



PCC-CAP[®] **CARBON ADSORPTION PROCESS** **SOLUTIONS**

Solutions

FOR YOUR POLLUTION CONTROL NEEDS

PROCESS COMBUSTION CORPORATION

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“SOLUTIONS” for Air Pollution Control... PCC’s goal is to assist industrial customers in meeting the toughest control demands faced today. PCC designs solutions for industrial and commercial manufacturing processes designed to treat waste streams, and remove pollutants.

PCC-CAP® is a Granular Activated Carbon (GAC) Adsorption Solution

Industrial Solutions: Granular activated carbon adsorption is an effective solution for removing Volatile Organic Compounds (VOCs) and trace contaminants from vapor phase applications. Harnessing its versatility, PCC offers Carbon Adsorption Process (PCC-CAP®) systems to treat contaminated industrial vapor streams.



Back-up Devices: PCC-CAP® Adsorbers are also specifically designed to serve as back-up devices for Recuperative Thermal Oxidizers (T.O.'s), Regenerative Thermal Oxidizers (RTOs), and Catalytic Oxidizers. When your oxidizer requires scheduled maintenance or shutdown, switch over to the PCC-CAP® Adsorber to maximize your production uptime and ensure seamless operation.

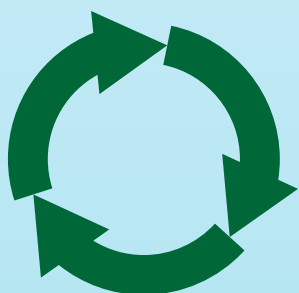
Advanced Products and Services

Wide Granular Activated Carbon Selection - Activated carbon is a porous material that removes organic compounds from liquids and gases through a process known as “Adsorption”. PCC offers a wide selection of granular activated carbon to efficiently adsorb and remove targeted VOCs.

Standard & Custom Units:

PCC-CAP® adsorbers are available in standard and custom-designed modules and vessels. The units are sized to achieve excellent flow distribution and maximize VOC

removal. ASME Code vessels are available.



Rental, Pilot Testing & Carbon Media Exchange: PCC also provides additional services, such as adsorber rentals, pilot testing of waste gases, and activated carbon media exchange services. Once the carbon’s adsorption capacity has been reached, PCC can assist in the disposal, reactivation, and recycling of the spent carbon.

Vapor Phase Applications across Industries

Activated Carbon Adsorbers can be used for a wide variety of vapor phase applications in vapor emission control, industrial odor control, and other markets.

Carbon Adsorbers are designed for use with both continuous and intermittent industrial waste streams, with high flow and low VOC concentrations. These include process vents, tank filling and tank vents.

PCC-CAP® Adsorbers can receive flows from 20 to >20,000 cfm. Flows > 20,000 cfm are treated by using adsorbers in parallel.

Ideal Applications

VOC Abatement

Process Emissions

Odor Control

Thermal Oxidizer Back-ups

Storage Tank

API Tank

Oil Water separator
Tank vent line

Tank Vents

Solvents
MTBE, TCE
Asphalt
Styrene
Benzene

Incineration

Standby VOC Equipment
Temporary back-up for
flares/incineration

Process Emissions

Manufacturing

Specialty Chemical
Pharmaceutical
Refinery
Synthetic Rubber
Paper Milling
Paint & Coatings
Plastic Resin
Natural Gas
Pesticide & Herbicides

Reaction Off-gas

Fugitive Emissions
Solvent Recovery
Biofilter Polish

Process Emissions (con't)

Packaging

Material transfer emissions
Gasoline terminals
Compressed Gas Purification
Corrosion Control for
Clean Rooms

Air Stripper Off-Gas

Odor Control

Landfill
Sanitary
Pump Station
Lift Station
Animal Products

Examples of Suitable Compounds for Carbon Adsorption

Chlorinated Hydrocarbons & Solvents

Benzene, Toluene, Ethylbenzene, Xylene

Diesel Fuels & Gasoline Vapors

Methyl tert-Butyl Ether (MTBE)

TriChloroethylene, Chlorobenzene



THERMAL OXIDIZER BACK-UP DEVICES



No DOWNTIME! Seamless Operation!

Our customers rely on PCC solutions to keep them running. Downtime - even when scheduled - has its costs, and we want to maximize every minute of our customer's production time. Most operations can't afford to shutdown, and that is why PCC is now offering the proactive solution: **Thermal Oxidizer Back-up devices.**

