



CASE STUDY: REDUCING FUGITIVE EMISSIONS



Fugitive emissions have become a worldwide concern, motivating governments to place tight restrictions on plants.

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UK AND EU

The Industrial Emissions Directive (IED) 2010/75/EU is the legislative framework that regulates emissions of industrial installations across the UK and EU.

USA

There have been several emission guidelines developed at local, state, and federal levels, including the Clean Air Act from the Environmental Protection Agency (EPA).

APAC

Emissions standards vary across the APAC region but follow the same principle goals as the IED and EPA. One example is Australia's National Clean Air Agreement.

THESE DIRECTIVES HAVE ONE COMMON MESSAGE:

The need to apply the BEST AVAILABLE TECHNIQUES (BATs) for reducing emissions.

BEST AVAILABLE TECHNIQUE

A BATs aim is to achieve integrated prevention and control of pollution arising from process activities. This will lead to a higher level of protection of the environment as a whole.

Operators should take all appropriate preventative measures against pollution, in particular through the application of Best Available Techniques, enabling them to improve their environmental performance.

The global emissions directives, guidelines and standards are changing the way plants operate. It is critical to be up to date. Not adhering to them could have major consequences, including heavy fines and penalties.



OSECO SAFETY CARTRIDGE™

With the Oseco Safety Cartridge™ we offer the only cost-effective solution for reducing emissions and improving air quality in line with government directives.

Using the latest innovative technology and emission control techniques for bursting discs, the single-piece Oseco Safety Cartridge™ reduces unwanted emissions by ensuring a tight seal to 10^{-8} helium.

We have also designed and built the Oseco Safety Cartridge™ for ease of installation and maintenance, offering opportunities for cost savings and easier inventory management that a traditional disc-and-holder combination does not.

EXAMPLE OF A BAT PROCESS USING THE OSECO SAFETY CARTRIDGE™

1 BUSINESS PROBLEM

The STAR (Strategic Toxic Air Reduction) Program was instituted by the City of Louisville, KY USA in 2005 to address the presence of cancer-causing chemicals in the air around the city.

In response to this, the American Synthetic Rubber Company (ASRC) introduced a thermal oxidiser to reduce emissions. As illustrated in Figure 1, this significantly reduced stack emissions of 1,3 butadiene at the facility. However, subsequent investigations in 2013 revealed that ongoing fugitive emissions from the 10,000-plus components in service were still causing the facility to exceed permissible limits.

2 INVESTIGATION

ASRC began a stringent monitoring program at BACT/LAER frequencies and limits (250 ppm) to determine which components they needed to replace. One of the largest emissions sources was revealed to be the bursting discs in service at the site. It was noted that many of the bursting disc installations were torqued incorrectly. This meant they were prone to leakage, both between the bursting disc and holder as well as between the holder and pipe flanges. It was also noted that in many cases, the torque values recommended by the bursting disc supplier conflicted with the recommendation for the specific gaskets used in butadiene service.

3 SOLUTION

ASRC began looking at options for reducing the fugitive emissions associated with the bursting discs. The Oseco Safety Cartridge™ was identified as the Best Available Technique for their needs. In 2016, ASRC partnered with Oseco-Elfab and began implementation of the Oseco Safety Cartridge™ in all butadiene bursting disc applications.

As the Oseco Safety Cartridge™ is a one-piece design with no recommended installation torque, the plant simply followed the torque values defined by the gasket manufacturer. The Oseco Safety Cartridge™ also eliminated the traditional leak paths between the rupture disc and holder, leaving only a solid bar stock surface exposed to the environment (Figure 2). The implementation was completed in 2017.

4 RESULT

Once installed, the facility began monitoring emissions. They noted that previous bursting disc leakage was eliminated. As a result, plantwide fugitive emissions of butadiene were reduced almost 50% in two years (Figure 3).

The Oseco Safety Cartridge™ also reduced the plant's installation time by 75%. Due to its ease of installation, downtime associated with overpressure events has been reduced by over 60%, making the Oseco Safety Cartridge™ highly popular with pipefitters and operations teams.

FIGURE 1 ASRC Emissions of 1,3-Butadiene from 2003 to 2017

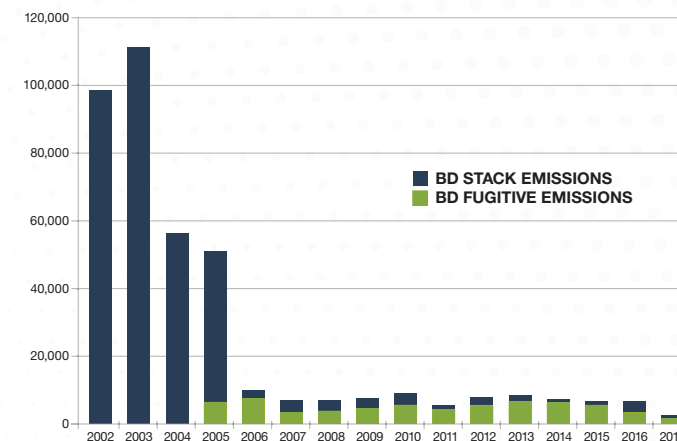


FIGURE 2
OSECO Safety
Cartridge™

FIGURE 3 5 Year Reduction in Fugitives

