



Johnson Matthey

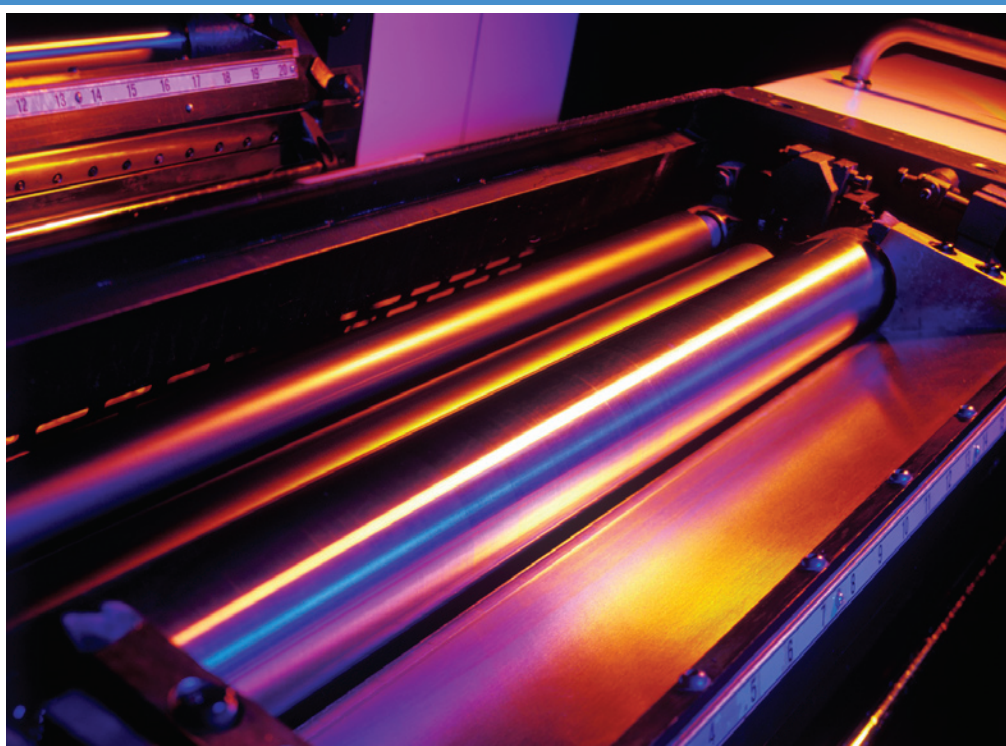
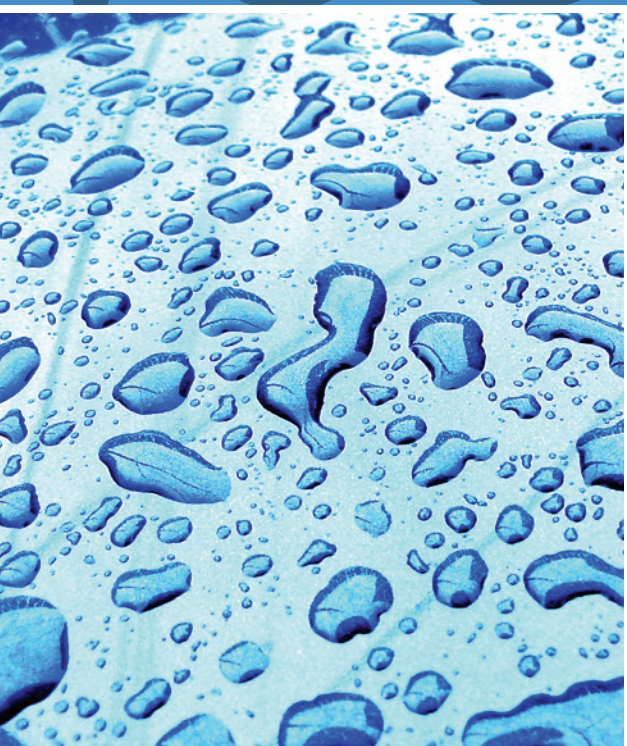
JOHNSON MATTHEY STATIONARY EMISSIONS CONTROL



VOC

Clearing the Air for Today and the Future:

