

ENVIRONMENTAL CONTROL

(FOR COOKING EXTRACT SYSTEMS)

Emissions from commercial kitchens have contributed to local environmental problems for many years. Problems come in the form of odours, which permeate into homes and commercial premises, smoke created by different cooking processes and grease deposits on ductwork and buildings. Both smoke and grease emissions could be dealt with under the control of Pollution Act 1974, however, odour was not counted as a nuisance under the act although evidently a problem. The Environmental Protection Act introduced in 1990 made allowance for odours deeming that they could now be construed as a nuisance. Whilst the inclusion of odours was welcomed by those affected it presented a separate problem; if odour control could now be enforced suitable methods must be found to effectively reduce or neutralise these emissions, the options are many and varied. In 2005 DEFRA were commissioned to prepare a study and report to assist specifiers and those carrying out enforcement to understand the methods and how to apply them better.

Control of odour itself is relatively easy, most people are aware that activated carbon is a very effective method of eliminating odours. However, this is not so with cooking emissions as there are two phases of contaminant within the discharge:- Particulate and Gaseous. There are many known separation technologies for the two phases unfortunately there is not one that caters for both. The particulate phase is mainly made up of hydrocarbons (smoke) and small food deposits. The gaseous phase is odour held as vapour or separated gas molecules. As previously stated activated carbon is often used to adsorb odours and other gaseous molecules unfortunately activated carbon is not suitable for removing particles and is particularly adverse to grease. An activated carbon filter, exposed even to the lowest levels of grease or smoke, can be rendered useless within hours as the micro porous structure, which allows adsorption of the gases, becomes clogged with particles, thus allowing the odours to continue through the filter. It is impossible to treat the gaseous phase without first eliminating the majority of the particulate phase, this does not rule out carbon based filters but the design and maintenance are critical. Whilst this is in theory possible, it is not always practical for the following reasons:

1. Cost.
2. Physical Size.
3. Pressure Loss.
4. Maintenance Requirements.
5. Variations in separation efficiency between clean and dirty conditions of filters.

The main requirements for an effective and enforceable emission control system are set out below.

- a) The system should be reasonably priced.
- b) The pressure differential created by the separation method should be low thus avoiding the need to install large fans, which can add to noise pollution and will result in increased operational costs.
- c) The system should be relatively simple and economic to maintain.
- d) There should be no major detrimental effect on the system if it is not maintained as recommended.
- e) The maintenance or non-maintenance of the system should be easily identifiable.

Commercial operators and Environmental Health Officers have long been aware of the environmental problems associated with kitchen extract systems. In the majority of cases the ducting is run up the height of the building and discharges above the eaves. Whilst this is a capable method for minimising the nuisance caused by grease and smoke it does not apply to odour as this can be carried in pockets in the wind and brought back down.

Additionally, there are environmental concerns and planning regulations that do not support unsightly ductwork and fans being mounted on the outside of buildings. In the next few pages you will read about the most effective and up to date methods for minimising the emissions from commercial kitchens. It should be noted that whilst not impossible, it is impractical to completely eliminate these problems, at best we can reduce them by approximately ninety percent.

