SECTION 2 ELECTROSTATIC PRECIPITATION OF PARTICULATE PHASE CONTAMINANTS FROM COMMERCIAL KITCHEN EXTRACTS

Electrostatic Precipitation and its use for the separation of sub micron particles has been around since the late nineteenth century. The principle of operation is to impart a negative or positive electrical charge (Ionisation) to a particle. The particle is then passed between finely spaced parallel metal plates (average spacing 5-10mm) which are held at opposite electrical potentials. One plate will be charged to the same polarity as the ionised particle whilst the other will be earthed (opposite with respect to the positive/negative).

As the charged particle travels between the two metal plates it is forced away from the plate held at the identical polarity and drawn towards the earthed plate. During the path of travel the Parallel Effect takes place resulting in the charged particle becoming attached to the earthed plate due to the electrostatic difference, once attached the particle will remain suspended on the plate until cleaned off during maintenance.

The Electrostatic Precipitator is ideal for use in kitchen exhaust systems to separate the small grease and smoke particles that penetrate the main grease filters in the canopy.

Efficiency

The Electrostatic Precipitator is a very efficient means for separating the particulate phase; operating efficiency when clean can be as high as 98% at particle sizes down to 0.01 micron. However, as the plates and ioniser become laden with particles during use the efficiency will reduce due to the insulating effect of the dirt.

Pressure Loss

The Electrostatic Precipitator does not present a high-pressure loss (10mm - 15mm Water Gauge). This gives a specific advantage in that most standard Kitchen extractor fans will have the capability of overcoming this small differential. This is particularly advantageous when it is considered that if the pressure loss were high larger noisier fans would probably be necessary resulting in potential noise pollution.

Maintenance

There are no replacement filters; all that is required is regular removal of the filters, ioniser and collector cells, which can be cleaned with chemicals and warm water. If the maintenance schedule is ignored or overruns there is no significant damage to the Electrostatic Precipitator.