

Pollution Control Strategy for the Kitchen Ventilation System

There are occasions when it is not possible, desirable, or visually acceptable to install the discharge duct from a commercial kitchen ventilation system up to roof level for a high-level vertical discharge to atmosphere.

For such occasions, the alternative is to pass the vitiated exhaust air through a **Pollution Control Unit (Ecology Unit)** and clean the air to such a degree that it can be safely discharged at low-level from the building, thereby, on the one hand, avoiding the implications of unsightly external ductwork, but on the other, committing the operator to the additional costs of routine maintenance.

The proposal is to re-plan and configure to kitchen standard DW172 the existing internal supply and extract systems which exist including new canopies as required including completely re-furbishing and service the existing filtration plant (Coalescent/Carbon/UV/HEPA/Bag/Panel Filters) covered by the Halton specification sheet as previously approved and accepted by MCC under previous discharge of condition application CDN/19/0071. The exhaust point size and location will not change. The client commits to ensure the recommended maintenance programme required to deliver the continuous same level of contaminant cleanliness stated is maintained (similarly as feasible) through annual premises usage as delivered at handover.

The proposed system for controlling the quality of exhaust air for this project can simply be described, as follows;

- The stainless steel kitchen canopy would incorporate removable **KSA multi-cyclonic primary grease eliminators**, immediately followed by removable **Coalescer Filters**, specifically intended to reduce any airborne grease in the vapour phase.
- The final element of this 3-part canopy filtration system are Halton's Capture Ray **UV-C (ultraviolet) lamp cassettes** which work by breaking up the long-chain oxygen molecules in the airstream using "photolysis" and then, at 185 nm wavelength, produce small quantities of ozone which, through "ozonolysis", destroys any residual grease and reduces the volatile organic compounds (VOCs) and in so doing drastically reduces any cooking odours at the point of discharge to atmosphere.
- As the duct connects to one end of the Pollustop unit the air passes through 3 levels of additional filtration; a) **Panel** filters, b) **Bag** filters and c) **HEPA** filters. These 3 banks of filters combine to reduce any smoke in the exhaust air down to 0.3 microns, which is invisible to the naked eye.
- The 4th level of filtration inside the Pollustop unit is a bank of **NFX Activated Carbon** filters, designed to adsorb airborne ozone from the airstream down to 10.06ppm, which is the level recommended by the World Health Organization
- From this point the exhaust air would pass through a constant volume centrifugal-type fan, selected for its extremely low sound levels, and then through an Attenuator (silencer) before connecting to the discharge louvre at low level in the new shopfront.