

Air Emission Control Solutions for Chemical Processing



CECO
ENVIRONMENTAL

The chemical sector is made up of a myriad of segments from agrochemicals, basic process industry and specialty chemicals to consumer products, pharmaceuticals and other niches. Across all of these segments, regulatory requirements that address air pollutants from various sources must be met.

Pollutants range from process emissions to flue gases, tail gases, waste gases from vents, and regeneration of catalyst and solvents.

For decades, CECO Environmental has provided a comprehensive range of industrial air solutions that help companies across the chemical sector successfully manage air pollutants. Industrial air solutions include cyclones, dust collectors, bag houses, bin vents, thermal oxidizers, venturi scrubbers, packed bed scrubbers and mist eliminators. They are highly effective in treating Particulate Matter, VOCs, HAPs, Acid Gases, SOX, NOX, Odors, Aerosols and Mists.



CECO Environmental is trusted by customers around the world to deliver reliable, high-quality and efficient products and solutions to meet the unique industrial air pollution and product recovery challenges faced by chemical process companies. We bring decades of expertise to every project with the financial stability and resources of a global leader.

We help you reduce your total cost of ownership, whether you are looking for solutions to address emissions related to VOCs, HAPs, Acid gases, PM control and condensable particulate matter in harsh corrosive conditions, or other customized products to address your unique requirements. We partner with our customers throughout the lifecycle from design, fabrication, installation supervision to start up and commissioning and other support services through the life of your system.



PARTICULATE MATTER CONTROL

Every chemical processing operation must have the right technology to control and reduce particulate matter that can result from combustion of fuels, or from process operations, such as dust from solids handling.



Bin Vents, Cyclones, Dust Collectors and Baghouses

Flex-Kleen's Bin Vents and Dust Collectors (BV and PV model series)

Provide rugged welded housings that are equipped with automatic pulse-jet cleaning.

Flex-Kleen's Baghouses

Offer a wide variety of sizes, materials of construction and filter media to fit your specific application needs. 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.).

Flex-Kleen's Cartridge Collectors

Utilize a horizontal cartridge that allows for easy inspection and removal of cartridge filters. Cartridge Collectors can be the most cost-effective solution available for certain applications that require a small footprint.

Construction: MS (Mild Steel), 304 SS (Stainless Steel), 316 SS, custom.

Pressures: 20" w.g. (for pleated filters); 17" w.g. (for bag and cage filters); higher pressure designs available.



Fisher-Klosterman Cyclones

Remove relatively large particles from the air and help recover highly valuable product from process gas streams. We offer various levels of efficiency and capacities to meet your specific collection needs.

Advantages and Design Features:

- Ultra-high efficiency design
- Carbon, Stainless or Alloy Steel construction
- ASME code design and construction
- High temp designs with optional insulation available
- Abrasion resistant linings for extended life
- Explosion containment or venting per NFPA



Petro Chem Cyclone
with Steam Trace



ASME Polished Bin Vent



Dust Collector

VOC ABATEMENT

ADWEST/EIS: REGENERATIVE THERMAL OXIDIZERS (RTO)

For more than 30 years, Adwest has provided affordable, energy efficient and reliable regenerative thermal oxidizers for control of VOCs.



RTO

Advantages and Design Features:

- Reliable, simple Dual Chamber RTO from 1K to 80K CFM
- Handles low to high VOC concentrations
- Up to 99% VOC DRE (Destruction Removal Efficiency)
- NOx free operation with flameless Natural Gas Injection (NGI)
- Lower RETOX RTO gas usage with 95-97% primary heat recovery & NGI

Applications: Chemical Processing, Amine Treating and Dehydrating, Petrochemical Processing, Halogenated and Acid Gas Processes, Pharma, Flavors and Fragrances, Ethanol.

ADWEST/EIS: DIRECT FIRED THERMAL OXIDIZERS (DFTO)

DFTOs are suitable for high and rich Lower Explosive Level (LEL) process applications.

Advantages and Design Features:

- Retention time of one second and greater with turbulent mixing
- Excellent odor abatement for malodorous and high BTU processes with long chain aldehyde and hydrocarbon components
- Up to 99+% VOC DRE @1400 deg F
- NOx free operation with flameless NGI



DFTO

HEE-DUALL: ACTIVATED CARBON SYSTEMS

Suitable for low VOC concentration air streams



Activated Carbon Tower

Advantages and Design Features:

- Custom designed single and dual bed systems
- Low pressure drop
- Space saving minimal footprint.
- FRP (Fiber Reinforced Plastic), PVC (Poly Vinyl Chloride), PP (Polypropylene) Construction; Alloy and Steel options available

ACID GASES REMOVAL

HEE-DUAL: PACKED WET SCRUBBERS

Superior chemical resistance to handle harsh and corrosive chemicals.

