
- Fans
- Screw Conveyors
- Slide Gates
- HEPA Filters
- Controls & Instrumentation

### Alternative Inlet Options

- High Inlet





# HIGH PRESSURE BAGHOUSES

## Models: CT & PC

**Overview:** CECO Flex-Kleen has decades of experience providing bag houses for high pressure applications. CECO Environmental has project engineers on staff that can provide finite element analysis (FEA) and finite element modeling (FEM).

These collectors are often seen on applications requiring very high pressures. Flex-Kleen has provided many collectors for applications as high as 350 PSI.

### Material of Construction

- Mild Steel
- 304 Stainless Steel
- 316 Stainless Steel
- Other exotic materials

### Standard Design Pressure

- 17" or 12" H.G. based on housing diameter
- 100" or 40" W.G. based on housing diameter
- ASME Code Vessels Available
- Other design pressures available as needed

### Electrical Area Classifications

- NEMA 4
- NEMA 4x
- NEMA 4/7/9
- ATEX
- Other classifications

### Filter types

- Bag and Cage
- Vertical Pleated Filter

### Filter Removal Styles:

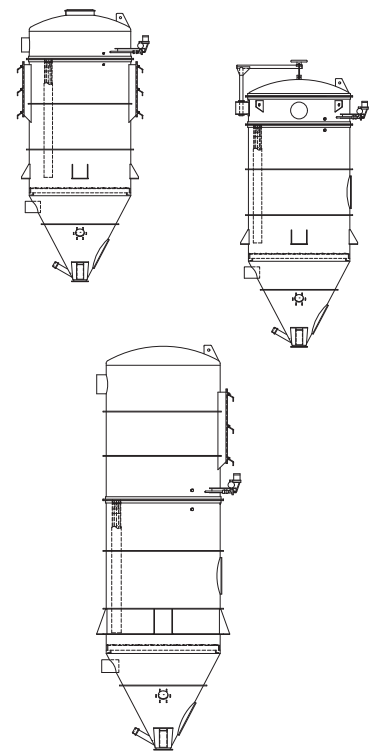
- Bottom Bag Removal
  - Lift Off Head
  - Walk-In Plenum
- Top Bag Removal

### Explosion Protection Options

- NFPA 68 rupture-type explosion vents
- Flameless Vents
- Explosion Suppression
- Sprinkler Systems

### Auxiliary Options

- Airlocks
- Fans
- Screw Conveyors
- Slide Gates
- HEPA Filters
- Controls & Instrumentation





# CARTRIDGE COLLECTORS

## Models: CDC

**Overview:** CECO Flex-Kleen's CDC Cartridge collectors utilize a horizontal cartridge with up to 226 square feet of media in a single filter. The best part about the CDC model is that one door enables you to access multiple cartridges. This means easy inspection and removal.

For certain applications requiring a small foot-print, CDC cartridge collectors can be the most cost effective solution available.

### Material of Construction

- Mild Steel
- 304 Stainless Steel
- 316 Stainless Steel
- Other exotic materials

### Standard Design Pressure

- 20" W.G.
- Higher pressures available

### Electrical Area Classifications

- NEMA 4
- NEMA 4x
- NEMA 4/7/9
- ATEX
- Other classifications

### Filter types

- Horizontal Cartridge Filters

### Filter Removal Styles

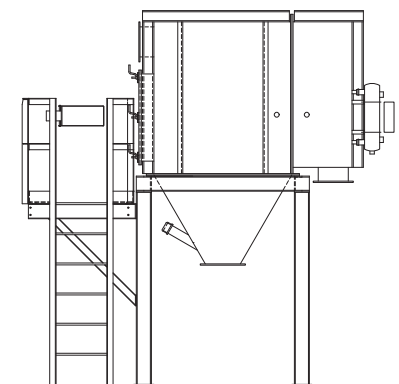
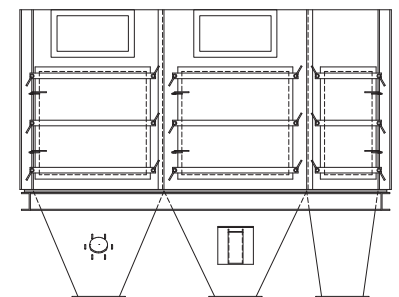
- Side Removal

### Explosion Protection Options

- NFPA 68 rupture-type explosion vents
- Flameless Vents
- Explosion Suppression
- Sprinkler Systems

### Auxiliary Options

- Airlocks
- Fans
- Screw Conveyors
- Slide Gates
- HEPA Filters
- Controls & Instrumentation



## FILTER BAG MEDIA SELECTION

Proper selection of the filter bag media will ensure optimal collector operation and maximize bag life. Flex-Kleen has over 60 years experience in filter media selection. Our staff of skilled engineers and product specialists would be happy to assist you in your bag selection.

It is important to analyze your dust collector application, considering operating temperature, particle abrasiveness and size, and acidic or alkaline levels when selecting a filter bag fabric. The following charts are designed to aid you in making an appropriate filter selection.