**Catalytic Solutions to Control Volatile Organic
Compounds and Hazardous Air Pollutants**



Johnson Matthey Catalysts for VOC and HAPs Emissions

Clearing the Air and Helping Clean Up the Environment

If you operate an industrial plant—of almost any kind—there's a burning issue that you need to address...literally. It's Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAPs). Contained in the exhaust gases produced by many industrial processes, VOC and HAPs including chlorinated and brominated hydrocarbons are harmful to the environment and can create health hazards. So, clearly...we need to clear the air by controlling these emissions. With Johnson Matthey catalysts and catalytic systems, you can be assured of a cost-effective approach to meeting ever-tightening EPA, state and local air quality standards.



TOP: Catalytic Oxidizers are used to control VOC and HAPs from many surface coating processes.

BOTTOM: PTA catalyst application.

With over 40 years experience in the stationary emissions control business and thousands of successful installations worldwide, Johnson Matthey Stationary Emissions Control (SEC) has the skills, know-how and technologies to deliver optimum catalytic solutions for new and replacement applications across an array of industrial processes. Plain and simple, you won't find a supplier equal to Johnson Matthey for proprietary VOC or HAPs catalysts, industry experience, engineering expertise and technical support.

Johnson Matthey SEC offers a complete range of precious and base metal oxidation catalysts:

- VOC and HAPs Oxidation Catalysts
- Metallic and ceramic honeycomb substrate monoliths
- Variety of configurations, types and sizes depending on application
- Supplied as stand-alone elements, housed units or custom-designed systems

Putting Catalytic Oxidation—and All of Its Advantages—to Work

Advanced technology for destroying VOC and HAPs. The simplest, most economical and efficient method for controlling emissions. You get all of that and more with catalytic oxidation solutions from Johnson Matthey.

While thermal incineration has been the most widely-used technology for reducing VOC and HAPs, it is not always the best solution. In fact, catalytic oxidation has been proven to be an improvement over thermal incineration.

Catalytic Oxidation

- Cost-effective, offering a lower capital equipment cost
- More economical to operate because of lower gas consumption
- More efficient because it can destroy VOC and HAPs at a much lower temperature
- More compact, offering a dramatically smaller foot print
- Converts dioxins/furans while avoiding the formation of NOx

Johnson Matthey catalysts are a substance, or a combination of substances, that accelerate the rate of a chemical reaction without being consumed by the reaction. And, they do so 10 times faster and at temperatures 50% lower than thermal incineration, which translates to significant cost savings. Typical operating temperature range is 500°F to 700°F (260°C to 370°C).

Johnson Matthey VOC and HAPs oxidation catalysts can also be installed in an RTO (Regenerative Thermal Oxidizer) to make an RCO (Regenerative Catalytic Oxidizer). An RCO offers numerous advantages over a standard RTO.

Regenerative Catalytic Oxidizer

- Requires a lower VOC and HAPs destruction temperature, thus avoiding NOx formation
- More efficient, providing reduced fuel consumption and electricity usage
- Operates at lower temperatures, thus eliminating metal stress cracking and the need for high temperature corrosion resistant materials of construction

Customized Engineering Solutions, Designed for Your Application

Every Johnson Matthey catalytic solution is engineered with your application in mind. From product design to fabrication and installation, you get the best possible solution...ensuring optimum performance and ongoing compliance. Johnson Matthey VOC and HAPs catalysts achieve 90+% emissions reductions. When designing a catalyst, Johnson Matthey focuses on these key factors:

- Desired level of VOC and HAPs reduction
- Required catalyst life
- Process gas flow rate, pressure and temperature
- Composition of process gas including VOC and HAPs concentration
- Contaminant levels
- Catalyst type, size and shape based on installation requirements, such as space constraints

Attention to Detail...Yours and Ours

To say that Johnson Matthey SEC is detail-oriented is an understatement. When designing VOC and HAPs catalysts, we take into consideration your need

for peak performance and maximum cost effectiveness. That means working closely with both end-users and manufacturers of industrial incinerators, to offer a full range of support services, which includes pre-qualifying catalytic requirements with solvent testing at our in-house laboratory. We gather exhaust gas operating data on VOC and HAPs concentration, temperature and pressure, contaminant levels and flow rate, enabling us to consistently fine-tune our systems and deliver features and benefits that are unmatched by other catalysts.