Advantages and Design Features:

- ↔ **Horizontal Design:**
Cross flow, low profile, easy access
- ↕ **Vertical Design:**
Counter current flow, minimal footprint
- ⇒ **Airflow Range:**
1000 to 90,000 acfm
- ⚙ **Removal Efficiency:**
Up to 99% gaseous contaminants



Horizontal FRP Scrubber



Vertical PP Scrubber



Venturi Scrubber

FISHER KLOSTERMAN: VENTURI SCRUBBERS

Compact cyclonic separator (velocity up to 2X traditional designs)

Advantages and Design Features:

- Horizontal venturi section with a variety of liquid injection methods
- External recycle tank - easier to maintain
- Open pipe liquid injection - plug resistant
- Vertical venturi with various throat designs available
- Flooded elbow - abrasion resistant
- Traditional or MS Cyclonic Separator can be used

MIST CONTROL

CECO FILTERS: FIBER BED MIST ELIMINATORS

CECO Filters offers a complete line of Fiber Bed (or Candle Filter) Mist Collector Systems to eliminate sub-micron liquid mist emissions, aerosols, soluble solids and pre-filtering insoluble solids. Products range from single filter systems to large-scale units.

CECO's Patented TWIN-PAK system is perfect for retrofitting due to its reduced footprint and higher flow rates.



Twin-Pak



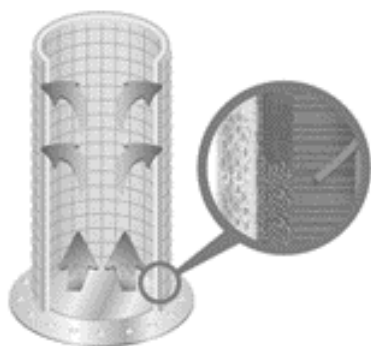
Standing Candle Filter



Hanging Candle Filter

Advantages and Design Features:

- Reduces footprint and total size to allow for a compact system
- Allows up to 60% more gas flowrates
- Quantity of filters are reduced in comparison to conventional filters
- Lower pressure drop in comparison to conventional filters
- Available in sitting or hanging arrangements
- Increases element life
- Perfect for retrofitting (Fits into existing tube sheet)



CECO Graded Bed Filter

CECO Graded Bed Filters

CECO Graded Bed Filters provide superior performance with higher sub-micron particle collection efficiency and deeper loading into the media bed for extended element life.

A Graded Bed Filter consists of a media bed that is constructed of multiple layers of different types of media, each with a specific quality. In the CECO Graded Bed Filter we employ two or more types of media per bed.

EXHAUST AIR MANAGEMENT

FANS

Corrosion Resistant Exhaust Fans

- Premium fiberglass and thermoplastic materials
- Four models: centrifugal, inline centrifugal, radial and lab
- Airflows from 500 to 165,000 cfm
- Static pressures up to 20+ inches w.g.



HEE-DUALL Thermoplastic Fan

HPCA and HPIA Air Foil fans

- AMCA certification guarantees specified performance
- Capable of static pressures up to 18+” w.g.
- Static efficiency ratings up to 83%
- Eight different discharge positions
- Factory balanced to ASTM specifications
- Premium quality materials and components
- Capacities up to 165,000 cfm



Inline Centrifugal FRP Exhaust Fan



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Application Examples for CECO products in the Chemical Process Industry

End Market	Emission Control Sources	Emissions	Emission Solutions
Adhesives	Carbon Adsorption Towers and Thermal Oxidizers	VOCs, Solvents	Coaters and dryers
Cellulosics	Scrubbers	VOCs, HAP	Storage tanks reactors, distillation columns, stripper columns and dryers
Sulfuric Acid	Fiber Bed Mist Eliminators	Mists (Sulfuric Acid PM10)	Post drying tower, inter pass absorption tower and final absorber
Fertilizers	Cyclones, MS Venturi Scrubbers	PM recovery	Post dryer and granulator
	Fiber Bed Mist Eliminators	Mists; Removal of NH3 and Ammonium Nitrate PM	Mists during steam purification; prilling operation
	Fabric Filter	Particulate Matter	Grinding and screening operation, slurry dryer/cooler, bulk storage bin and conveyor
Pharmaceutical	Cyclones, Baghouses	PM recovery	Pill processes, post dryer

If you'd like to explore more applications and solutions [click here](#).

Want to Learn More?

[Acid Gas Abatement](#)
[Thermal Oxidizers](#)
[VOC Abatement](#)

[Dust Collectors](#)
[Exhaust Fans](#)
[Cyclones and Scrubbers](#)

CECO ENVIRONMENTAL (NASDAQ: CECO) is a leading environmentally focused, diversified industrial company whose solutions protect people, the environment and industrial equipment across the globe, serving a broad landscape of industrial air, industrial water and energy transition markets.

CECO Environmental

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