Media Fiber Type	Abrasion Resistance	Resistance To Acids	Resistance To Alkali	Maximum Operating Temperature
Polyester	Excellent	Good	Good	275 °F
Polypropylene	Good	Excellent	Excellent	180 °F
Homopolymer Acrylic	Fair	Excellent	Good	275 °F
Aramid	Excellent	Fair	Fair	400 °F
Fiberglass	Poor	Excellent	Fair	500 °F
Teflon	Poor	Excellent	Excellent	500 °F
PPS	Good	Excellent	Good	500 °F
P84	Excellent	Good	Good	500 °F

Media Treatments	Finish Properties	Fabric Applications
Glazed	Improved Cake Release	Polyester, Polypropylene, Aramid
Singed	Improved Cake Release	Polyester, Polypropylene, Aramid
Siliconized	Aids Start-Up Caking And Limited Cake Release	Polyester, Polypropylene, Aramid
PTFE Membrane	Improves Filtration Efficiency And Cake Release	Polyester, Polypropylene, Aramid, Fiberglass, Teflon
Teflon Bath	Cake Release And Lubricity	All
Acid Resistant	Provides Acid Resistance	Polyester, Polypropylene, Aramid, Fiberglass, Teflon
Flame Retardant	Retards Combustibility	Polyester, Polypropylene, Aramid, Fiberglass, Teflon

Grounding Options	Description	Fabric Applications
Stainless Steel Ground Wire	Ground Wire To Ensure Continuity To The Housing	All
Chevron Ground Wire	Chevron Style Ground Wire To Ensure Continuity To The Housing	All
Stainless Steel Scrim	Improves Electrostatic Conductivity	Polyester, Polypropylene, Homopolymer Acrylic, Aramid, Teflon

## PLEATED FILTERS & CARTRIDGES

Proper selection of the media and cartridges will ensure optimal collector operation and maximize life. Flex-Kleen has over 60 years experience in filter media selection. Our staff of skilled engineers and product specialists would be happy to assist you in your selection.

It is important to analyze your dust collector application, considering operating temperature, particle abrasiveness and size, and acidic or alkaline levels when selecting a media and cartridge. The following charts are designed to aid you in making an appropriate media and cartridge selection.

Vertical Pleated Filter Media Type	Abrasion Resistance	Resistance To Acids	Resistance To Alkali	Maximum Operating Temperature
Spun Bond Polyester	Excellent	Good	Good	200 °F
Aramid	Excellent	Fair	Fair	375 °F

Horizontal Cartridge Media Type	Abrasion Resistance	Resistance To Acids	Resistance To Alkali	Maximum Operating Temperature
80% Cellulose / 20% Synthetic				180 °F
Spun Bond Polyester	Excellent	Fair	Fair	250 °F
Aramid	Excellent	Fair	Fair	375 °F

Media Treatments	Finish Properties	Fabric Applications
PTFE Membrane	Improves Filtration Efficiency And Cake Release	Polyester, Polypropylene, Aramid, Fiberglass, Teflon
Flame Retardant	Retards Combustibility	Polyester, Polypropylene, Aramid, Fiberglass, Teflon

Grounding Options	Description	Fabric Applications
Stainless Steel Ground Wire	Ground Wire To Ensure Continuity To The Housing	All
Chevron Ground Wire	Chevron Style Ground Wire To Ensure Continuity To The Housing	All

# TRUST CECO ENVIRONMENTAL

CECO Environmental provides efficient and highly reliable products and services to meet and exceed your challenges. You can optimize your total cost of ownership through our vast range of technologies and solutions for air pollution control and product recovery. From industrial ventilation to volatile organic compound (VOC) and particulate abatement, CECO can equip you with the right resources to ensure you achieve top performance.

Purchasing pollution control equipment can be a complex process, particularly when you have a system that requires many different pieces of equipment. CECO Environmental can take that challenging situation and simplify by meeting all your needs with the full brand of CECO Industrial Solutions Products. Whether you have a project that requires a thermal oxidizer, wet scrubber, blower and ducting or a dust collector, mist eliminator and other filtration equipment, CECO Environmental has you covered. Our CECO Environmental family of brands can provide all your pollution control needs from one source.

## OTHER CECO SOLUTIONS

### Busch

- Rolling Mill Fume Exhaust
- Metals Industry Air Pollution Control
  - Pickle Lines
  - Dust Collection
  - Fugitive Emission Filtration
- Jet\*Star Strip and Coil Cooling
- Scalper Chip Collection

### Flex-Kleen

- Pulse-Jet Particulate Filtration
  - Pleated Filters
  - Baghouses
  - Cartridge Collectors
- ASME Code Vessel Capability
- Parts and Service Installation

### HEE-Duall

- Corrosion Resistant Exhaust Duct and Fans
- Mist Eliminators and Wet Particulate Collectors
- Fume and Gas Scrubbers
- Industrial and Municipal Odor Control
- Biofiltration Technologies

### Fisher-Klosterman

- High Efficiency ASME Cyclones
- Severe Service Cyclones
- Classifiers
- Wet Particulate Scrubbers
- Gas Absorbing & Fume Scrubbers

### Adwest

- Regenerative Thermal Oxidizers
- VOC Concentrators
- Media Change Outs
- RTO Rebuilds (All RTO Brands)

### CECO Filters

- Fiber Bed Mist Eliminators
- Mesh Pad Mist Eliminators
- Chevron Vane Mist Eliminators
- Sub-Micron Droplet Control for Various Acid and Oil Mist Particles

### Kirk & Blum

- Custom Sheet Metal Fabrication
- Flanged Ductwork Fabrication
- Industrial Ductwork Systems
- Air Quality System Design
- System Assessments
- NFPA Combustible Dust Assessment

### KB Duct

- Clamp Together Ducting
- Welded Flanged Duct
- No Return Isolation Valve
- Spark Arrestor
- Design Support
- Gates and Dampers
- Various Ducting Components

## CECO Industrial Solutions



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