



European Solvents Industry Group

Advice and help in hydrocarbon
and oxygenated solvents

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CASE STUDY - Packaging plant chooses thermal oxidation as most cost effective option

When the draft Solvents Emissions Directive was first discussed in 1996, many industries were concerned about the potentially high costs of abatement. However, research by the industry over the past 25 years to study the impact of VOCs and ways of dealing with them has resulted in the development of a number of abatement techniques. But how does an enterprise decide which is the most appropriate solution for its needs?

Many aspects must be taken into account when planning VOC emission control. The type and size of the process, whether it is an existing or a new production plant, the qualities/properties of the product, the availability of capital and staff skills, local site factors, and most importantly, the solvent vent stream, flow rates and concentrations of solvents used are all key factors to be considered.

BP Chemicals Darton Packaging site analysed all these parameters against the different abatement technologies available to them including biological oxidation, use of ultra-violet curable inks, water based inks and solvent recovery and recycling, and opted for regenerative thermal oxidation to abate the solvent-based inks they use to print on plastic film substrates used in the manufacture of flexible packaging. The study carried out by Business Manager Martin Elliot and his team showed that:

- *solvent recovery* and *recycling* was not suitable because the plant uses a mixture of solvents
- *biological oxidation* was not feasible. Bugs, laid out in beds, require continuous feeding and constant operating conditions
- *UV lamps* are expensive to run and the heat they generate has an adverse effect on the printing press
- *water based* inks are not suitable because they cannot currently meet all technical requirements. In addition they incur substantial effluent treatment costs.

The study also highlighted the many advantages of regenerative thermal oxidation. Although initially more expensive to install, this process has low running costs and maximises re-use of the heat released by the combustion of VOCs, hence the overall cost is much more attractive. Once the oxidiser has been installed, eight months from the order being placed to the time it is fully operational, emissions will drop from 950 to 20 tonnes a year or 50 mg carbon per cubic metre.

This case study shows thermal oxidation is a cost-effective and environmentally sound option that can help many solvent-users meet the 67 per cent reduction target likely to be set in the Directive.

For more information on abatement technologies, please contact Phil Davison, e-mail davisop@bp.com, tel +44 (0)1482 892 448, fax +44 (0)1482 894 868.

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