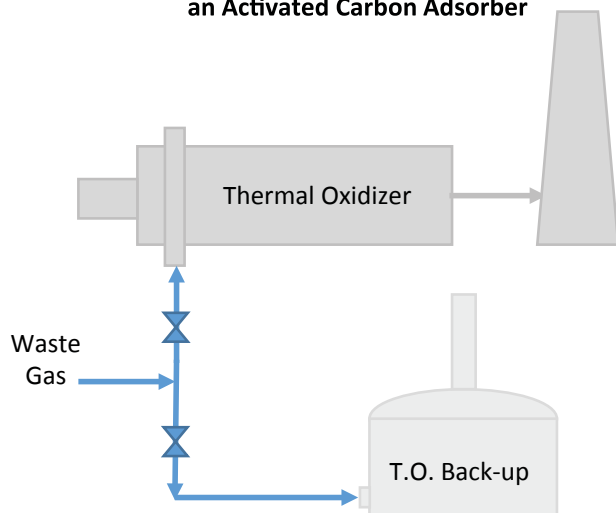
Using proven Activated Carbon Adsorption, **T.O. Back-up devices** offer your process the opportunity for seamless operation. Thermal Oxidizer back-up systems can be easily installed and integrated into your digital control system to support your Thermal Oxidizer or RTO equipment.



Ideal for industries:

- *Pharmaceutical Facilities*
- *Specialty Chemical Manufacturing*
- *Crude, Refineries, Natural Gas*
- *Paint & Coating Manufacturers*
- *Plastic Resin, Fiberglass & Synthetic Fiber Manufacturing*
- *Pesticide & Herbicide Manufacturing*
- **ANY INDUSTRY that CANNOT AFFORD TO SHUTDOWN!**

Schematic of a Thermal Oxidizer Back-up system with an Activated Carbon Adsorber



1. Scheduled maintenance is required for thermal oxidizer.
2. The integrated PLC diverts the waste gas to the T.O. Back-up.
3. The T.O. Back-up receives waste gas, keeping the plant online.
4. The Thermal Oxidizer maintenance is complete
5. Waste gas diverted back to T.O.
6. Carbon Change-out of T.O. backup is scheduled & completed.

Customized to keep you running

Activated Carbon Adsorbers are a PCC solution to keep your operations running around the clock. Applying our expertise in thermal oxidation, PCC partners with its customers to develop the back-up strategy that is right for your plant.

PCC-CAP® Adsorbers are designed with the advantages of:

- Customization
- Easy Installation
- Minimal footprint
- Flexibility for wide ranges of flows
- Automation for quick switch over

Keep your plant running with a PCC back-up solution for your Thermal Oxidizer or RTO!

Carbon Adsorbers for Industrial Processes

Rigorous environmental emission regulations dictate that industrial facilities limit the release of volatile organic compounds (or VOCs) with vapor emission control systems. Vapor phase activated carbon adsorbers are ideal for eliminating or minimizing the emission of VOCs from a wide range of industrial processes including:

- Storage tank emissions from daily/seasonal temperature changes
- Tank filling product transfer operations
- Continuous process vents
- Railcar, tank truck, and barge loading
- Tank cleaning



Industrial Air Treatment for Vapor Emissions

The rising emphasis on cleaner air poses new challenges for industry to treat contaminants at air emission sources. Activated carbon adsorbers are utilized to capture VOCs and other toxic air pollutants from petrochemical plants, landfill sites, manufacturing operations, and chemical processing facilities.

Industrial Odor Removal

There are many industrial processes where odor removal is the primary reason for air treatment. These odors are generally in the vapor phase and tend to contain sulfur compounds such as H_2S and other odorous compounds.

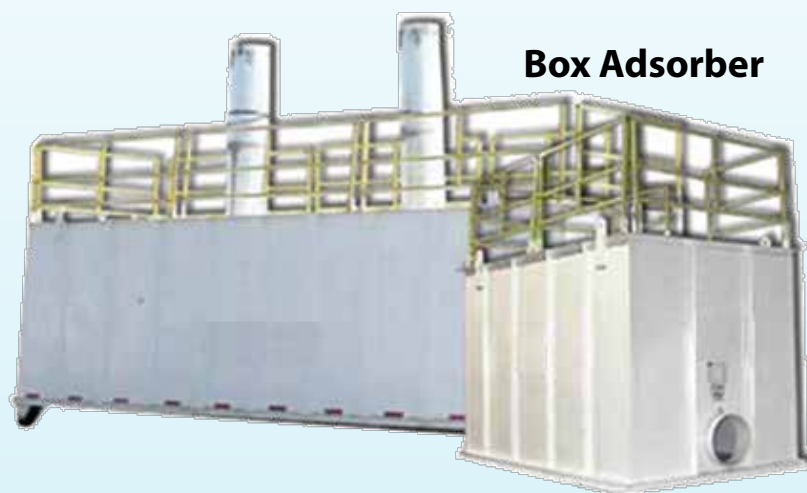
Activated carbon is an effective adsorbent media for odor removal from vapor phase streams. PCC-CAP® Adsorbers are excellent at capturing the odor-causing compounds in industrial applications.

