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### Control Air Pollution with a Low-Temperature Catalytic Oxidizer

#### Lower your costs with a Catalytic Oxidizer

Thermal and Catalytic Oxidizers destroy Hazardous Air pollutants (HAPs), Volatile Organic Compounds (VOCs) and odorous emission that are often discharged from industrial and organic processes. Through the process of catalytic oxidation, it converts the pollutants to much safer carbon dioxide and water vapor. A [catalytic oxidizer](#), also known as a Catox Incinerator, is a type of oxidation system that is similar in function to a thermal oxidizer but uses a catalyst to promote oxidation at lower temperatures.

A catalyst is a substance that is used to accelerate the rate of a chemical reaction, and by using an industrial-grade catalyst bed in the air treatment equipment, oxidation is accomplished at a much lower temperature compared to thermal oxidation.

When a catalytic oxidizer is used, an air pollutant is mixed with oxygen, which is then heated to an elevated temperature and passed through a catalyst. This method destroys the pollutant in the air stream by converting it to CO<sub>2</sub>, H<sub>2</sub>O and heat. The rate of reaction is controlled by the temperature of the catalyst chamber and the length of time the pollutant spends within the catalyst itself.

Catalytic oxidation typically happens through a chemical reaction between the VOC molecules and a metal or ceramic catalyst bed in the oxidizer system. This system can operate effectively and efficiently from 370°C to 480°C, whereas a thermal oxidizer requires temperatures nearly double that between 700°C to 820°C. This can result in a major fuel from 40% to 60%, further reducing both the carbon emissions and operating costs when compared to a thermal oxidizer.

Catalytic oxidizers can be combined with Regenerative Thermal Oxidizers, or Recuperative Thermal Oxidizers, resulting in a system that achieves emission destruction at lower standard temperatures.

A Recuperative Catalytic Oxidizer incorporates a thermal storage media that recovers the process heat for additional use within the system to further reduce fuel requirements. In recuperative heat recovery, heat is recovered by passing the hot

exhaust gases through a non-contact, air-to-air heat exchanger to heat air coming into the oxidizer.

Regenerative catalytic oxidizers allow lower operating temperatures by using suitable oxidation catalysts to reduce ignition temperatures, which results in lower operating costs. In regenerative heat recovery, hot exhaust gases and cooler inlet gases are alternatively passed through a fixed bed, typically employing ceramics.

[HiTemp Technology](#) designs and builds SVE (Soil Vapor Extraction) systems and created the first conversion recuperative catalytic oxidizer that can be field modified to operate with either gas or electric heating sources. We can evaluate your situation and customize a high efficiency and low temperature solution tailored to your specific situation. [Contact us](#) today for more information!