Pollution Systems
INTELLIGENT AIR SOLUTIONS

Case Study

Sterilization Facility Cuts Emissions with Catalytic Oxidizer System

Initial Operating Issue

A production increase at an existing ethylene oxide (EtO) sterilization facility in northern Texas triggered unexpected air compliance issues that needed resolving within a limited time frame. The facility urgently sought a permanent solution that would meet a specific Volatile Organic Compound (VOC) destruction efficiency, have high on-stream time, and low operating costs.

The company approached Pollution Systems to view the project scope and recommend an alternative solution for its surge in emission composition.

Proposed Solution

The time frame was tight to meet air permit regulations. Pollution Systems provided expedited turnaround at every project stage until operators felt more at ease, including an immediate onsite visit to conduct a thorough process review and frequent follow-up meetings within the limited timeframe to discuss technical recommendations.

After carefully reviewing the process application and balancing initial investment against the ongoing operating cost, Pollution Systems recommended the installation of a Recuperative Catalytic Oxidizer. Particulate matter and catalyst poisons were not present in the process airstream, and the concentration of VOCs was below the 25% Lower Explosive Limit (LEL), making the Recuperative Catalytic Oxidizer the most appropriate solution for the application.

The Technology: How it Works

Pollution Systems ultimately designed the Recuperative Catalytic Oxidizer Model #RCO-14 using an engineered catalyst that achieves results at lower temperatures, thereby significantly reducing operating costs.

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Since oxidation of the VOCs occurs at a much lower temperature when using a catalyst, the temperatures utilized translated into significantly lower operating costs for the ethylene oxide facility. Low temperatures also allowed for cost-effective construction materials and improved equipment life due to less thermal expansion/contraction during shutdown and startup operations. Lower gas usage meant less carbon dioxide and NOx generated from VOC destruction.

Implementation and Results

Pollution Systems efficiently met the facility's high treatment requirement with a low maintenance, highly reliable system. The Recuperative Catalytic Oxidizer was quickly commissioned for the ethylene oxide facility to meet a minimum VOC destruction efficiency greater than 99%.

Pleased with the outcomes of their new equipment, the sterilization company has actively commissioned inspections of the air pollution abatement systems used in their other facilities (nationwide and abroad) to see if similar process efficiency was possible. New equipment by Pollution Systems is now installed in several more of their existing plants, and plans for more are underway to meet the increasingly stringent ETO regulations across the nation.