



Fugitive Emissions can be addressed in a creative, cost effective and sustainable way.

Fact Sheet

Chasing Fugitive Industrial Emissions

Fugitive Emissions

Fugitive emissions arise from various industrial processes. Historically classed as “odours” and often sweet smelling, these gaseous emissions are considered undesirable and a nuisance. Public outcry over plants and factories that “smell” has resulted in odorous emissions becoming the target for tighter regulation and a basis for restrictions on land use zoning.

Typically, the odours that cause most offence contain volatile organic compounds (VOCs) – mixtures of substances that boil-off and escape with other gases from production processes. Industrial sources that generate fugitive emissions are very diverse and include activities such as:

- panel beating
- painting
- chemical processing
- mushroom growing
- waste treatment plants
- food processing
- sewage treatment
- composting
- landfills
- poultry farms
- dry cleaning
- abattoirs



Management Solutions

Historically, fugitive emissions have been released to the atmosphere and allowed to disperse without treatment or abatement. And while urban demand for land permitted odorous industries to be kept apart from residential areas, this approach generally yielded a satisfactory outcome. However, this is no longer acceptable, and odour management is now a pre-requisite for planning consent for many of the industries that generate offensive odours and fugitive emissions.

The volatile nature of many fugitive emissions means that a common method for scrubbing them from process air is oxidation, or burning, to break down the aromatic hydrocarbon compounds into less offensive gases that can be discharged to the atmosphere without causing offence. Other methods include absorption and chemical breakdown or biological degradation.

Stack Management Systems (SMS) has been working on the application of a range of systems to manage fugitive emissions, including a combined filtration-absorption system – the Absorb-Filter, and a power generating combustion system – the Power-Burn.

The Absorb-Filter System

For the Absorb-Filter, SMS has selected a filter media that is manufactured and sold for evaporative cooling and air humidification with gas turbine engines. The filter media has exceptionally high surface area per cubic metre, and remarkably low drop in pressure across the media.



Stack Management Systems Pty Ltd
ABN 30 107 586 541
PO Box 877 Newport Beach NSW 2106
Ph 612 9954 1200 • Mob 61 412 500 702
www.smsventilation.com • AUSTRALIA

In the Absorb-Filter, the filter media is coated with patented photocatalytic paint, **EcoPaint**, which on exposure to ultra violet light catalyses the absorption of organic pollutants, removing them from the air stream. In the Absorb-Filter, banks of **EcoPaint** coated filter media will be used as the “extended surface” over which contaminated air will pass in the presence of UV light.

The cellular structure of filter media permits ready access to the surfaces of the filter by the UV. It also provides multiple pathways along which the polluted air travels. Turbulence in the tubular pathways combine with the reflected ultra violet light to ensure that there is a high level of interaction between the polluted air, the UV light and the coated surface, facilitating the catalytic reaction to remove the organic pollutants.



The SMS Absorb-Filter is a candidate to replace traditional bio-filters with a commensurate major reduction in plant footprint, and significant improvement in cost, performance, maintenance and filter service life.

The Power-Burn System

Many of the available odour management devices operate in a parasitic mode at the discharge end of processes, capturing odours and neutralising them with little or no added value to the production process, other than to eliminate the odours.

However, the combustibility of many fugitive emissions points to possible new sources of renewable energy. With the development of micro turbines the opportunity to burn fugitive emissions in turbines is becoming an attractive option, especially with relatively clean emissions. And, if the energy component of the fugitive emissions is significant, then, the renewable energy benefit adds considerably to the economic and environmental benefits that can accrue.

The SMS Power-Burn System can offer superior odour clean-up, plus electricity for internal plant use, and heat to stimulate and accelerate industrial processes. In addition, the kinetic energy of the moving air through the SMS Power-Burn System can assist with air movement through the plant. Typical of waste industry application are:

- **waste transfer stations** receive waste from local collection vehicles and transfer it to bulk carriers for medium to long haul to disposal sites. SMS Power-Burn System installed for odour management will support such facilities through the kinetic energy in the air flows and produce electricity for the general needs of the transfer station, at the same time eliminating odours from the system;
- **liquid waste treatment plants** manage a range of aqueous wastes with significant quantities of associated grease, fats and oils. SMS Power-Burn System can be used for odour management plus a source of heat to raise the temperature of the liquid wastes, evaporating the water for capture and re-use and to improve the efficiency of the processing system. Heat by-product from the SMS Power-Burn System can create steam for cleaning of vehicles and facilities and electricity generated can be used on site or exported;
- **compost plants** receive and process organic wastes to manufacture soil conditioners. These plants generate fugitive emissions in several locations through the composting process, noticeable in the waste drop-off area, in waste shredding and sorting, and in the compost bays. Conventional odour emission management is via a negative ventilation system drawing air through the plant to be cleansed in a packed bed bio-filter. With SMS Power-Burn System clean-up technology it is possible to achieve superior odour clean-up, plus electricity for internal plant use, and heat to stimulate and accelerate the composting process. In addition, the kinetic energy of the moving air through the SMS Power-Burn System can assist with air movement through the plant.

For further information

SMS: www.smsventilation.com • Mobile: 61 412 500 702