Johnson Matthey offers two families of catalysts for controlling VOC and HAPs emissions:

- VOC Oxidation Catalysts—developed to control a wide range of VOC, hydrocarbons and CO emitted from manufacturing processes and combined heat and power plants. Special variants of these catalysts have also been specifically developed to control HAPs such as formaldehyde, acrolein, acetaldehyde, methanol and lighter hydrocarbons such as methane and ethane.
- HVOC Oxidation Catalysts—developed for use on halogenated VOC (HVOC) process streams to control chlori-

nated and brominated VOC and CO emitted during the production of chemical intermediates such as Purified Terephthalic Acid (PTA); and from the remediation of contaminated soil.

Johnson Matthey VOC and HAPs catalysts are proprietary in material and design. They are made from a variety of durable and highly dispersed platinum group metals (pgm) to provide the highest catalytic activity and poison resistance. PGM allow lower inlet temperatures for achieving conversion levels and can withstand higher operating temperatures without degradation.

As part of our commitment to detail, Johnson Matthey recognizes that requirements do vary and that's why—unlike other catalyst manufacturers—we offer choices in catalyst design and construction:

- Metal or ceramic substrate supports
- Variety of sizes and cell densities
- Ability to retrofit new and existing catalytic oxidizers
- Ability to retrofit thermal incinerators

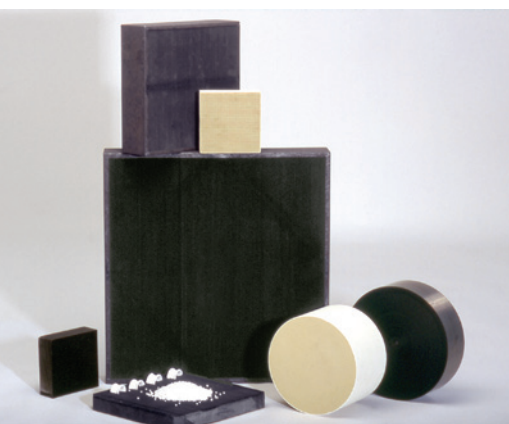


LEFT: VOC tailgas control for formaldehyde manufacturing plant.

RIGHT: VOC emissions control for intermediate chemicals manufacturing.



There's a Johnson Matthey VOC catalyst for nearly every process application. To respond quickly to your requirements, we stock a range of sizes. In addition, we can design ceramic catalysts to fit round or square vessels and we offer custom design services.



Johnson Matthey VOC and HAPs catalysts available in standard and custom sizes.

A Full Range of Products for a Full Range of Applications

PRODUCTS	USAGE
Standard VOC–200 cpsi	Designed for destruction of VOC, HC and CO for a broad scope of applications. Economical due to low pgm (platinum group metals) loading. Has a low pressure drop and is less susceptible to masking by particulate matter.
CONCAT™–400 cpsi	Offers a higher surface area over our Standard VOC formulation—for increased destruction efficiency at comparable space velocities.
Halocat®	Durable, corrosion resistant catalysts specially formulated to convert chlorinated, brominated and other halogenated streams.
LHC™	Formulated to oxidize less reactive hydrocarbons such as Methane and Ethane.

VOC

Look to the Leader

For a full line of industrial catalysts and systems, rely on a leader in the business: Johnson Matthey SEC. In addition to VOC and HAPs catalysts, we design and manufacture stationary IC engine catalytic converters, complete SCR systems, CRT® diesel particulate filter systems, combined SCR/CRT® systems (SCRT®) as well as SCR and oxidation catalysts

for gas turbines and boilers. Our catalysts and catalytic systems are used extensively around the world on manufacturing processes and power generating equipment to control NOx, VOC, CO and PM (Particulate Matter).

Superior and comprehensive products, backed by our warranty, are not the only factors that make Johnson Matthey a leader.

There's also our tremendous database of applications knowledge, full staff of catalyst experts, company longevity and stability, full-service customer package, international locations, state-of-the-art manufacturing facilities and unsurpassed technical capabilities. All in all, there's no better choice than Johnson Matthey for environmental control solutions.



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Stationary Emissions Control

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