Advantages for Industry

- **Efficient** for treating contaminated vapor streams with low VOC levels
- **Flexible** for both continuous and batch operations.
- **Proven** to remove VOCs, including Halogenated Organics & BTEX
- **Suitable** for a wide range of waste gas flow rates, from 20 cfm to >20,000 cfm

PCC offers a wide range of activated carbon adsorption equipment and systems for vapor phase applications in vapor emission control, industrial odor control, Thermal Oxidizer back-up, and other markets. These vapor phase activated carbon adsorbers are designed for use with: VOC Abatement, storage tank emissions, tank filling, railcar or barge loading, tank vents, process vents and continuous industrial waste streams.

The range of flows treated by PCC's vapor phase activated carbon adsorber line is from 20 to >20,000 cfm. Larger flows have been treated by using adsorbers in parallel. All PCC-CAP® Adsorbers are modular and designed to have low pressure drop, excellent flow distribution, and resistance to corrosive compounds. Customized ASME Code designs are available.



Box Adsorber

PCC-CAP® Vapor Phase Activated Carbon Adsorbers				
	Max Flow (cfm)	Max Pressure (psig)	Max Temp (deg. F)	Standard Fill (lbs)
Integrated System	100 - 20,000	1-15 psi	180	Dependent upon type
Box Adsorber	8,000 - 20,000	1	180	6,000 - 16,000
Steel Vessel	75 - 5000	15	180	650 - 7,400
XP Drum	100 - 500	ATM-3	130	170 - 400
Steel Drum	100 - 250	6	200	200 - 400



Steel Vessel

Steel Drum



XP Drum

Customer Service

To better serve our global customers, PCC has operations in Beijing, China and London, England. Their mission is to support the Pittsburgh headquarters in the execution of projects in Europe and Asia by developing supply chains, provide Project Management support, start-up services, inspection services, local contract and banking services, assist with Sales and Marketing activities and help our customers communicate effectively with PCC worldwide.



Oxidation Technologies

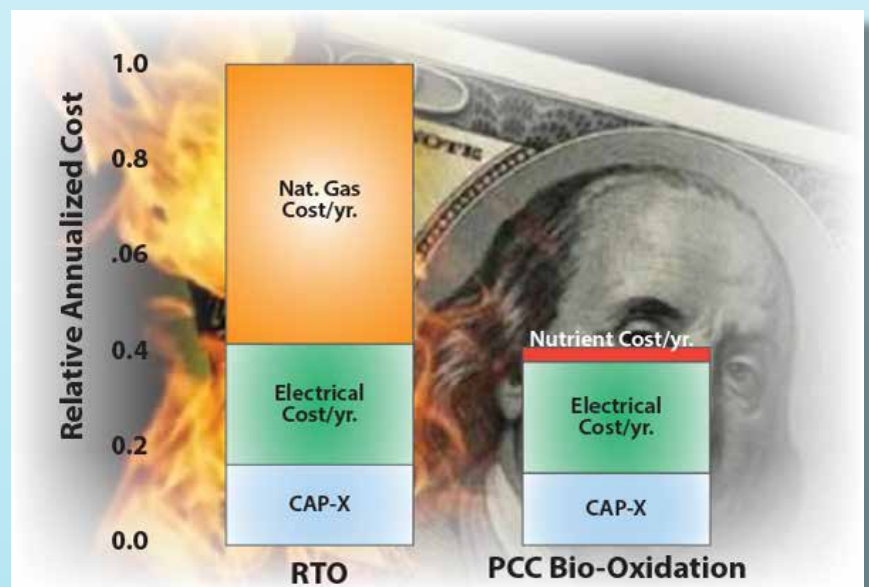


Broad Experience - PCC designs, manufactures and supplies thermal oxidation technologies for a wide range of pollution control applications. Our designs promote the chemical reaction between the pollutant compound and oxygen (O_2) in air. Our system designs range from highly technical to pre-engineered projects.

PCC supplies multiple types of thermal oxidizer systems including direct fired thermal oxidizers, multi-stage thermal oxidizers, and recuperative thermal oxidizers.

PCC's Dual-BioPhase™ Bio-Oxidation Technology, provides an economical and environmentally friendly method of treatment for a wide range of organic and inorganic air emissions. PCC's Dual-BioPhase™ systems are fully automated and custom-engineered to meet the performance requirements for most odor or VOC applications.

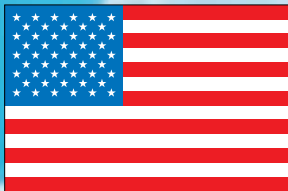
The replacement of Regenerative Thermal Oxidizers (RTO's) with PCC's Dual-BioPhase™ Bio-Oxidation Technology is becoming more common. There are numerous applications that lend themselves to the replacement of the RTO with Dual-BioPhase™ technology. A minimum of a 60% operating cost reduction can be realized as well as an 80% - 90% reduction in Green House Gases, along with the elimination of NOx.



CALL US @ 412.655.0955



Representatives are located in major US Cities, Canada, Asia, and selected countries, visit www.pcc-group.com to find your local agent.



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